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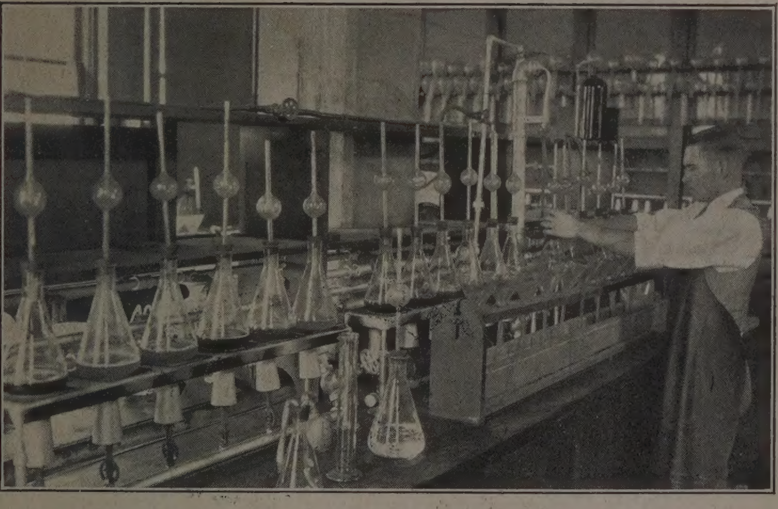
COMMERCIAL FEEDING STUFFS



It is important to know the amount of crude fiber in commercial feeding stuffs.

Purdue University
Agricultural Experiment Station
Lafayette, Indiana

This circular contains a condensed report of Indiana's 1929 commercial feed inspection.

Approximately 498,887 tons of commercial feeds with a retail value of $26,491,777 were sold in Indiana during the year 1929. The inspectors of the State Chemist department secured 2,761 samples, or approximately one sample for each 180 tons of commercial feeds sold in this state.

All of the 2,761 samples collected were examined microscopically and 2,230 were analyzed chemically. It was found that 82 per cent of the samples were equal to or better than the manufacturer's guarantee as declared on the official tag and 486 were not in accord with the official label. Of the 486 samples incorrectly guaranteed, 284 of them would be classed as seriously deficient and sold in violation of the law. Shipments seriously deficient were withdrawn from sale and manufacturers relabeled such feeds correctly and made refunds amounting to $773 to the agents and consumers.

Comments on certain classes of feeding stuffs sold in Indiana during the year 1929.

Summary of the annual tonnage and expenditures for commercial feeding stuffs since 1911.

Explanation of terms used in the analysis of feeds.

The Definitions of Feeding Stuffs adopted by the Association of Feed Control Officials.

Table II gives the average analyses of the common cereals and by-product feeds.

Table III gives the standing of each feed manufacturer on the basis of compliance with the Indiana Feeding Stuffs law both in regard to maintaining guarantees and tagging of his feed. It will pay all purchasers to spend a little time studying this table.

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COMMERCIAL FEEDING STUFFS

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The Indiana Feeding Stuffs law is primarily a correct labeling law. It requires the feeding stuff to be correctly labeled with official labels or tags in order that the prospective buyer may have the information necessary to determine whether the feed is the kind which he wishes to buy. The official tag which bears the facsimile signature of the State Chemist gives the manufacturer's minimum guarantees for crude protein and crude fat and a maximum guarantee for crude fiber. Furthermore the tag states the specific name of each ingredient used in preparing the feeding stuff. Mineral feeds containing no organic ingredient do not require the usual chemical feed guarantee but do require a declaration of each ingredient contained therein and the minimum percentages of lime (CaO), phosphoric acid (P_2O_5), iodine (I) and the maximum percentage of salt ($NaCl$) if same are present. With this information the purchaser is able to distinguish between superior and inferior feeds and to make an intelligent and economical purchase.

In order to verify the correctness of the feed manufacturer's guarantee, the State Chemist collected 2,761 samples of commercial feeding stuffs during the year 1929 from manufacturers, agents and farmers in the various sections of the state. One inspection sample was secured from approximately each 180 tons of commercial feed sold in Indiana. All of the 2,761 samples collected were examined microscopically and 2,230 of them were analyzed chemically. Those not analyzed were largely from shipments previously analyzed. Many of the samples drawn represented carload shipments.

Of the 2,761 samples secured 486 of them were found to be guaranteed incorrectly and 284 were classed as being seriously deficient or misbranded and not sold in accordance with the Indiana Feeding Stuffs law. The year's inspection showed that 82 per cent of the samples were equal to or better than the manufacturer's guarantee, as compared to 77 per cent in 1928.

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Refunds and Withdrawals from Sale

Shipments found to be seriously deficient were removed promptly from sale and the manufacturers either replaced the shipment with feed up to the guarantee or else retagged the feed with a correct guarantee. Where deficient feed had already been sold, refunds were made in most cases to the dealers and consumers. During the year 1929 the sum of $773 was refunded on 93 shipments by 63 feed manufacturers. The payment of refunds does not affect the right of any one in the state to call cases of deficiency to the attention of the prosecuting attorney. However, by making these refunds the manufacturer indicates his good intentions and does all that he can to correct the violation of the law.

During 1929 the State Chemist advised the withdrawal from sale of 620.7 tons of commercial feeding stuffs on account of non-tagging, deficiency and misbranding. Of this amount 476.7 tons, representing 170 shipments, were removed from sale on account of non-tagging and 90.1 tons, representing 29 shipments, were removed from sale due to protein deficiency.

Estimated Sales of Commercial Feeding Stuffs in 1929

Approximately 498,887 tons of commercial feeding stuffs with a retail value of $26,491,777 were sold in Indiana in 1929. This estimate was based on the number of tags or labels issued by the State Chemist. Compared with the sales of 1928, the banner year, this shows a decrease of 25,589 tons and a corresponding decrease of $3,326,789 in expenditures. From Table I the principal decreases in tonnage sold during the year 1929 compared with 1928 were for hominy feed, corn feed meal, mill by-products, proprietary feeds and condimental stock feeds while the principal increases were for poultry mashes, linseed oil meal and mineral feeds.

Attention! Manufacturers, Dealers, and Consumers

The official tag required by law bears the facsimile signature of the State Chemist and contains the manufacturer's guarantee.

Dealers and consumers should not accept any shipments without State Chemist tags or with such tags showing alterations. When such shipments are received they should not be accepted until official Indiana labels are furnished. When these are received one should be attached to each bag of 100 pounds or fraction thereof before offering or exposing for sale or selling the feed.

The sale or offering for sale of feed not tagged with official tags constitutes a serious violation of the Indiana Feeding Stuffs law. The law states that a person, company or corporation on conviction of such a violation shall suffer a penalty of $50 for the first offense and $100 for each subsequent offense.

Manufacturers or distributors when shipping feed into this state are especially urged to attach an official Indiana state tag to each bag in the shipment. If this is not done the manufacturer not only violates the law but he also inconveniences his customer who is required to withdraw the feed from sale until it is properly tagged.

Agents and farmers should represent and purchase from manufacturers whose records show that they are complying with the law both in regard to labeling and maintaining guarantees of composition and ingredients. Consult Table III "The Summary of Feed Inspection" and buy from only such companies as have a good record of inspection.

Animal By-Products

Tankage and meat scraps are sold mostly as protein supplements. These products are also valuable in that they furnish mineral constituents, largely tricalcium phosphate ($Ca_3(PO_4)_2$). Analyses of samples found on sale in 1929 show that this class of feeds is often deficient in protein and sometimes adulterated with hoof, horn, hair, etc. If meat scraps contain more than 10% phosphoric acid (P_2O_5) they should be designated as meat and bone scraps. During the past year a few shipments were removed from sale due to the above misbranding. When purchasing tankages the comparative cost per unit of protein should always be considered.

Condimental Poultry and Stock Feeds

These preparations which come under the provisions of the Indiana feeding stuffs law are composed usually of some ordinary feeding stuff or feeding stuff adulterant for a base or carrier together with some cathartic, generally glaubers or epsom salts, and appetizers, such as gentian, fenugreek, ginger, or anise, with small amounts of worm seed, poke root, copperas, sulphur, etc.

In many instances where minerals are present it is often difficult to classify the mixture as a remedy or as a mineral feed. However, the ingredients guaranteed and the high price of these mixtures may be helpful to the purchaser in differentiating between these two types of feeds.

It is very doubtful whether it is advisable to continually dose live stock and poultry with these high priced preparations. The decrease in tonnage sold in 1929 compared to 1928 of 1,280 tons may indicate that the feeder is giving more attention to this class of condimental feeds.

Cottonseed Meal

Cottonseed meal is usually purchased for its protein content. It is used quite extensively in the preparation of balanced dairy rations. Of a great number of samples analyzed the past year only two were found to be seriously deficient in crude protein. This unusually fine record seems to indicate that the manufacturers of cottonseed meal are able to control their products and also take great care in furnishing tags with the correct guarantee.

Mineral Feeds

The primary purpose of mineral feeds is to supplement the mineral deficiency in grain and seeds. These feeds are compounded principally of such materials as superphosphate, rock phosphate, bone meal, bone black, precipitated phosphate, limestone, wood ashes, common salt and sometimes an iodine salt. The mineral ingredients must be stated in their common English term, if any such term exists. Such terms as sodium chloride and calcium carbonate will not be accepted in lieu of the terms common salt and limestone as it is not advisable to confuse the purchasers of these mixtures. Besides the ingredients on the tag particular attention should be given to the percentages of lime (CaO), phosphoric acid (P_2O_5), iodine (I) and salt ($NaCl$) if same are present.

In case these terms are not familiar to all perhaps it would be well to mention that a good grade of limestone will contain 53% CaO, steamed bone meal 34% CaO and 29% P_2O_5, superphosphate 24% CaO and 16% P_2O_5 and potassium iodide 76% iodine.

Poultry Mash

During the year 1929 the estimated tonnage of poultry mash sold in this state was 120,563 tons with a retail value of $7,197,611. This class of feed leads all other classes of feeds in amount sold and has no rival when expenditures are considered. In addition to the above tonnage no doubt a large quantity of poultry mash is home-mixed. Whether the mash is purchased ready-mixed or the individual ingredients are purchased to be home-mixed the official Indiana State tag will give useful information to the buyer.

Proprietary Feeds

There are being sold in this state under various names a wide variety of mixtures composed of screenings and oat hulls on up to ingredients of high feeding quality. This class of ready-mixed feeds consists largely of dairy feeds, calf meals, hog and pig feeds and horse and mule feeds. While many of these feeds are of the highest type others have very little feeding value.

Chicken Chuckle and Chicken Charmer

During the past year inquiries have been made regarding certain feeding stuffs of the following brand names manufactured by the Pico Feed Company, Warsaw, Indiana: Chicken Chuckle and Chicken Charmer. Both of these products are registered with this department under the same guarantee as follows: crude protein not less than 1%, crude fat not less than 1% and ingredients: black strap molasses, corn oil, cocoanut oil, soybean oil, gelatin and corn syrup. Analyses of samples of these products show that they contain not less than 97% black strap molasses. In addition to this they may contain small amounts of other ingredients. The price quoted for Chicken Chuckle is $1.50 per gallon. Black strap molasses can be purchased for from 18 to 20 cents per gallon.

TABLE I. ESTIMATED SALES OF COMMERCIAL FEEDING STUFFS IN INDIANA

Kind of Feed	Estimated Tons			Estimated Retail Values Dollars	
	1927	1928	1929	1928	1929
Alfalfa meal and leaf meal	2,063	2,625	2,657	145,950	129,130
Animal by-products (tankage, meat scrap, etc.)	32,813	25,812	26,094	1,791,353	1,823,971
Brewers, distillers' and yeast dried grains	250	197	63	9,259	2,627
Condimental poultry and stock feeds*	2,781	2,937	1,657	455,235	243,082
Corn bran	31	187	....	6,545	....
Corn feed meal	2,406	5,125	3,875	237,800	158,100
Corn germ meal	375	500	1,125	26,150	57,038
Corn gluten meal and feed	1,938	1,875	813	90,562	39,593
Corn and oats chop and miscellaneous chops	4,844	5,312	4,406	240,102	181,087
Cottonseed meal	10,250	8,532	9,406	481,205	510,746
Dried buttermilk semi-solid, condensed, etc	8,156	5,781	7,063	1,064,282	1,181,640
Hominy meal and hominy feed	28,875	60,750	49,031	2,843,100	2,098,527
Linseed oil meal	8,281	7,281	9,719	436,860	622,016
Mill by-products wheat bran, middlings, rye feeds, etc. with and without screenings	133,594	136,250	120,133	6,076,750	4,697,200
Mineral feeds	7,031	7,312	9,188	666,854	690,938
Oat meal by-products oat shorts, oat hulls, oat middlings, oat groats, etc	250	219	188	7,008	7,990
Poultry scratch feed—with and without grit	55,813	38,593	40,906	2,230,675	2,106,659
Poultry mash	61,594	102,375	120,563	6,562,237	7,197,611
Proprietary feeds ready mixed	76,063	110,719	88,781	6,310,983	4,581,100
Soybean oil meal	188	125	531	6,687	31,010
Miscellaneous—beet pulp, rice bran, processed garbage, kelp, cocoanut oil meal, peanut oil feed, etc	2,938	1,969	2,688	128,969	131,712
Totals	440,534	524,476	498,887	29,818,566	26,491,777

*Not all condimental feeds come under the law.

WITHDRAWALS FROM SALE

Number of shipments withdrawn from sale	Number of manufacturers represented	Reasons for withdrawal from sale	Amount withdrawn tons
170	88	Not tagged	476.7
29	22	Deficient in crude protein	90.1
8	7	Misbranded	24.6
3	2	Deficient in crude fat	6.6
1	1	Deficient in crude fat and crude protein	1.3
1	1	Excess crude fiber	20.0
1	1	Mutilated tags	0.3
1	1	Excess salt	0.9
1	1	Deficient phosphoric acid (P_2O_5)	0.2
215	....	Totals	620.7

SUMMARY OF THE ANNUAL TONNAGE AND EXPENDITURES FOR COMMERCIAL FEEDING STUFFS SINCE 1911

Year	1911	1912	1913	1914	1915	1916	1917
Estimated sales, tons	179,000	196,752	217,689	271,751	270,339	317,664	379,152
Estimated retail value, dollars	5,056,906	6,371,571	6,406,645	8,461,751	8,221,684	10,316,516	21,700,101
Year	**1918**	**1919**	**1920**	**1921**	**1922**	**1923**	**1924**
Estimated sales, tons	439,152	506,958	390,078	283,256	340,197	389,971	419,441
Estimated retail value, dollars	26,717,086	33,013,463	27,014,049	11,716,745	14,244,175	18,026,682	19,720,313
Year	**1925**	**1926**	**1927**	**1928**	**1929**		
Estimated sales, tons	408,713	337,298	440,534	524,476	498,887		
Estimated retail value, dollars	20,945,026	16,837,512	24,173,605	29,818,566	26,491,777		

Explanation of Terms Used in the Analysis of Feeding Stuffs

Moisture is the varying quantity of water occurring in feeding stuffs which can be driven off by heat at the temperature of boiling water. The amount of water present varies with the temperature, moisture content of the air, process of manufacture and the character of the substance. In most concentrates this value ranges from five to fifteen per cent.

Crude Fat consists mainly of fats and oils with small amounts of waxes, resins, coloring matter and similar substances, dissolved from feeding stuffs by dry ether. In calculating the heat and energy value of a feed, the fat is considered 2.25 times greater than that of either carbohydrates or protein.

Crude Protein is the term applied to the nitrogenous constituents of a feeding stuff. It is obtained by multiplying the total nitrogen by 6.25. Protein is the most important as well as the most costly constituent in a feed. Plants have the power of building up protein from the inorganic elements of the soil and air while animals must secure their protein from the plants or other animals. The plant proteins contain varying amounts of the essential amino acids, therefore it is necessary to carefully select a variety of feeds which will furnish the essential amino acids economically.

Crude Fiber is the woody portion of a feeding stuff, for the most part cellulose, and is insoluble in dilute acids and alkalis. Most of the common seeds and grains contain very little fiber while the hulls, husks and stems are high in this constituent. In poultry and swine crude fiber when present in considerable quantities exerts a retarding influence on the digestion of nutrients present.

Ash, the mineral matter of plants, is the residue left after burning a feeding stuff at low redness. It consists chiefly of the phosphates, sulphates, chlorides and carbonates of sodium, potassium, calcium and magnesium. The calcium and phosphorous are absolutely essential for the proper nutrition of the animal.

Nitrogen Free Extract consists of sugars, starches, pentoses, non-nitrogenous organic acids, etc., and is determined by subtracting the sum of moisture, crude fat, crude protein, crude fiber and ash from 100.

Carbohydrates is the sum of the crude fiber and Nitrogen-free extract.

DEFINITIONS OF FEEDING STUFFS

Meal is the clean sound ground product of the entire grain, cereal, or seed which it purports to represent.

Chop is a ground or chopped feed composed of one or more different cereals or by-products thereof. If it bears a name descriptive of the kind of cereals, it must be made exclusively of the entire grains of those cereals.

Ear Corn Chops is corn and cob chopped, without the husk, with not a greater proportion of cob than occurs in the ear corn in its natural state.

Head Chops consist of the entire head of the grain sorghums chopped, and should bear the name of the sorghum from which it is made. This includes, among others, kaffir head chops, milo head chops, feterita head chops, and sorghum head chops.

Head Stems consist of the head of the grain sorghums, from which the grain has been removed, and should bear the name of the sorghum from which it is made.

Alfalfa Products

Chopped Alfalfa is the entire alfalfa hay, chopped and not ground finely enough to become a meal. It must not contain an admixture of alfalfa straw or other foreign material.

Alfalfa Meal is the product obtained from the grinding of the entire alfalfa hay, without the addition of any alfalfa stems, alfalfa straw or foreign material, or the abstraction of leaves. It must be reasonably free from other crop plants and weeds, and must not contain more than 33 per cent of crude fiber.

Alfalfa Leaf Meal is the ground product consisting chiefly of leafy materials separated from alfalfa hay. It must be reasonably free from other crop plants and weeds and must not contain more than 18 per cent of crude fiber.

Alfalfa Stem Meal is the ground product remaining after the separation of the leafy material from alfalfa hay or meal. It must be reasonably free from other crop plants and weeds.

Animal By-Products

Blood Meal is ground, dried blood.

Blood Flour is dried blood, prepared by special processes and reduced to a fine powder.

Digester Tankage, Meat Meal Digester Tankage, Meat Meal Tankage, or **Feeding Tankage** is the residue from animal tissues exclusive of hoof, horn, manure and stomach contents, except in such traces as might occur unavoidably in good factory practice, especially prepared for feeding purposes by tanking under live steam or by dry rendering or a mixture of the products made suitable by drying and grinding. When these products contain more than 10 per cent phosphoric acid (P_2O_5) they shall be designated **Digester Tankage With Bone, Meat and Bone Meal Digester Tankage, Meat and Bone Meal Tankage,** or **Feeding Tankage With Bone.** If they bear a name descriptive of their kind, composition or origin they must correspond thereto.

Meat Scraps is the ground dry-rendered residue from animal tissues exclusive of hoof, horn, manure and stomach contents, except in such traces as might occur unavoidably in good factory practice. When this product contains more than 10 per cent phosphoric acid (P_2O_5) it shall be designated **Meat and Bone Scraps.** If they bear a name descriptive of their kind, composition or origin they must correspond thereto.

Raw Bone Meal is the dried, ground product suitable for animal feeding, obtained by cooking in water at atmospheric pressure, undecomposed bone, just enough to remove excess fat and meat. It must not contain less than 23 per cent of protein.

Steamed Bone Meal is the dried, ground product suitable for animal feeding obtained by cooking bones with steam under pressure.

Special Steamed Bone Meal is the dried, ground product suitable for animal feeding obtained by cooking dried bone after the removal of grease and meat fibre with steam under pressure in the process of obtaining gelatine or glue.

Apple Products

Dried Apple Pomace is the sound, dried residue obtained by the removal of cider from apples.

Dried Apple Pectin Pulp is the sound, dried residue obtained by the removal of pectin from apple products.

Barley Products

Barley Hulls are the outer coverings of the barley.

Barley Feed is the entire by-product resulting from the manufacture of pearl barley from clean barley.

Barley Mixed Feed is the entire offal from the milling of barley flour from clean barley and is composed of barley hulls and barley middlings.

Ground Barley is the entire product obtained by grinding clean sound barley, containing not less than 90 per cent pure barley and not more than 10 per cent of other grains, weed seeds and other foreign material and not more than 6 per cent fiber; provided that no portion of this stated 10 per cent of other grains, weed seeds or other foreign material shall be deliberately added.

Mixed Feed Barley is the entire product obtained by grinding country run barley containing not less than 75 per cent pure barley and not more than 25 per cent of other grains, weed seeds and other foreign material; provided that no portion of this stated 25 per cent of other grains, weed seeds or foreign material shall be deliberately added. The ingredients must be stated as barley, other grains, weed seeds and foreign material.

Brewers' and Distillers' Products

Brewers' Dried Grains are the properly dried residue from cereals obtained in the manufacture of beer.

Distillers' Dried Grains are the dried residue from cereals obtained in the manufacture of alcohol and distilled liquors. The products shall bear the designation indicating the cereal predominating.

Distillers' Corn Solubles, a by-product from the manufacture of alcohol from corn, is a mash liquor concentrated after the removal of the alchohol and wet grains.

Distillers' Rye Solubles, a by-product from the manufacture of alcohol from rye, is a mash liquor concentrated after the removal of the alcohol and wet grains.

Distillers' Corn and Rye Solubles, a by-product from the manufacture of alcohol from corn and rye, is a mash liquor concentrated after the removal of the alcohol and wet grains.

Malt Sprouts are the sprouts of the barley grain obtained in the malting process. Sprouts derived from any other malted cereal must be designated by the name of that cereal.

Yeast or Vinegar Dried Grains are the properly dried residue from the mixture of cereals, malt and malt sprouts (sometimes cottonseed meal) obtained in the manufacture of yeast or vinegar, and consists of corn or corn and rye from which most of the starch has been extracted, together with malt added during the manufacturing process to change the starch to sugars, and malt sprouts (sometimes cottonseed meal) added during the manufacturing process to aid in filtering the residue from the wort and serve as a source of food supply for the yeast.

Buckwheat Products

Buckwheat Shorts or **Buckwheat Middlings** are that portion of the buckwheat grain immediately inside of the hull after separation from the flour.

Corn Products

Corn Bran is the outer coating of the corn kernel.

Corn Feed Meal is the by-product obtained in the manufacture of cracked corn, with or without aspiration products added to the siftings. This name is also correctly applied to the by-product obtained in the manufacture of table meal from the whole grain by the non-degerming process.

Grits are the hard, flinty portions of Indian corn containing no bran or germ.

Corn Gluten Meal is that part of commercial shelled corn that remains after the separation of the larger part of the starch, the germ and the bran, by the processes employed in the manufacture of cornstarch and glucose. It may or may not contain corn solubles.

Corn Gluten Feed is that portion of commercial shelled corn that remains after the separation of the larger part of the starch and the germs by the processes employed in the manufacture of cornstarch and glucose. It may or may not contain corn solubles.

Maltose Process Corn Gluten Feed is the dried residue from degermed corn, after removal of starch in the manufacture of malt syrup.

Hominy Feed, Hominy Meal or **Hominy Chop** is the kiln-dried mixture of the mill-run bran coating, the mill-run germ, with or without a partial extraction of the oil, and a part of the starchy portion of the white corn kernel obtained in the manufacture of hominy, hominy grits, and corn meal by the degerming process.

Yellow Hominy Feed, Yellow Hominy Meal or **Yellow Hominy Chop** is a kiln-dried mixture of the mill-run bran coating, the mill-run germ, with or without a partial extraction of the oil, and a part of the starchy portion of the yellow corn kernel obtained in the manufacture of yellow hominy grits and yellow corn meal by the degerming process.

Corn Oil Cake consists of the corn germ from which part of the oil has been pressed and is the product obtained in the wet milling process of manufacture of cornstarch, corn syrup, and other corn products.

Corn Oil Meal is ground corn oil cake.

Corn Germ Cake consists of corn germ with other parts of the corn kernel from which part of the oil has been pressed, and is the product obtained in the dry milling process of manufacture of corn meal, corn grits, hominy feed, and other corn products.

Corn Germ Meal is ground corn germ cake.

Cottonseed Products

Cottonseed Meal is a product of the cottonseed only, composed principally of the kernel with such portion of the hull as is necessary in the manufacture of oil; provided that nothing shall be recognized as cottonseed meal that does not conform to the foregoing definition and that does not contain at least 36 per cent of protein. Cottonseed meal shall be graded and classed as follows:

1. **Cottonseed Meal**, Prime Quality. Cottonseed meal, prime quality, must be finely ground, not necessarily bolted, of sweet odor, reasonably bright in color, yellowish, not brown or reddish, free from excessive lint, and shall contain not less than 36 per cent of protein. It shall be designated and sold according to its protein content. Cottonseed meal with 36 per cent of protein shall be termed "36 per cent Protein Cottonseed Meal, Prime Quality," and higher grades similarly designated (as "43 per cent Protein Cottonseed Meal, Prime Quality"), etc.

2. **Cottonseed Meal**, Off Quality. Cottonseed meal not fulfilling the above requirements as to color, odor and texture shall be graded "36 per cent Protein Cottonseed Meal, Off Quality," and higher grades similarly designated.

Cottonseed Feed is a mixture of cottonseed meal and cottonseed hulls, containing less than 36 per cent of protein.

Cold Pressed Cottonseed is the product obtained from the subjection of the whole undecorticated cottonseed to the cold pressure process for the extraction of oil and includes the entire cottonseed less the oil extracted.

Ground Cold Pressed Cottonseed is the product obtained by grinding cold pressed cottonseed.

Fish By-Products

Fish Meal is clean dried ground tissues of undecomposed whole fish and/or fish cuttings with or without the extraction of part of the oil.

Fish Residue Meal is the clean, undecomposed residue from the manufacture of glue from non-oily fish.

Linseed and Flax Products

Linseed Cake or **Meal** is oil cake or meal made from flaxseed; provided that the final product shall contain less than 6 per cent of weed seeds and other foreign materials and; provided further, that no portion of the stated 6 per cent of weed seeds and other foreign materials shall be deliberately added.

Old Process Oil Meal, Old Process Linseed Meal is oil meal as defined or linseed meal as defined produced by crushing, cooking and hydraulic pressure.

New Process Oil Meal, New Process Linseed Meal is oil meal as defined or linseed meal as defined produced by crushing, heating and the use of solvents.

Flax Plant By-Product is that portion of the flax plant remaining after the separation of the seed, the bast fiber and a portion of the shives, and consists of flax shives, flax pods, broken and immature flax seeds, and the cortical tissues of the stem.

Ground Flaxseed or **Flaxseed Meal** is the product obtained by grinding flaxseed which has been screened and cleaned of weed seeds and other foreign materials by the most improved commercial process; provided that the final product shall contain less than 4 per cent of weed seeds and other foreign materials; and provided further, that no portion of the stated 4 per cent of weed seeds and other foreign materials shall be deliberately added.

Unscreened Flaxseed Oil Feed Cake is the product obtained by extraction of part of the oil from unscreened flaxseed by crushing, cooking and hydraulic pressure, or by crushing, heating and the use of solvents. The ingredients shall be stated as partially extracted flaxseed and foreign seeds (wheat, wild buckwheat, pigeon grass, wild mustard, etc.).

Ground Unscreened Flaxseed Oil Feed is the ground unscreened flaxseed oil feed cake.

Screenings Oil Feed is the ground product obtained after extraction of part of the oil by crushing, cooking and hydraulic pressure, or by crushing, heating and the use of solvents from the smaller imperfect grains, weed seeds and other foreign materials, having feeding value, separated in cleaning the grain. The name of the grain from which the screenings are separated shall be prefixed to "screenings oil feed."

Oil Cake

Oil Cake is the product obtained after the extraction of part of the oil by crushing, cooking and hydraulic pressure, or by crushing, heating and the use of solvents, from seeds which have been screened and cleaned of weed seeds and other foreign materials by the most improved commercial process. When used alone the term "Oil Cake" shall be understood to designate linseed cake as defined. When used to cover any other product the name of the seed from which it is obtained shall be prefixed to the words "Oil Cake."

Oil Meal or **Ground Oil Cake** is oil cake ground to a meal.

Oat Products

Oat Groats are the kernels of the oat.

Oat Hulls are the outer coverings of the oat.

Oat Middlings are the floury portions of the oat groat obtained in the milling of rolled oats.

Oat Shorts are the covering of the oat grain lying immediately inside the hull, being a fuzzy material, carrying with it considerable portions of the fine floury part of the groat obtained in the milling of rolled oats.

Clipped Oat By-Product is the by-product obtained in the manufacture of clipped oats. It may contain the light, chaffy material broken from the end of the hulls, empty hulls, light immature oats and dust. It must not contain an excessive amount of oat hulls.

Peanut Products

Peanut Oil Cake is the residue after the extraction of part of the oil by pressure or solvents from peanut kernels.

Peanut Oil Meal is ground peanut oil cake.

Unhulled Peanut Oil Feed is the ground residue obtained after extraction of part of the oil from whole peanuts, and the ingredients shall be designated as **Peanut Meal and Hulls.**

Rice Products

Rice Bran is the pericarp or bran layer of the rice, with only such quantity of hull fragments as is unavoidable in the regular milling of rice.

Rice Hulls are the outer coverings of the rice.

Rice Polish is the finely powdered material obtained in polishing the kernel.

Rice Meal is ground brown rice or ground rice after the hull has been removed.

Ground Rough Rice is ground rice from which the hull has not been removed or ground paddy rice.

Rice Stone Bran is the siftings from the materials secured in removing hulls from rice and contains rice germs, broken rice and some rice hulls.

Rice Huller Bran is a product secured by the huller and comes from brown rice and consists mostly of the bran and germs.

Rye Products

Rye Bran is the coarse outer covering of the rye kernel as separated from the cleaned and scoured rye.

Rye Feed, a by-product obtained in the usual process of the milling of rye flour from cleaned and scoured rye grain, consists principally of the mill-run of the outer covering of the rye grain and the germ with small quantities of flour and aleurone.

Rye Red Dog, a by-product obtained in the usual process of the milling of rye flour, consists principally of aleurone with small quantities of flour and fine bran particles and shall not contain more than 3.5 per cent of fiber.

Rye Low Grade Feed Flour consists principally of dark rye flour and small quantities of aleurone and fine bran particles and shall not contain more than 1.5 per cent crude fiber.

Rye Middlings consists of rye feed and rye red dog combined in the proportions obtained in the usual process of milling rye flour.

Rye Flour Middlings consists of rye feed, rye red dog and pure dark rye flour combined in the proportions obtained in the milling of rye flour and shall not contain more than 5 per cent crude fiber.

Velvet Bean Products

Velvet Bean Meal is ground velvet beans containing only an unavoidable trace of hulls or pods.

Ground Velvet Bean and Pod is the product derived by grinding velvet beans "in the pod." It contains no additional pods or other materials.

Wheat Products

Wheat Bran is the coarse outer covering of the wheat kernel as separated from cleaned and scoured wheat in the usual process of commercial milling.

Hard Spring Wheat Products

Standard Middlings consists mostly of fine particles of bran germ and very little of the fibrous offal obtained from the "tail of the mill." This product must be obtained in the usual commercial process of milling and shall not contain more than 9.5 per cent crude fiber.

Flour Middlings shall consist of standard middlings and red dog flour combined in the proportions obtained in the usual process of milling and shall not contain more than 6.0 per cent crude fiber.

Wheat Red Dog, a by-product obtained in the usual commercial process of flour milling, consists principally of aleurone with small quantities of flour and fine bran particles and shall not contain more than 4.0 per cent crude fiber.

Wheat Low Grade Feed Flour, a by-product obtained in the usual commercial process of flour milling, consists principally of flour with small quantities of aleurone and fine bran particles and shall not contain more than 1.5 per cent crude fiber.

Wheat Bran and Standard Middlings consists of the two commodities as defined above, mixed in the proportions obtained in the usual process of commercial milling.

Hard Wheat Mixed Feed (mill-run wheat feed) consists of pure wheat bran and flour middlings combined in the proportions obtained in the usual process of commercial milling. This product shall not contain more than 9.5 per cent crude fiber.

Winter Wheat Products

Brown Shorts (Red Shorts) consists mostly of the fine particles of bran, germ and very little of the fibrous offal obtained from the "tail of the mill." This product must be obtained in the usual commercial process of milling and shall not contain more than 7.5 per cent crude fiber.

Gray Shorts (Gray Middlings or Total Shorts) consists of the fine particles of the outer bran, the inner bran or bee-wing bran, the germ and the offal or fibrous materials obtained from the "tail of the mill." This product must be obtained in the usual process of commercial milling and shall not contain more than 6.0 per cent crude fiber.

White Shorts or **White Middlings** consists of a small portion of the fine bran particles and the germ and a large portion of the fibrous offal obtained from the "tail of the mill." This product must be obtained in the usual process of flour milling and shall not contain more than 3.5 per cent crude fiber.

Wheat Mixed Feed (mill-run wheat feed) consists of pure wheat bran and the gray or total shorts combined in the proportions obtained in the usual process of commercial milling. This product shall not contain more than 8.5 per cent crude fiber.

Screenings consists of the smaller imperfect grains, weed seeds, and other foreign materials, having feeding value, separated in cleaning the grain.

Scourings consists of such portions of the cuticle, brush, white caps, dust, smut and other materials as are separated from the grain in the usual commercial process of scouring.

(NOTE) If to any of the wheat or rye by-product feeds there should be added screenings or scourings—as above defined, either ground or unground, bolted or unbolted, such brand shall be so registered, labeled and sold as clearly to indicate this fact. The word "Screenings" or "Scourings," as the case may be, shall appear as a part of the name or brand and shall be printed in the same size and face of type as the remainder of the brand name. When the word "Screenings" appears it is not necessary to show also on the labeling the word "Scourings."

Mineral Feeds

Mixed feed containing both feed and more than 5 per cent of mineral ingredients requires, in addition to the usual declaration of the chemical feed analysis, a declaration of each ingredient contained therein and the minimum percentages of lime (CaO), phosphoric acid (P_2O_5), iodine (I), and the maximum percentage of salt (NaCl) if same is added. If minerals predominate in the mixture, the usual declaration of the chemical feed analysis, with the exception of protein, may be omitted.

Mineral feeds containing no organic ingredient do not require the usual chemical feed guarantee, but do require a declaration of each ingredient contained therein and the minimum percentage of lime (CaO), phosphoric acid (P_2O_5), iodine (I), and the maximum percentage of salt (NaCl) if same are present.

That the mineral ingredients be stated in the common English terms, if any such terms exist.

It being impossible to classify separately the drug ingredients and the mineral ingredients, be it resolved:

(1) That all mixtures containing mineral ingredients generally regarded as dietary factors essential for the normal nutrition of animals and which are sold or represented for the primary purpose of supplying these minerals as additions to rations in which these same mineral factors may be deficient, be classified as mineral feeds.

(2) That all other preparations which are sold or represented primarily for the cure, mitigation or prevention of disease be classified by this association as drugs, medicines or specifics.

Miscellaneous Products

Dried Beet Pulp is the dried residue from sugar beets which have been cleaned and freed from crowns, leaves and sand, and which have been extracted in the process of manufacturing sugar.

Dried Buttermilk Feed is the product resulting from the removal of water from clean, sound buttermilk derived from natural cream to which no foreign substances have been added, excepting such as are necessary and permitted in the manufacture of butter. It contains not more than eight per cent (8.0%) of moisture and not more than thirteen per cent (13.0%) of mineral matter (ash).

Evaporated Buttermilk Feed, Concentrated Buttermilk Feed, Condensed Buttermilk Feed, is the product resulting from the removal of a considerable portion of water from clean, sound buttermilk derived from natural cream to which no foreign substances have been added excepting such as are permitted and necessary in the manufacture of butter. It contains not less than 27% of total solids, not less than 2% of butterfat, and not more than .14% ash for each per cent of solids. This definition does not prohibit the use of a distinctive trade name, provided it is followed by one of the names given.

Cocoanut Oil Meal or "Copra Oil Meal" is the ground residue from the extraction of part of the oil from the dried meat of the cocoanut.

Ivory Nut Meal is the ground waste material resulting from the manufacture of buttons and similar articles from the vegetable ivory nut.

Processed Garbage is composed of animal and vegetable waste from garbage collected sufficiently often that harmful decomposition has not set in and is separated from material such as crockery, glass, or similar material. Its odor must not be suggestive of the presence of decomposition and it must contain less than one per cent of glass. None of it shall contain knife-like or needle-like particles, and provided further, that the maximum percentage of glass be stated on the label when present in excess of one-fifth of one per cent.

Palm Kernel Oil Meal is the ground residue from the extraction of part of the oil by pressure or solvents from the kernel of the fruit of Elæis guineënsis or Elæis malanococco.

TENTATIVE DEFINITIONS

Table Scrap Meal is the properly cooked dried and ground residue resulting from freshly collected hotel and house garbage from which all metal, crockery, glass, and other foreign material has been removed except in such traces as may unavoidably occur in good factory practice. The finished product shall not be suggestive of material decomposition in odor. It shall not contain any sharp, needle pointed pieces of glass and shall not contain more than one-fifth of one per cent of finely ground glass or dull particles of glass.

Crab Meal is prepared from the undecomposed waste of the crab industry and contains the shell, viscera and part or all of the flesh. It should contain at least 25 per cent protein.

Shrimp Meal is prepared from the undecomposed waste of the shrimp industry and contains the head, hull and/or the whole shrimp.

Milk Products

Dried Skimmed Milk (Feeding) is the product resulting from the removal of water from clean, sound skimmed milk. It contains not more than 8 per cent moisture.

Condensed Skimmed Milk (Feeding) is the product resulting from the removal of a considerable portion of water from clean, sound skimmed milk. It contains not less than 27 per cent total solids.

Condensed Cultured Skimmed Milk (Feeding) is the product resulting from the removal of a considerable portion of water from the clean, sound skimmed milk which has been soured by a suitable culture of lactic bacteria. It contains not less than 27 per cent total solids.

Milk Sugar Feed is the by-product from the manufacture of cheese, containing at least 65 per cent lactose (milk sugar).

TABLE II. AVERAGE ANALYSIS OF CEREALS AND BY-PRODUCTS

Material	Description of	Pounds in one hundred		
		Crude fat	Crude protein	Crude fiber
Alfalfa meal	Entire ground hay	1.5	12.0	30.0
Alfalfa leaf meal	Largely alfalfa leaves	2.5	20.0	18.0
Barley	Whole or ground	1.8	11.0	6.0
Beet pulp	Dried	0.9	8.5	18.0
Blood (dried)	Blood meal	0.5	80.0	none
Bone (raw)	Raw bone	3.0	20.0	1.0
Bone (steamed)	Steamed bone	0.5	10.0	1.0
Brewers' dried grains	From manufacture of beer	6.0	26.0	15.0
Buckwheat	Whole or ground	2.2	10.0	10.0
Buckwheat mixed feed	Entire product from manufacture of buckwheat flour	3.2	12.0	28.0
Buckwheat middlings	Entire product from manufacture of buckwheat flour, except the hulls	7.3	28.8	6.4
Buttermilk (dried)	Dried buttermilk	6.0	30.0	none
Buttermilk (condensed)	Condensed buttermilk	2.0	10.0	none
Cane seed	(Sorghum) removed from head and cleaned	2.5	9.0	2.5
Charcoal	Charcoal	none	none	90.0
Cob meal	Ground corn cob	0.5	2.0	31.0
Corn	Old corn No. 2	4.0	9.0	2.0
Corn and cob meal	Ear corn (old)	3.5	8.0	8.0
Corn bran	Containing little corn germ	2.5	7.0	10.0
Corn mill feed	Corn bran, germ and some meal from manufacture of meal or corn flour	7.4	11.0	4.2
Corn feed meal	Manufacture of cracked corn	3.5	9.0	2.0
Corn germ oil meal	Corn germ with part of the oil removed	8.0	20.0	8.0
Corn gluten feed	Remains after the larger part of starch and germ is removed	2.6	25.0	7.0
Corn gluten meal	From manufacture of corn starch and glucose	1.0	42.0	2.0
Corn screenings	Small and broken grains of corn, small pieces cob, etc., romoved from shelled corn	2.7	8.6	8.6

Copra meal	Dried coconut meats with partial extraction of oil	7.6	21.6	8.6
Cottonseed meal (prime quality)	Sold as 36 per cent protein	7.0	36.0	13.0
Cottonseed meal (prime quality)	Sold as 38.5 per cent protein	7.0	38.5	12.0
Cottonseed meal (prime quality)	Sold as 41 per cent protein	7.0	41.0	10.0
Cottonseed meal (prime quality)	Sold as 43 per cent protein	7.0	43.0	9.0
Cottonseed feed	Below 36 per cent protein	4.0	22.8	22.0
Cottonseed hulls	Contains trace of lint and meal adhering	1.8	4.6	38.0
Cowpea	Seeds, pods removed	1.4	20.8	4.1
Distillers' grain (dried)	From corn or rye	9.0	27.0	12.0
Emmer	Often called spelt	2.0	11.5	10.0
Flaxseed	Whole grain or meal without extraction of oil	33.7	22.6	7.1
Flax plant by-product	Shives, pods, etc	2.1	15.0	31.0
Flaxseed screenings	Small and broken grains, flaxseed, weed seed and other foreign material cleaned from flaxseed	8.0	14.0	14.0
Hominy feed, meal or shop	Manufacture of hominy grits or meal by degerminator process	6.0	11.0	6.0
Kafir corn	Milo	2.5	10.0	2.5
Linseed meal (old process)	Oil extracted by pressure	6.0	34.0	8.0
Unscreened flaxseed oil feed	Flaxseed meal and flaxseed screenings	6.0	30.0	9.0
Malt sprouts	Sprout of the barley grain	1.3	27.9	12.1
Meat scraps	High grade scraps from big packers	8.0	50.0	2.5
Millet	Italian millet seed	3.9	10.3	9.4
Milo	Whole or ground	2.5	10.7	2.5
Molasses	From beets	none	3.0	....
Molasses	Blackstrap from cane	none	3.0	....
Oats	Ground or whole	4.0	11.0	11.0
Oat-clipped by-product	Clippings	2.0	9.0	30.0
Oat-groats	Kernels of oat berry	6.5	15.0	2.0
Oat meal mill by-product	Oat hulls and oat shorts	1.5	6.0	28.0
Oat middlings	Floury portion of oat groat	5.0	15.0	5.0
Peanut oil feed	Peanut meats and peanut hulls	6.0	30.0	25.0
Peanut shells	Whole or finely ground	1.2	5.5	70.9
Rice bran	Cuticle layer beneath hull	12.0	12.0	12.0
Rye	Rye	1.5	11.0	2.0
Rye feed	Rye feed	3.5	16.0	5.0
Soy bean	Seed pods removed	19.0	35.0	5.0
Soy bean oil meal	Ground	6.0	40.0	6.0
Sunflower seed	Whole or ground	19.0	16.0	30.0

TABLE II—Continued

Material	Description of	Pounds in one hundred		
		Crude fat	Crude protein	Crude fiber
Tankage (digester)	60 per cent reinforced with concentrated tank water or dried blood	6.0	60.0	2.0
Velvet bean feed	Velvet beans and pods	4.0	19.0	17.0
Wheat	Whole or ground	1.9	11.9	2.4
Wheat bran (soft	Wheat bran	3.5	14.5	8.0
Wheat bran (hard)	Wheat bran	4.0	16.0	10.0
Wheat middlings	Wheat middlings	3.5	15.5	6.0
Wheat standard middlings	With and without screenings	4.0	16.0	9.5
Wheat red dog flour	Red dog flour	3.5	15.0	4.0
Wheat mixed feed and mill run screenings	Bran, middlings, red dog flour and screenings	3.5	15.0	8.0

TABLE III. Summary of Feed Inspection
January 1, 1929, to January 1, 1930

Name and Address of Manufacturer	Number of samples examined	Number of samples passed	Number of samples not passed	Number of samples not tagged
Acme-Evans Co., Indianapolis, Ind	37	36	1	2
Acme Manufacturing Co., Forest Park, Ill	5	3	2	1
Acme Milling Co., Aurora, Ind	1	1		
American Agricultural Chemical Co., Detroit, Mich.	1	1		
American Linseed Co., New York, N. Y	3	3		
American Maize Products Co., New York, N. Y	1	1		
American Milling Co., Peoria, Ill	54	52	2	2
American National Mineral Corp., Hillsboro, Ind	7	1	6	
Amo Milling Co., Amo, Ind	1	1		
Anchor Milling Co., Rochester, Ind	9	8	1	
Anderson Mercantile Exchange, Anderson, Ind	1	1		
Angola Flour Mills, Angola, Ind	5	4	1	
Angola Reduction Co., Angola, Ind	1	1		
Arcady Farms Milling Co., Chicago, Ill	20	19	1	6
Archer-Daniels-Midland Co., Minneapolis, Minn	15	15		7
Armour & Co., Chicago, Ill	25	22	3	1
Armour Fertilizer Works, Chicago, Ill	2	2		
Atlas Mills, Vincennes, Ind	6	6		
Aubrey & Co., Louisville, Ky	1	1		
Auburn Roller Mills, Auburn, Ind	3	3		
Aukerman Bros.—Catey Co., Amboy, Ind	7	7		
Aunt Jemima Mills, Branch The Quaker Oats Co., St. Joseph, Mo	1	1		
Aurora Flour & Feed Co., Aurora, Ind	1	1		
Aviston Milling Co., Aviston, Ill	9	8	1	1
Badenoch Co., J. J., Chicago, Ill	7	7		
Badger Grain & Feed Co., Milwaukee, Wis	3	3		
Badgley Milling Co., F. E., Cutler, Ind	2	2		
Bahler Feed Co., Remington, Ind	3	3		
Baker, Jesse I., Hagerstown, Ind	1	1		
Baker-Mayes Co., Omaha, Neb	2	2		
Ballard & Ballard Co., Louisville, Ky	4	4		1
Ballard Packing Co., Marion, Ind	2	2		
Baltic Mills Co., Vincennes, Ind	27	22	5	
Bargersville. Grain Co., Bargersville, Ind	1		1	
Barr Grain Co., O. L., Bicknell, Ind	1	1		
Bash & Co , C. E., Huntington, Ind	3	2	1	
Bashore Feed Store & Hatchery, North Manchester, Ind	2	2		
Batesville Fertilizer Co., Batesville, Ind	1	1		
Batesville Roller Mills, Batesville, Ind	2	1	1	
Baur Flour Mill Co., St. Louis, Mo	2	2		
Bausback Fertilizer Co., Shelbyville, Ind	1		1	
Bay Chemical Co., Inc., New Orleans, La	1	1		
Bay State Milling Co., Winona, Minn	1	1		
Beatrice Creamery Co., Chicago, Ill	1	1		1
Berne Equity Exchange, Berne, Ind	1	1		
Berne Milling Co., Berne, Ind	3	2	1	
Bernet, Craft & Kaufman Milling Co., St. Louis, Mo.	3	3		
Big Four Elevator Co., Mattoon, Ill	1	1		
Big Four Stock Mineral Co., Cicero, Ind	1	1		
Bisbee Linseed Co., Chicago Heights, Ill	13	13		2
Bishop Feed Line, Laporte, Ind	2	2		1
Blair Milling Co., Atchison, Kan	2	2		

TABLE III—Continued

NAME AND ADDRESS OF MANUFACTURER	Number of samples examined	Number of samples passed	Number of samples not passed	Number of samples not tagged
Blish Milling Co., Seymour, Ind	19	14	5	......
Bloomfield Mill & Elevator Co., Bloomfield, Ind	1	1	......	......
Bloomingdale Mill Co., Bloomingdale, Ind	3	3	......	......
Bloomington Milling Co., Bloomington, Ind	2	2	......	......
Blue River Reduction Co., Edinburg, Ind	3	3	......	......
Bluffton Milling Co., Bluffton, Ind	3	3	......	......
Board of Sanitary Commissioners, Indianapolis, Ind.	8	7	1	......
Boldt Milling Co., Waynetown, Ind	2	2	......	......
Boonville Milling Co., Boonville, Ind	7	7	......	......
Boyers Hatchery, Thorntown, Ind	1	1	......	......
Branch Grain & Seed Co., Martinsville, Ind	2	2	......	......
Bremen Roller Mills, Bremen, Ind	2	2	......	......
Brode Corp., F. W., Memphis, Tenn	8	8	......	2
Brown Bros., Indianapolis, Ind	1	1	......	......
Buchsieb, E. G., Columbus, O	7	7	......	1
Buckeye Cotton Oil Co., Cincinnati, O	2	2	......	......
Buckeye Cotton Oil Co., Louisville, Ky	7	7	......	......
Buhner Fertilizer Co., Seymour, Ind	3	1	2	......
Bundy Bros. Mill Co., Medora, Ind	2	2	......	......
Bundy Bros. Mill Co., Vallonia, Ind	6	5	1	1
Burk Elevator Co., Decatur, Ind	3	3	......	......
Burket Elevator Co., Burket, Ind	3	3	......	......
Burnettsville Elevator Co., Burnettsville, Ind	1	1	......	......
Busenbark Grain Co., Crawfordsville, Ind	10	9	1	......
Butler Milling Co., Butler, Ind	5	4	1	......
Butt & Co., L. T., Center Point, Ind	18	13	5	......
Cadick Milling Co., Grandview, Ind	2	2	......	......
Cairo Meal & Cake Co., Cairo, Ill	7	7	......	1
Capital Flour Mills, Inc., Minneapolis, Minn	13	13	......	4
Carmer Co., J. M., Auburn, Ind	1	1	......	......
Catron Bros., Flora, Ind	1	1	......	......
Cayuga Milling Co., Cayuga, Ind	7	7	......	......
Central Feed Store, Mooresville, Ind	2	2	......	......
Central States Mineral Feed Co., Indianapolis, Ind.	2	1	1	......
Central Western Feeding Molasses Co., Warsaw, Ind.	2	......	2	......
Chamberlain Co., F. B., St. Louis, Mo	1	1	......	1
Chapin & Co., Chicago, Ill	3	3	......	......
Chapman-Doake Co., The, Decatur, Ill	21	18	3	......
Charlestown Milling Co., Charlestown, Ind	5	5	......	......
Chemical Products Co., Cincinnati, O	2	1	1	......
Choctaw Sales Co., Kansas City, Mo	1	1	......	......
Clayton Milling Co., Clayton, Ind	2	2	......	......
Clendenin & Co., Richmond, Ind	1	......	1	......
Cloverleaf Mills, Kokomo, Ind	3	3	......	......
Cohee & Clark, Kempton, Ind	7	6	1	......
Collis Products Co., Clinton, Ia	2	2	......	......
Columbus Milling Co., Columbus, Ind	3	3	......	......
Columbus Sanitary Reduction Co., Columbus, Ind.	3	3	......	......
Community Mill, Edinburg, Ind	2	1	1	......
Community Mill, Newberry, Ind	2	2	......	......
Conkey Co., G. E., Cleveland, O	3	3	......	1
Conroy, M. A., Jeffersonville, Ind	1	1	......	......
Consolidated Products Co., Chicago, Ill	1	1	......	1
Co-Operative Elevator Co., Winamac, Ind	3	3	......	......
Corn Belt Feed Co., Boswell, Ind	2	1	1	......

TABLE III—Continued

Name and Address of Manufacturer	Number of samples examined	Number of samples passed	Number of samples not passed	Number of samples not tagged
Corn Products Refining Co., New York, N. Y.	7	7	......	5
Crabbs Reynolds Taylor Co., Crawfordsville, Ind.	7	7		......
Crabbs Reynolds Taylor Co., Lafayette, Ind.	20	20	......	2
Crabbs Reynolds Taylor Co., Reynolds, Ind.	1	1		
Crescent Mill, Branch Blish Milling Co., Seymour, Ind.	4	4	......	......
Crete Mills, The, Crete, Neb.	7	7	......	1
Dalrymple & Hinton, Crawfordsville, Ind.	1	1	......	......
Darling & Co., Chicago, Ill.	16	12	4	1
Daviess County Farm Bureau, Washington, Ind.	4	4	......	......
Davis, G. G., Goldsmith, Ind.	1	1	......	......
Davis, S. P., Little Rock, Ark.	1	1	......	1
Davis Fertilizer Co., Plainfield, Ind.	1	1	......	......
Decatur County Farm Bureau, Greensburg, Ind.	1	1	......	......
Decatur Milling Co., Decatur, Ill.	14	14	......	1
Decatur Rendering Plant, Decatur, Ind.	2	2	......	......
Deck, James H., Roann, Ind.	2	2	......	......
Dekalb Tanking Co., Auburn, Ind.	1	......	1	......
Denver Alfalfa Milling & Products Co., Lamar, Colo.	9	9	......	5
Diamond Mills, Evansville, Ind.	2	2	......	......
Dickey, H., Parker, Ind.	3	3	......	......
Dickinson Co., The Albert, Chicago, Ill.	25	25	......	4
Dixie Mills Co., East St. Louis, Ill.	1	1	......	......
Dockwiler & Kingsbury Co., Indianapolis, Ind.	2	1	1	......
Dolman & Son, Walkerton, Ind.	3	3	......	......
Dorsel Milling Co., Albert H., Liberty, Ind.	4	4	......	......
Dreyer Commission Co., St. Louis, Mo.	1	1	......	......
Dryfus Packing Co., Lafayette, Ind.	1	1	......	......
Dubois Milling Co., Dubois, Ind.	1	1	......	......
Dwiggins & Sons, Chas., Waynetown, Ind.	1	1	......	......
Eagle Roller Mill Co., New Ulm, Minn.	2	2	......	......
Early & Daniel Co., Cincinnati, O.	7	6	1	......
Easton, Elza D., Bedford, Ind.	1	1	......	......
Eberts and Bros., North Vernon, Ind.	1	1	......	......
Eberts Grain Co., Louisville, Ky.	2	1	1	1
Eckhart Milling Co., B. A., Chicago, Ill.	3	3	......	......
Edwards & Co., S. T., Chicago, Ill.	1	1	......	......
Elkhart Packing Co., Elkhart, Ind.	4	4	......	......
Elkhart County Fertilizer Co., Wakarusa, Ind.	1	......	1	......
Elkhorn Mills, Boonville, Ind.	1	......	1	......
Emge & Sons, Fort Branch, Ind.	1	......	1	......
Empire Milling Co., Minneapolis, Minn.	2	2	......	1
Engeler & Co., W. M., Poneto, Ind.	3	3	......	......
Eureka Milling Co., Corydon, Ind.	5	5	......	......
Evans Milling Co., Indianapolis, Ind.	21	21	......	......
Evansville Packing Co., Evansville, Ind.	1	1	......	......
Ewing Mill Co., Brownstown, Ind.	3	3	......	......
Excello Feed Milling Co., St. Joseph, Mo.	1	......	1	......
Excelsior Milling Co., Minneapolis, Minn.	15	14	1	......
Fairmont Creamery Co., Omaha, Neb.	1	1	......	1
Fairplay Feed Mills, Linton, Ind.	4	4	......	......
Farmers Coal and Feed Co., Goshen, Ind.	2	2	......	......
Farmers Co-Operative Co., Cicero, Ind.	2	1	1	
Farmers Co-Operative Co., Knox, Ind.	2	2	......	
Farmers Co-Operative Co., Sheridan, Ind.	2	2	......	

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TABLE III—Continued

Name and Address of Manufacturer	Number of samples examined	Number of samples passed	Number of samples not passed	Number of samples not tagged
Farmers Co-Operative Co., Southport, Ind	1	1	......	......
Farmers Co-Operative Elevator Co., Seymour, Ind	8	5	3	1
Farmers Co-Operative Grain & Supply Co., Crawfordsville, Ind	1	......	1	......
Farmers Elevator Co., Morocco, Ind	2	2	......	......
Farmers Equity Exchange, Van Buren, Ind	3	2	1	1
Farmers Exchange, Inc., Warren, Ind	1	1	......	......
Farmers Feed & Grain Co., Darlington, Ind	1	1	......	......
Farmers Grain Co., Carlos City, Ind	1	1	......	......
Farmer Grain & Coal Co., Frankton, Ind	2	2	......	......
Farmers Grain & Seed Co., Darlington, Ind	2	1	1	......
Farmers Grain & Supply Co., Oak, Ind	1	1	......	......
Farmers Grain & Supply Co., Windfall, Ind	5	5	......	......
Farmers Marketing Association, Columbus, Ind	1	......	1	......
Farmers Mill, The, Huntingburg, Ind	4	2	2	......
Farmers Mill & Elevator Co., Columbia City, Ind	5	5	......	......
Farmers Milling & Supply Co., Honey Creek, Ind	1	1	......	......
Fayette Grain Co., Connersville, Ind	1	1	......	......
Fisher-Lambert Feed & Coal Co., Anderson, Ind	5	4	1	......
Ford Milling Co., New Harmony, Ind	3	3	......	......
Foster-Kendall Co., Carmel, Ind	4	3	1	......
Franke Grain Co., The, Milwaukee, Wis	1	1	......	......
Frankfort Rendering Co., Frankfort, Ind	10	9	1	......
Franklin Grain Co., Franklin, Ind	1	1	......	......
Freese's Sons, George, Nappanee, Ind	2	2	......	......
Fretz Feed Store, R. C., Waterloo, Ind	4	4	......	......
Fry Elevator Co., Herbert B., Argos, Ind	7	6	1	......
Fuhrer-Ford Milling Co., Mt. Vernon, Ind	2	2	......	......
Fulks and Sons, Willard, Columbus, Ind	8	8	......	......
Fulton Mill, Fulton, Ind	3	2	1	......
Fyke Milling Co., Kendallville, Ind	6	6	......	......
Galesburg Molasses Feed Co., Galesburg, Ill	5	5	......	1
Garland Milling Co., Greensburg, Ind	7	6	1	......
Garner & Co., C. R., Amarillo, Tex	1	1	......	......
Garten Feed Co., Indianapolis, Ind	10	9	1	1
Geabes Bros., Clay City, Ind	14	12	2	......
Geneva Equity Exchange, Geneva, Ind	1	1	......	......
Geneva Milling & Grain Co., Geneva, Ind	4	3	1	......
Goeke Sons, Edward F., Evansville, Ind	15	12	3	2
Goldberg, Harry, Crawfordsville, Ind	3	3	......	......
Gold Leaf Mineral Co., Lima, O	2	2	......	1
Goldreich Fertilizer Co., Marion, Ind	4	2	2	......
Gooch Milling & Elevator Co., Lincoln, Neb	1	1	......	......
Goodrich Bros. Co., Winchester, Ind	19	19	......	1
Goodrich Bros. Hay & Grain Co., Winchester, Ind	1	1	......	......
Goshorn, R. J., Washington, Ind	2	1	1	......
Graco Milling Co., Sherman, Tex	18	18	......	......
Graft, C. V., Winchester, Ind	6	5	1	......
Grant Coal & Feed Co., Marion, Ind	6	6	......	......
Greendale Mills, Inc., Lawrenceburg, Ind	3	1	2	......
Greenville Milling Co., Greenville, Ind	1	1	......	......
Grimes & Finch, Portland, Ind	5	5	......	......
Gutwein Milling Co., Francesville, Ind	8	7	1	......
Habig Bros., Indianapolis, Ind	7	7	......	......
Haines-Thompson Milling Co., Crawfordsville, Ind	2	2	......	......

TABLE III—Continued

NAME AND ADDRESS OF MANUFACTURER	Number of samples examined	Number of samples passed	Number of samples not passed	Number of samples not tagged
Haldeman-Baum Co., Akron, Ind	7	7		
Hales & Hunter Co., Chicago, Ill	10	9	1	1
Hales Milling Co., Milwaukee, Wis	2	2		
Hammel Milling Co., Fremont, Ind	1	1		
Hansel, C. D., North Terre Haute, Ind	2	1	1	
Harrison-Switzer Milling Co., Belleville, Ill	2	2		2
Hartz Flour Mill, Bernard, Chrisney, Ind	4	4		
Hayes, W. E., Kokomo, Ind	2	2		
Hayes Grain & Commission Co., Chicago, Ill	2	2		
Haynes Milling Co., Portland, Ind	5	5		
Heinz Co., The Dr., Cincinnati, O	2		2	
Heise Bros., Orleans, Ind	7	4	3	
Heitschmidt, A. C., Michigan City, Ind	2	2		
Heldt Co., Evansville, Ind	3	2	1	
Hemlock Grain Co., Hemlock, Ind	1	1		
Heppe Co., The, Logansport, Ind	3		3	
Hirst & Begley Linseed Works, Chicago, Ill	6	6		
Hite Bros., Peru, Ind	6	6		
Hobbs Grain Co., Hobbs, Ind	4	4		
Holland Mills, Holland, Ind	4	3	1	
Hollingsworth, C. W. & S. P., Russiaville, Ind	3	3		
Holser & Co., B. I., Walkerton, Ind	6	3	3	
Home Mill & Grain Co., Mt. Vernon, Ind	1		1	
Home Packing & Ice Co., Terre Haute, Ind	3	3		
Hoosier Abattoir, Indianapolis, Ind	1	1		
Hoosier Mineral Feed Co., Greenwood, Ind	9	8	1	1
Hooton Davis Co., Lebanon, Ind	1	1		
Hoover, P. F., Keystone, Ind	1	1		1
Hornung & Sons, J. M., Greensburg, Ind	2	2		
Hubbard, J. W., Monrovia, Ind	1	1		
Hubbard Milling Co., Mankato, Minn	1	1		1
Hughes-Curry Packing Co., Anderson, Ind	10	7	3	
Humphreys-Godwin Co., Memphis, Tenn	19	19		3
Huntington Equity Exchange, Huntington, Ind	4	4		
Huntington Mill Co., Huntington, Ind	5	5		
Huntington Packing Co., Huntington, Ind	2	1	1	
Hutchins Bros. Mineral Works, Hillsboro, Ind	1		1	
Igleheart Bros., Evansville, Ind	9	8	1	
Illinois Feed and Elevator Co., Bloomington, Ill	16	16		1
Imbs Milling Co., J. F., Belleville, Ill	3	3		
Imperial Meal Co., Minneapolis, Minn	2	2		
Imperial Mills, Inc., Cambridge City, Ind	11	8	3	2
Indianapolis Abattoir Corp., Indianapolis, Ind	3	3		
Indianapolis Mineral Feed Co., Indianapolis, Ind	5	3	2	
Indiana Farm Bureau Purchasing Department, Inc., Indianapolis, Ind	102	92	10	11
Indiana Flour & Feed Co., Muncie, Ind	4	4		
Indiana Hide & Tallow Co., South Bend, Ind	12	11	1	
Indiana State Milling Co., South Bend, Ind	9	8	1	
Inland Milling Co., DesMoines, Ia	1	1		
International Milling Co., Minneapolis, Minn	1	1		
International Sugar Feed Co., Minneapolis, Minn	1	1		
Interstate Feed Co., Fort Worth, Tex	1	1		
Iowa Milling Co., Cedar Rapids, Ia	3	1	2	1
Iroquois Roller Mills, Rensselaer, Ind	2		2	

TABLE III—Continued

Name and Address of Manufacturer	Number of samples examined	Number of samples passed	Number of samples not passed	Number of samples not tagged
Jacobson, Soren, Young America, Ind	2	2		
Jasper Roller Mills, Inc., Jasper, Ind	1	1		
Jay Grain Co., The, Elwood, Ind	2	2		
Jersee Co., The, Minneapolis, Minn	8	8		
Jones Bros., West Lebanon, Ind	3	3		
Jordan & Baird, Kewanna, Ind	1	1		
Jordan & Sons, George M., Vincennes, Ind	2	2		
Joslin-Schmidt Corp., Cincinnati, O	16	14	2	
Kahn's Sons Co., The E., Cincinnati, O	5	5		1
Kasch, Louis, Logansport, Ind	4	4		
Kellogg & Sons, Inc., Spencer, Buffalo, N. Y	3	3		
Kemper & Holman, Sharpsville, Ind	1	1		
Kendallville Fertilizer Co., Kendallville, Ind	1	1		
Kentucky Chemical Manufacturing Co., Covington, Ky	7	5	2	1
Kentucky Feed & Grain Co., Louisville, Ky	1	1		
Kern & Kirtley Grain Co., Whitestown, Ind	1	1		
Kibler, F. M., West Terre Haute, Ind	1	1		
Kiefer Feed & Supply Co., Elwood, Ind	11	10	1	1
Kiest Milling Co., Knox, Ind	2	2		
Killian Elevator, Newberry, Ind	3	2	1	
Kingan & Co., Indianapolis, Ind	13	13		
King Elevator Co., Wabash, Ind	5	5		
King Midas Mill Co., Minneapolis, Minn	3	3		
Kirk Feed Co., Indianapolis, Ind	3	3		
Klondike Milling Co., Danville, Ind	5	5		
Kopps Feed Store, Rockport, Ind	1		1	
Kosciusko County Farm Bureau Co-Operative Association, Inc., Warsaw, Ind	4	2	2	
Kosciusko County Produce Association, Inc., Warsaw, Ind	1	1		
Knecht Milling Co., Hartford City, Ind	5	5		
Knight Feed Store, Fort Wayne, Ind	1	1		
Knox County Fertilizer Co., Bicknell, Ind	2	2		
Krause Milling Co., Chas. A., Milwaukee, Wis	30	29	1	5
Kuhner Packing Co., Muncie, Ind	1	1		
Lafayette Co-Operative Elevator Co., Lafayette, Ind	11	9	2	
Lafayette Milling Co., Lafayette, Ind	5	5		
Lake & Reagan Grain Co., Manson, Ind	1	1		
L. & H. Products Co., Yorktown, Ind	1	1		
Lapaz Grain Co., Lapaz, Ind	2	2		
Larabee Flour Mills Co., Kansas City, Mo	4	4		3
Larkin & Denny, Cloverdale, Ind	2	2		
Lash Flour Mills, Fred. B., Farmersburg, Ind	4	4		
Lauramie Grain Co., Stockwell, Ind	1	1		
Lawrenceburg Roller Mills Co., Lawrenceburg, Ind	6	6		
Lemon Milling Co., Bedford, Ind	6	6		
Linton Mill Co., Linton, Ind	2	2		
Liberty Rendering Co., Liberty, Ind	1	1		
Logansport Elevator Co., Logansport, Ind	4	1	3	
Loughry Bros. Milling & Grain Co., Monticello, Ind	5	5		
Louisville Cotton Oil Mill, Louisville, Ky	4	4		
Louisville Milling Co., Louisville, Ky	2	2		
Lovitt & Co., L. B., Memphis, Tenn	10	9	1	2

TABLE III—Continued

Name and Address of Manufacturer	Number of samples examined	Number of samples passed	Number of samples not passed	Number of samples not tagged
Lowell Reduction Co., Lowell, Ind	1	1		
Lower, Alton, Pierceton, Ind	1	1		
Lucas, Henry, Brownstown, Ind	1	1		
Lyon & Greenleaf Co., Ligonier, Ind	3	3		
McCardle & Wallace, Terhune, Ind	1	1		
McComas & Randall, Indianapolis, Ind	1	1		
McCormick & Co., Chas. W., Logansport, Ind	1	1		
McMahan Seed Co., Valparaiso, Ind	6	6		
McVey & Goodrich Co., Jolietville, Ind	1	1		
Macdonald, C. L., Marion, Ind	2	2		
Major Bros. Packing Co., Mishawaka, Ind	1	1		
Mansfield Roller Mill, Rockville, Ind	4	3	1	
Marengo Milling Co., Marengo, Ind	1	1		
Marianna Sales Co., Memphis, Tenn	6	5	1	1
Marlott, E. H., Attica, Ind	1	1		
Marshall Feed & Grain Co., Marshall, Ind	3	3		
Martin, John D., Lafayette, Ind	11	11		
Martinsville Milling Co., Martinsville, Ind	7	7		
Mattix & Son, N. W., Frankfort, Ind	2	2		
Maumee Feed Co., Toledo, O	2	1	1	
Mayer Grain Co., South Whitley, Ind	9	8	1	
Mayflower Mills, Fort Wayne, Ind	3	3		
Meier Packing Co., Indianapolis, Ind	1	1		
Memphis Cottonseed Products Co., Memphis, Tenn.	1	1		1
Menaugh, Will H., Osceola, Ind	7	4	3	
Metamora Roller Mills, Metamora, Ind	5	2	3	
Mexico Elevator & Live Stock Co., Mexico, Ind	1	1		
Miami Milling Co., Oxford, O	1	1		1
Middlebury Milling Co., Middlebury, Ind	3	2	1	
Midland Flour Milling Co., Kansas City, Mo	3	3		
Midway Elevator, Colfax, Ind	1	1		
Midwest Flour & Feed Co., St. Louis, Mo	2	2		
Midwest Mineral Co., Greenwood, Ind	1		1	
Miesenhelder Bros., Inc., Palestine, Ill	1	1		
Milford Grain & Milling Co., Milford, Ind	1	1		
Milford Mills, Milford, Neb	1	1		
Miller Cereal Mills, Omaha, Neb	16	14	2	3
Miller Grain Co., Bainbridge, Ind	3	3		
Milroy Milling Co., Milroy, Ind	4	3	1	1
Minneapolis Milling Co., Minneapolis, Minn	11	11		5
Mishawaka Grain & Coal Co., Mishawaka, Ind	6	5	1	
Missouri Cotton Oil Co., Cairo, Ill	3	3		
Modoc Roller Mill & Elevator, Modoc, Ind	1	1		
Moellering's Flour Mill, Fort Wayne, Ind	3	3		
Monarch Mill, Columbia City, Ind	2	1	1	
Monon Hatchery, Monon, Ind	1	1		
Monroe Mills, Bloomington, Ind	1	1		
Montezuma Mill & Elevator Co., Montezuma, Ind.	3	2	1	
Mooreland Grain Co., Mooreland, Ind	1	1		
Mooresville Milling Co., Mooresville, Ind	3	2	1	
Morgan, Frank, Plainville, Ind	2	2		
Morgan, J. L., Lyons, Ind	1	1		
Morgantown Grain Co., Morgantown, Ind	1		1	
Morris & Co., (Branch North American Provision Company), Chicago, Ill	39	36	3	

TABLE III—Continued

NAME AND ADDRESS OF MANUFACTURER	Number of samples examined	Number of samples passed	Number of samples not passed	Number of samples not tagged
Morris Flour Mills, Morris, Ind	1	1		
Morrow Grain Co., Wabash, Ind	3	3		
Mosier Feed & Sale Barn, Martinsville, Ind	2	2		
Mount Jackson Feed & Seed Co., Indianapolis, Ind	1	1		
Mount Vernon Milling Co., Mount Vernon, Ind	1	1		1
Mulberry Grain Co., Mulberry, Ind	1	1		
Mutschler Packing Co., Fred., Decatur, Ind	3	2	1	
Myers & Co., J. M., Chili, Ind	1	1		
Mystic Mills, Sioux City, Ia	3	2	1	
Naber & Co., Chas. F., Alexandria, Ind	3	3		
Naber & Co., Chas. F., Fairmount, Ind	1	1		
Nading Grain Co., Wm., Greensburg, Ind	6	6		
Nappanee Milling Co., Nappanee, Ind	10	9	1	
National Cottonseed Products Corp., Memphis, Tenn	2	1	1	
National Feed Co., St. Louis, Mo	11	9	2	
National Milling Co., Toledo, O	1	1		
New Carlisle Hide & Rendering Co., New Carlisle, Ind	1	1		
Newsome Feed & Grain Co., The, Pittsburgh, Pa	12	12		
New Ulm Roller Mills Co., New Ulm, Minn	1	1		
Noblesville Milling Co., Noblesville, Ind	5	5		
Noragon & Son, Butler, Ind	1	1		
Northfield Milling Co., Minneapolis, Minn	1	1		1
North Madison Coal Co., North Madison, Ind	2	2		
North Manchester Fertilizer Co., North Manchester, Ind	2	2		
North Manchester Milling Co., North Manchester, Ind	1	1		1
North Webster Mills, Inc., North Webster, Ind	1	1		1
Norton Co., The Willis, Topeka, Kan	1	1		
Nowak Milling Corp., Buffalo, N. Y	3	3		
Nowak Milling Corp., Hammond, Ind	26	26		
Nunn & Sons Milling Co., Chas., Evansville, Ind	2	2		
Oakland City Milling Co., Oakland City, Ind	4	4		
Odon Milling Co., Odon, Ind	5	4	1	
O'Hern Coal & Feed Co., W. P., Montpelier, Ind	1	1		
Ohio Valley Seed Co., Evansville, Ind	4	3	1	
Old Dutch Mills, Minneapolis, Minn	1	1		
Orme & Sons, Arnold, Rushville, Ind	1		1	
Osgood Milling Co., Osgood, Ind	3	1	2	
Packer Products Co., Chicago, Ill	1		1	
Paoli Milling Co., Paoli, Ind	2	2		
Park, Inc., Philip R., San Pedro, Calif	2	2		
Park & Pollard Co., Chicago, Ill	1	1		
Paxson, C. E., Elkhart, Ind	6	5	1	
Pearl Packing Co., Inc., Madison, Ind	4	2	2	
Peerless Dog Food Co., Battle Creek, Mich	1	1		1
Penman Bros., Brazil, Ind	4	4		1
Pennville Milling Co., Pennville, Ind	2	2		2
Petersburg Milling & Grain Co., Petersburg, Ind	1	1		
Pfeffer Milling Co., Lebanon, Ill	3	3		
Phflum, Clem, Osgood, Ind	1		1	
Phillips, J. C., Star City, Ind	3	3		
Pico Feed Co., Warsaw, Ind	5	2	3	5

TABLE III—Continued

NAME AND ADDRESS OF MANUFACTURER	Number of samples examined	Number of samples passed	Number of samples not passed	Number of samples not tagged
Pierce Elevator Co., Union City, Ind	1	1	......	......
Pillsbury Flour Mills Co., Minneapolis, Minn	4	4	......	......
Pinola Co-Operative Co., Pinola, Ind	2	2	......	......
Pioneer Elevator Co., Worthington, Ind	6	6	......	......
Pittsburgh Plate Glass Co., Red Wing, Minn	1	1	......	......
Plainview Egg Farm, Burket, Ind	1	1	......	......
Plainville Mill & Elevator Co., Plainville, Ind	2	2	......	......
Plant Flour Mills Co., St. Louis, Mo	2	2	......	......
Plymouth Fertilizer Co., Plymouth, Ind	1	1	......	......
Portland Fertilizer Plant, Portland, Ind	1	1	......	......
Pottage Tankage Co., The, Dayton, O	1	1	......	......
Prairie State Milling Co., Chicago, Ill	8	6	2	1
Pratt Food Co., Hammond, Ind	15	15	......	......
Pratt Food Co., Philadelphia, Pa	2	2	......	......
Price, L., Converse, Ind	2	2	......	......
Producers Creamery, Marion, Ind	1	......	1	......
Puckett & Helms, Winchester, Ind	1	......	1	......
Purcell Seed Co., Evansville, Ind	14	11	3	......
Puritan Mills, Inc., Chicago, Ill	2	2	......	......
Pyrmont Mills, Pyrmont, Ind	3	3	......	3
Quaker Oats Co., Chicago, Ill	64	59	5	5
Ralston Purina Co., St. Louis, Mo	47	46	1	......
Randall, Clyde, Indianapolis, Ind	1	1	......	1
Rankin & Co., M. G., Milwaukee, Wis	5	3	2	3
Rauh & Sons Animal Feed Co., E., Indianapolis, Ind.	9	8	1	......
Read Phosphate Co., New Albany, Ind	3	3	......	......
Rea-Patterson Milling Co., Coffeyville, Kan	1	1	......	1
Red Wing Linseed Oil Co., Red Wing, Minn	1	1	......	1
Reed Elevator Co., Decatur, Ind	9	8	1	......
Richland Milling Co., Bloomfield, Ind	4	4	......	......
Richmond Feed Milling Co., Richmond, Ind	19	16	3	......
Richmond Roller Mill & Elevator, Richmond, Ind.	1	1	......	......
Ripley County Fertilizer & Feed Co., Osgood, Ind.	1	1	......	......
Rittenhouse, E. S., Liberty Mills, Ind	1	1	......	......
Riverdale Products Co., Chicago, Ill	11	11	......	1
Roberts Cotton Oil Mill, Cairo, Ill	1	1	......	......
Robinson, J., Perrysville, Ind	4	4	......	......
Roby, Harry B., Winchester, Ind	2	2	......	......
Rodocker, W. E., Broad Ripple, Ind	1	1	......	1
Roper & Brown, Hobart, Ind	3	3	......	......
Routh & Co., W. C., Logansport, Ind	2	1	1	......
Rowe Sons Co., A., Terre Haute, Ind	2	2	......	......
Rund & Klink Packing Co., Lafayette, Ind	2	2	......	......
Rush County Mills, Rushville, Ind	8	2	6	......
Rush Service Bureau, Rushville, Ind	12	11	1	......
St. Louis Independent Packing Co., St. Louis, Mo.	6	5	1	......
St. Meinrad Milling Co., St. Meinrad, Ind	2	2	......	......
Salamonia Mills, Warren, Ind	2	2	......	......
Sample, John L., Madison, Ind	2	2	......	......
S. & S. Feed Store, South Bend, Ind	1	1	......	......
Saxony Mills, St. Louis, Mo	1	1	......	......
Schaefer, John H., Columbus, Ind	5	4	1	......
Schaffer & Sons, Joe, Springfield, Ill	1	1	......	......
Schnaible Co., M. & J., Lafayette, Ind	1	......	1	......
Schultz-Baujan & Co., Beardstown, Ill	7	7	......	......

TABLE III—Continued

Name and Address of Manufacturer	Number of samples examined	Number of samples passed	Number of samples not passed	Number of samples not tagged
Scottsburg Elevator, Scottsburg, Ind	2	2		
Scottsburg Milling Co., Scottsburg, Ind	2	2		
Seaboard Products Co., The, Baltimore, Md	1		1	
Security Food Co., Minneapolis, Minn	1	1		
Sellers Grain Co., Forest, Ind	1		1	
Shaw, Albert F., Carmel, Ind	1		1	
Shellabarger Mill & Elevator Co., Salina, Kan	4	4		
Sheridan Milling Co., Sheridan, Ind	5	5		
Sherwin-Williams Co., Cleveland, O	7	7		3
Shirley Fertilizer Co., Knightstown, Ind	2	2		
Sims Milling Co., Frankfort, Ind	10	10		
Slugg, W. G., Milwaukee, Wis	2	2		
Smith Agricultural Chemical Co., Indianapolis, Ind	7	7		
Smith & Cascadden, Lapel, Ind	2		2	
Smock & Caca, Noblesville, Ind	2	1	1	
Sommerfield & Swanson, Laporte, Ind	1	1		
Southern Roller Mills Co., E. St. Louis, Ill	1	1		
Southland Cotton Oil Co., Paris, Tex	1	1		
Sparks Milling Co., Alton, Ill	2	2		1
Sparks Milling Co., Terre Haute, Ind	4	4		
Spencer Milling Co., Spencer, Ind	2	1	1	
Springer, W. D., Indianapolis, Ind	1	1		
Springs Valley Milling Co., French Lick, Ind	1	1		
Spurgin, Archie B., Columbus, Ind	2		2	
Stahl Packing Co., Evansville, Ind	2	2		
Staley Manufacturing Co., A. E., Decatur, Ill	3	1	2	
Staley Milling Co., Kansas City, Mo	8	8		
Stanard Tilton Milling Co., St. Louis, Mo	2	2		
Standard Fertilizer Co., Greensburg, Ind	1	1		
Star & Crescent Milling Co., Minneapolis, Minn	1	1		
Star Milling Co., Shoals, Ind	2	2		
Star Roller Mills, Burlington, Ind	1		1	
Starr Mills, South Bend, Ind	8	8		
Stock & Sons, F. W., Hillsdale, Mich	1	1		
Stolle & Sons, Anton, Richmond, Ind	1	1		
Strauch, Albert H., Royal Center, Ind	7	6	1	
Strauss & Son, J. W., North Manchester, Ind	2	2		
Street Milling Co., J., Laporte, Ind	6	5	1	
Struven & Co., Chas. M., Baltimore, Md	1	1		
Studabaker Grain & Seed Co., Bluffton, Ind	2	2		
Suckow Milling Co., Franklin, Ind	1	1		
Sugar Creek Creamery Co., Danville, Ill	2	2		2
Sugar Creek Grain Co., Thorntown, Ind	1	1		
Sullivan Fertilizer Co., Sullivan, Ind	1	1		
Sunman Flour Mills, Reading, O	1	1		
Sunnyside Milling Co., Evansville, Ind	6	5	1	
Swarthout, Jacob, Vernon, Ind	2	2		
Swift & Co., Chicago, Ill	48	43	5	
Tarkio Molasses Feed Co., Kansas City, Mo	2	2		
Tell City Flouring Mills, Tell City, Ind	3	2	1	
Terre Haute Abattoir & Stock Yard Co., Terre Haute, Ind	3	2	1	
Terre Haute Grease & Tallow Factory, Terre Haute, Ind	3	2	1	
Thomas & Son, A. R., Markle, Ind	1	1		

TABLE III—Continued

Name and Address of Manufacturer	Number of samples examined	Number of samples passed	Number of samples not passed	Number of samples not tagged
Thomas Grain Co., Greenfield, Ind	2	2	......	......
Thomas Milling Co., Marion, Ind	6	5	1	......
Thompson & Ruffing, Argos, Ind	1	1	......	......
Thornburg Milling & Elevator Co., Martinsville, Ind.	5	5	......	......
Three Minutes Cereals Co., Cedar Rapids, Ia	1	1	......	......
Tipton Fertilizer Co., Tipton, Ind	2	1	1	......
Tipton Milling Co., Tipton, Ind	3	3	......	......
Topeka Roller Mill, Topeka, Ind	5	5	......	......
Tower & Merryman, Marengo, Ind	2	2	......	......
Travis, S. A., Linton, Ind	2	2	......	......
Trenton Milling Co., Trenton, Ill	1	1	......	......
Tri State Co-Operative Association, Ray, Ind	1	1	......	......
Trow & Co., W., Madison, Ind	1	1	......	......
Union Mills, Wabash, Ind	4	4	......	......
Union Starch & Refining Co., Columbus, Ind	1	1	......	1
United Bi-Products Co., Chicago, Ill	8	8	......	......
Urmston Grain & Seed Co., Elwood, Ind	12	11	1	1
Urmston Grain & Seed Co., Frankton, Ind	1	1	......	1
Urmston Grain & Seed Co., Kokomo, Ind	1	1	......	......
Utterback, Frank E., Washington, Ind	1	1	......	......
Valentine & Co., Terre Haute, Ind	3	1	2	......
Valier & Spies Milling Co., St. Louis, Mo	1	1	......	......
Veedersburg Tankage Co., Veedersburg, Ind	1	1	......	......
Vevay Flour Mills, Vevay, Ind	1	1	......	......
Victoria Mill & Elevator Co., Jasper, Ind	6	5	1	......
Vitality Mills, Inc., Chicago, Ill	15	12	3	2
Vitamineral Products Co., Peoria, Ill	1	......	1	......
Wachtel Co., John, Indianapolis, Ind	2	1	1	......
Wakarusa Milling Co., Wakarusa, Ind	1	1	......	......
Walker & Co., Peter M., Loogootee, Ind	2	2	......	......
Walker & Co., Peter M., Washington, Ind	7	7	......	......
Walker & Son, J. M., Middletown, Ind	1	1	......	......
Warren Equity Exchange, Warren, Ind	1	1	......	......
Warsaw Fertilizer & Tankage Co., Warsaw, Ind	4	4	......	......
Washburn Crosby Co., Minneapolis, Minn	23	22	1	3
Washington County Farm Bureau, Salem, Ind	2	2	......	......
Wayne Feed Mills, The McMillen Co., Owners, Fort Wayne, Ind	65	63	2	9
Weber Milling Co., Brookville, Ind	2	2	......	......
Wellington Milling Co., Anderson, Ind	11	8	3	......
Western Feed Mills, Inc., Chicago, Ill	2	2	......	......
Western States Farmers Exchange, Chicago, Ill	4	4	......	1
Whelan, Omer G., Richmond, Ind	2	1	1	......
White & Co., Sherman, Goodland, Ind	1	1	......	......
White Bros., Scotts, Mich	2	2	......	2
Whitelock Mill Co., Petersburg, Ind	1	1	......	......
Whiteman Bros. & Co., Delphi, Ind	2	2	......	......
Wiedlocher & Sons, Springfield, Ill	3	2	1	3
Wildcat Roller Mills, Cutler, Ind	2	2	......	......
Wilkinson, Henry, Clay City, Ind	2	2	......	......
Wilkinson Co., T. B., Knightstown, Ind	1	1	......	......
Williams, Dr. N. L., College Corner, O	2	2	......	2
Wilson, M. J., Millerburg, Ind	1	1	......	......
Wilson & Co., Chicago, Ill	11	9	2	......
Wilson & Co., J. C., Russellville, Ind	1	1	......	......

TABLE III—Continued

NAME AND ADDRESS OF MANUFACTURER	Number of samples examined	Number of samples passed	Number of samples not passed	Number of samples not tagged
Wilson Bros. Fertilizer Co., Noblesville, Ind.	2	2	......	......
Wilson Grain Co., Sulphur Springs, Ind.	1	1	......	......
Wilson Hammer Mill, Millersburg, Ind.	2	2	......	......
Wolcottville Hammer Mill, Wolcottville, Ind.	4	3	1	......
Wolfe, C. G., North Liberty, Ind.	1	1	......	......
Wolfe Grain Co., Shipshewana, Ind.	4	3	1	......
Woodbury-Elliott Grain Co., Muncie, Ind.	4	3	1	......
Wooster Feed Manufacturing Co., Wooster, O.	5	5	......	2
Worthington Grain Co., Worthington, Ind.	5	3	2	......
Wright, John H., Clinton, Ind.	1	......	1	......
Wuichet Fertilizer Co., Dayton, O.	1	......	1	......
Young America Roller Mills, Young America, Ind.	1	1	......	......
Zabel Milling Co., New Albany, Ind.	4	4	......	......
Ziliak & Schafer Milling Co., Evansville, Ind.	20	18	2	......
Zionsville Grain Co., Zionsville, Ind.	2	2	......	......

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Circular No. 171 May, 1930

COMMERCIAL FERTILIZERS

Clover Hay on Bedford Fertility Plots.
201 Lime Alone
202 Lime and Superphosphate
203 Lime and Superphosphate and Potash

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Purdue University
Agricultural Experiment Station
Lafayette, Indiana

This circular reports the tonnage of commercial fertilizer sold in Indiana for 1929 as calculated by tag sales and as reported by manufacturers. Table X of this circular gives the standing and individual record of every Manufacturer who sold commercial fertilizer in Indiana from whose goods samples were secured.

Table I of this circular shows the tonnage of the 33 analyses for which there is the most demand, reported both by Manufacturers and as estimated from tag sales. The 2-12-6 as in previous years was still the most popular. Manufacturers reported 81,417 tons sold as compared to 74,850 tons calculated from tag sales.

There were 248,566 tons of high grade mixed fertilizer and only 10,506 tons of low and medium grade mixed fertilizer sold in Indiana last year.

More Nitrogen and Potash, and a slight increase of tons of Available P_2O_5 were sold last year which was the banner year as far as sale of gross tons. However, there was a decrease in pounds per ton of actual plant food as compared to the previous year. The average ton of commercial fertilizer for 1929 would have the following analysis (2.1-10.9-6.3) while that of 1928 would be (1.4-13.8-5.7).

Purchasers of Commercial Fertilizer for Fall 1930 and Spring 1931 should read the paragraphs entitled "**SPECIALS**" on page 5 of this circular.

COMMERCIAL FERTILIZERS

H. R. KRAYBILL, *State Chemist*
O. S. ROBERTS O. W. FORD L. E. HORAT
M. H. THORNTON

Fertilizer records in the State Chemist office date back to 1881, when Indiana's first fertilizer law was enacted. Sales of commercial fertilizer were higher for 1929 than for any year since the law was enacted. It is estimated that 291,193* tons of commercial fertilizer with a retail value of $11,317,868 were sold in Indiana in 1929. Inspectors from the State Chemist department visited every county in the state, both spring and fall. 1,378 official samples were drawn, representing one sample for every 211 tons sold. Of these samples 1,217 were equal to or above the guarantee in value, 155 were within 10% of the value guaranteed and 6 were 10% or more below the guarantee in value. Seven of the 920 samples which contained nitrogen showed inferior nitrogen, one was a dried manure which is an inferior source of nitrogen. This record is a slight improvement over that of past years.

The Indiana Fertilizer Law is designed to furnish the purchaser of fertilizer with a label or tag showing an accurate description of the material offered for sale. With this information it is expected that the purchaser will be able to buy intelligently. It is not the purpose of the law to state what fertilizer he shall or shall not buy.

In order that the law may be effective in accomplishing its purpose it is necessary to have the full co-operation of the manufacturers, dealers, agents, and consumers.

A copy of the full text of the law will be sent to persons making requests for the same to the State Chemist, Purdue University Agricultural Experiment Station, Lafayette, Indiana.

REFUNDS

There is every reason to believe that all fertilizer companies now doing business in Indiana are trying to maintain their fertilizer guarantees. Occasionally the fertilizer fails to meet the guarantee. When this occurs and the manufacturer makes a refund to the purchaser, he does not remove the violation of the law but he does indicate his good intentions and does all that he can then do to correct the matter. The payment of these refunds, however, does not nullify the right of any one in the state to call cases of deficiency of analysis to the attention of the prosecuting attorney.

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* This figure estimated from tag sales is probably high due to the discarding of tags on account of the change from the ammonia to the nitrogen basis, January, 1929.
See page 18 for tonnage as based on manufacturers reports.

All refunds are required to be distributed to the consumer and receipts for the same must be filed with the State Chemist.

Refunds are figured on raw materials when deficient $1.00 or more per ton as calculated from the wholesale price of the same.

Refunds are figured on mixed fertilizers when one ingredient is deficient to the extent of $1.00 or more per ton regardless of the excess of the other ingredients. Variations from this procedure may be applied in cases of deficiencies in double strength fertilizers.

Refunds amounting to $960.95 were paid by 20 companies on 94 shipments of fertilizer during 1929.

MANUFACTURERS

Any material used for manuring purposes except barnyard manure, marl, lime, wood ashes and plaster, must be registered with the State Chemist and properly tagged with the official state tag or label before it is offered or exposed for sale.

Each package whether one ounce or 200 pounds must have an official label attached before it is offered or exposed for sale. Bulk sales must be accompanied by labels sufficient to cover the total weight of the material. Manufacturers make themselves as well as their agents liable to prosecution when they ship untagged fertilizer to the agents.

The law contains no provision for granting permission to make unlabeled shipments. The manufacturer should use the utmost care to tag all shipments properly and thereby prevent the annoyance, inconvenience and expense to his dealers which arise from the removal of material from sale or from prosecution.

The law requires a minimum guarantee for each element which must be stated on the official label. *Since fertilizers are purchased on the basis of their analysis to meet the particular needs of the consumer an excess of one ingredient will not necessarily compensate for a deficiency in another.*

AGENTS, DEALERS, DISTRIBUTORS

The Indiana Fertilizer Law recognizes only the State Chemist labels bearing the facsimile signature of the State Chemist (see reproduction page 21). Do not accept, offer or expose for sale, sell, deliver, distribute or have in your possession any quantity of any commercial fertilizer which does not have attached to the packages or available for bulk shipments, the State Chemist label for each 200 pounds or fraction.

The State Chemist label is always printed and any alterations thereon constitutes a violation of the law. Therefore do not accept any quantity of fertilizer with State Chemist's labels showing alteration.

Manufacturers and their representatives frequently claim that a deficiency in one ingredient is compensated in value by the excess of another ingredient. Such a claim is illogical since each of the plant foods, nitrogen, potash and available phosphoric acid has a specific function to perform in plant production and cannot replace one another.

It is essential that the particular plant food desired and purchased be secured rather than an equal money value of another plant food if a profitable and an economical use of commercial fertilizer is made. Since local agents are directly responsible for the fertilizer they offer for sale, they should protect themselves by a clause in their contract wherein the manufacturer agrees to assume all responsibility for all fines or refunds in cases where the fertilizer fails to meet the requirements of the law.

CONSUMERS

Refuse to accept any fertilizer that is not what you bought or is not correctly labeled. Be guided by the analysis rather than by the brand name. Consult the inspection reports of this department and purchase from those companies whose record of inspection shows that they are maintaining their guarantees.

SPECIALS

During the past year a few cases of trade misrepresentation have been called to the attention of the State Chemist. Two of these are illustrated below. In both cases it was a question of the forms of P_2O_5 being misrepresented. The various forms of P_2O_5 are set forth and explained on page 8 of this circular.

One case was as follows:

1. John Doe's so-called "2-8-8-2" being represented as a 2-16-2. These are not identical analyses. The first guarantees 8% available and 8% insoluble P_2O_5. The second guarantees 16% available P_2O_5. At present prices the available P_2O_5 in the

first would be worth \$9.60 as against \$19.20 in the second; the insoluble P_2O_5 in the first would be \$3.20 or 1/3 as much as the available P_2O_5. These values are based on a valuation of \$1.20 per unit for available P_2O_5 and \$0.40 per unit for insoluble P_2O_5 which is the same valuation for the total P_2O_5 in raw rock phosphate.

Using a value of \$3.80 per unit for nitrogen and \$1.00 per unit for potash and the same values for P_2O_5 as referred to above the "2-8-8-2" would be worth \$22.40 as compared to \$28.80 for the 2-16-2.

2. Another case in point is the so-called "0-0-24-8" being represented as an 0-24-8. The first guarantees 24% insoluble P_2O_5 or the same form of P_2O_5 as the total P_2O_5 in raw rock phosphate and 8% potash. The second guarantees 24% available P_2O_5 and 8% potash. The value of the phosphate in the first is \$0.40 per unit as compared to \$1.20 per unit in the second. The potash in both cases would have the same value.

By carefully reading the tag this trouble may be eliminated. Our advice is—*Read the tag and satisfy yourself! Don't take some one else's word for it!*

A fair and comparatively simple way to decide which of two different fertilizer analyses is the cheaper may be determined by figuring the value of the ingredients of each according to the same standard.

Applying the above values to a 4-16-4 we would have

4	units of nitrogen	\$15.20
16	units of Available P_2O_5	19.20
4	units of Water Soluble Potash	4.00
	Total	\$38.40

Some interesting comparisons are encountered year by year in going over the records.

In the following table the values referred to above were applied to various analyses and this value then inserted between the high and low retail price as found on the open Indiana Fertilizer Market.

Analysis	Minimum Retail Price	Comparative Value	Maximum Retail Price
2-12- 6	$32.00	$28.00	$47.00
4-24-12	52.00	56.00	67.00
2-16- 8	35.00	34.80	39.00
1- 8- 4	26.00	17.40	28.00
2-12- 2	28.00	24.00	34.00
4-24- 4	53.00	48.00	59.00
2- 8- 2	29.00	19.20	34.00
4-16- 4	40.00	38.40	47.00
2-16- 2	33.00	28.80	35.50
2-8-8-2	36.00	22.40	27.00
0-14- 6	27.00	22.80	32.00
0-28-12	57.00	45.00	65.00
0-12-12	32.00	26.40	34.00
0-24-24	60.00	52.80	65.00
0-10-10	27.00	22.00	33.00
0-20-20	48.00	44.00	57.00

MEANING OF ANALYSIS

As recognized under the Indiana Fertilizer Law there are only three valuable fertilizer elements, nitrogen, phosphorus and potassium. These three elements do not occur in a free state but are always combined as chemical compounds. This facilitates the handling of them as commercial fertilizers. A brief discussion of these, their value and availability as plant food, is given in the following paragraphs.

Nitrogen.

From 1881 until the introduction of nitrogen salts on the market—the principal source of nitrogen was of an organic nature as found in dried blood, bone, tankage and slaughter-house by-products, garbage tankage, cotton seed meal, castor pomace, tobacco stems, manure sweepings and dried peat. The products would show very little water soluble nitrogen. The availability of the insoluble organic nitrogen in the above products would be classed as good with the exception of garbage tankage, manure sweepings, tobacco stems and dried peat.

Where as formerly most of the nitrogen was of organic source, today the reverse is true. Very little bone and bone products are found on the market. These have been diverted into the mixed feed channels. The nitrogen found in more than 80% of the fertilizers on the market in Indiana today is of mineral origin and is largely water soluble.

A few of the sources of the mineral or inorganic forms of nitrogen are as follows: nitrate of soda (natural and synthetic), ammonium sulphate, urea, cal urea, cal nitro and calcium nitrate all of synthetic origin.

Whereas in times past, with a limited organic source of nitrogen, the price has been high per unit, there is every reason to expect a very material reduction in the price of nitrogen per unit with the introduction of the new synthetic products.

Since water soluble forms of nitrogen, especially nitrate of soda and ammonium sulphate, are considered as being readily available for plant growth, we class a fertilizer that has 60% of its guaranteed nitrogen as water soluble as satisfactory.

If less than 60% of its guaranteed nitrogen is water soluble then the availability of the insoluble organic nitrogen is determined by the alkaline permanganate method. In this case if the active water insoluble nitrogen is equal to or greater than the inactive the nitrogen is classed as satisfactory. If less than half of the insoluble nitrogen is active the nitrogen is classed as inferior.

In case the nitrogen is found to be inferior the inactive water insoluble nitrogen appears in heavy type in Table X. Manures and garbage tankages that have not been acidulated show an inferior quality of nitrogen. This is not the fault of the manufacturer. The past year's inspection had seven samples showing an inferior source of nitrogen, of which number, one was a manure. This is noted and set forth in Table X of this Circular.

Phosphoric Acid.

The phosphorus in the fertilizer is linked up as chemical compounds with calcium, iron and aluminum. It may be as mono, di or tri calcium phosphate.

As monocalcium phosphate $CaH_4(PO_4)_2$ it is water soluble and readily available to plants for growth.

As di calcium phosphate ($CaHPO_4$) it is soluble in the soil solution and rendered available to plants for growth.

As tri calcium phosphate ($Ca_3(PO_4)_2$) it is less available to plants and becomes available only slowly in the soil.

The bulk of the fertilizer sold today contains mixtures of large amounts of mono and di calcium phosphate and a slight amount of tri calcium phosphate. This is in contrast to the earlier years when most of the fertilizer used was bone where the phosphorus is present as tri calcium phosphate.

In acidulated goods the phosphorus is sold only on the available P_2O_5 content. This would be the sum of the soluble and reverted P_2O_5.

In bone and rock phosphate the phosphorus is sold only on the total P_2O_5 content. It is only fair to state, however, that about

1/3 of the total P_2O_5 content of bone would show available by the neutral ammonium citrate method while rock phosphate would only show from two to four per cent by the same method.

Potash.

Potash, as the official label states, must be soluble in water, in which form it is considered directly available for plant use.

No difference in crop growth has been noted in American, French or German potash. Muriate of potash (KCl) being the cheapest has largely supplanted other potash salts for general crops.

CHANGE FROM AMMONIA TO NITROGEN BASIS

Through an agreement among the various fertilizer manufacturers the first numeral of the analysis of fertilizers has been changed to represent the per cent of nitrogen contained in the fertilizer rather than the per cent of ammonia as was the case heretofore.

In the past the first numeral of the analysis meant percentage of ammonia, the second percentage of available phosphoric acid and the third percentage of water soluble potash. In other words a 2-12-6 fertilizer contained 2 per cent of ammonia (equivalent to 1.65 per cent of nitrogen), 12 per cent of available phosphoric acid and 6 per cent of water soluble potash. Since January 1, 1929, under the new system a 2-12-6 fertilizer contains 2 per cent of nitrogen (equivalent to 2.42 per cent of ammonia), 12 per cent of available phosphoric acid and 6 per cent of water soluble potash.

STUDY THE STATE TAG TO AVOID CONFUSION

The new system applies to all new registrations and orders placed for tags after January 1, 1929. Usually there is some fertilizer held over from the previous season in the hands of dealers. This fertilizer may be offered for sale this year. Fortunately our Indiana law has required the percentage of nitrogen to be stated on the guaranteed analysis on the state tag. This will avoid confusion on the part of the consumer if he will examine the tag carefully. For instance if the analysis following the brand name is 2-12-6 and the guaranteed analysis shows 1.6 per cent nitrogen the analysis is based on the old system and the 2 in the analysis means percentage of ammonia.

If the percentage of nitrogen in the guaranteed analysis on the state tag is a whole number the tags were issued since January

1, 1929. The first figure of the analysis following the brand name is the percentage of nitrogen.

STATE CHEMIST RULING

In order to establish the new method of stating the nitrogen content on a nitrogen basis and to promote uniformity the State Chemist issued the following ruling effective January 1, 1929: "After January 1, 1929, no applications for registration of mixed fertilizers will be accepted except those that are guaranteed to contain minimum percentages of nitrogen, available phosphoric acid and water soluble potash, stated as whole numbers in the preceding order. Any numerals used on the bag or in advertising matter to describe the analysis of the fertilizers being offered for sale must be so arranged that the first numeral will be the minimum guaranteed percentage of nitrogen, the second numeral the minimum guaranteed percentage of available phosphoric acid and the third numeral the minimum guaranteed percentage of water soluble potash."

MOVE TOWARDS SIMPLIFICATION OF TERMS

This change from the ammonia basis to the nitrogen basis has been adopted by the fertilizer manufacturers for the district number 9 represented by the states, Ohio, Indiana, Illinois, Kentucky, Missouri, Kansas, Iowa, Minnesota, Wisconsin, Michigan, and California. Eventually it is hoped that this method of stating the analysis of a fertilizer will be adopted by the entire country. More and more the fertilizer companies are beginning to realize the advantage of simplicity of bag branding and statement of the analysis of fertilizer. Such moves make for a better and clearer understanding of the meaning of the bag branding and the guaranteed analysis which is of mutual benefit to the farmer and the fertilizer companies.

RULINGS ADOPTED BY A. O. A. C.

FERTILIZER GRADE

The grade of a fertilizer shall represent the minimum guarantee of its plant food expressed in terms of nitrogen, available phosphoric acid, and water-soluble potash.

FERTILIZER FORMULA

The term fertilizer formula shall be interpreted as expressing the quantity and grade of the crude stock materials used in making a fertilizer mixture. For example: 800 pounds of 16 per cent acid phosphate, 800 pounds of 9-20 tankage, and 400 pounds of sulfate of potash-magnesia.

FERTILIZER ANALYSIS

The word analysis, as applied to fertilizers, shall designate the percentage composition of the product expressed in terms of nitrogen or ammonia, phosphoric acid, and potash in their various forms.

BRAND AND BRAND NAME

A brand is a term, design, or trade mark used in connection with one or several grades of fertilizers.

A brand name is a specific designation applied to an individual fertilizer.

INTERPRETATION OF BRAND NAME TO INCLUDE THE ANALYSIS OR GRADE OF FERTILIZER

The committee recommends and urges the practice of including the analysis or grade of fertilizer with the brand name, both by the manufacturer on sacks and in printed literature and by the control official in his reports and publications.

UNIT

A unit of plant food is twenty (20) pounds, or one per cent (1%) of a ton.

MEANING OF TERM "FINELY GROUND"

The term finely ground in the definition of basic phosphate slag shall refer to actual size of particles as determined by the use of standard sieves, as follows: seventy per cent (70%) or more should pass a 100-, and ninety per cent (90%) or more should pass a 50-mesh sieve.

"LIME" AS APPLIED TO FERTILIZERS

The term lime shall not be used in the registration, labeling, or guaranteeing of fertilizers or fertilizing materials unless the lime is in a form to neutralize soil acidity, such as the oxide, hydroxide, or carbonate, or equivalent magnesia compounds.

LEACHED WOOD ASHES

Leached wood ashes are defined as ashes resulting from burning unleached wood, but as having had part of their plant food removed by artificial means or by exposure to rains, snows, or other solvent.

UNLEACHED WOOD ASHES

Unleached wood ashes are ashes that result from burning unleached wood, that had had no part of their plant food removed, and that contain four per cent (4%) or more of water-soluble potash (K_2O).

ASHES FROM LEACHED WOOD

Ashes from leached wood are defined as unleached ashes resulting from burning wood that has been exposed to or digested in water or other liquid solvent, as in the extraction of dyes, so that a part of the plant food has been dissolved and removed.

DRIED PULVERIZED OR SHREDDED MANURES

Dried pulverized or shredded manures shall be only what the name indicates, and not mixtures of manures and other materials.

FORM OF NITROGEN IN CYANAMIDE

The nitrogen in calcium cyanamide shall be considered as being of organic nature.

KAINIT

Kainit is a potash salt containing potassium and sodium chlorides and sometimes sulfate of magnesia with not less than twelve per cent (12%) of potash (K_2O).

MANURE SALTS

Manure salts shall be understood to mean potash salts containing high percentages of chloride and from twenty per cent (20%) to thirty per cent (30%) of potash (K_2O). The term double manure salts should be discontinued.

NITRATE OF POTASH (COMMERCIAL POTASSIUM NITRATE)

Nitrate of potash is a salt containing not less than twelve per cent (12%) of nitrogen and forty-four per cent (44%) of potash (K_2O).

MURIATE OF POTASH (COMMERCIAL POTASSIUM CHLORIDE)

Muriate of potash is a potash salt containing not less than forty-eight per cent (48%) of potash (K_2O) chiefly as chloride.

SULFATE OF POTASH-MAGNESIA

Sulfate of potash-magnesia is a potash salt containing not less than twenty-five per cent (25%) of potash (K_2O), nor less than twenty-five per cent (25%) of sulfate of magnesia, and not more than two and five-tenths per cent (2.5%) of chlorine.

SULFATE OF POTASH (COMMERCIAL POTASSIUM SULFATE)

Sulfate of potash is a potash salt containing not less than forty-eight per cent (48%) of potash (K_2O) chiefly as sulfate, and not more than two and one-half per cent (2.5%) of chlorine.

MAXIMUM AMOUNT OF CHLORINE PERMISSIBLE IN FERTILIZERS IN WHICH THE POTASH IS CLAIMED AS SULFATE

The chlorine in mixed fertilizers in which the potash is claimed as sulfate shall not exceed five-tenths of one per cent (0.5%) more than what is called for in the minimum potash content based on the definition for sulfate of potash as formulated by the committee. Calculate as follows: 0.05 times the percentage of potash found plus 0.5.

DEFINITION OF PRODUCTS SECURED BY HEATING CALCIUM PHOSPHATE WITH ALKALI SALTS CONTAINING POTASH

These products are not potassium phosphate. They may be called non-acid phosphates with potash.

BASIC PHOSPHATE SLAG

Basic phosphate slag is a by-product in the manufacture of steel from phosphatic iron ores. The product shall be finely ground and shall contain no admixture of materials other than what results in the original process of manufacture. It shall contain not less than twelve per cent (12%) of total phosphoric acid (P_2O_5), not less than eighty per cent (80%) of which shall be soluble in two per cent (2%) citric acid solution according to the Wagner method of analysis. Any other phosphate slag not conforming to this definition shall be designated low grade.

DISSOLVED BONE

Dissolved bone is defined as a ground bone or bone meal that has been treated with sulfuric acid.

NITRATE OF SODA (COMMERCIAL SODIUM NITRATE)

Nitrate of soda is commercial sodium nitrate containing not less than fifteen per cent (15%) of nitrogen, chiefly as sodium nitrate.

DRIED BLOOD

Dried blood is the collected blood of slaughtered animals, dried and ground and containing not less than twelve per cent (12%) of nitrogen in organic forms.

GROUND RAW BONE

Ground raw bone is a product resulting from drying and grinding animal bones that have not been previously steamed under pressure.

GROUND STEAMED BONE

Ground steamed bone is a product resulting from grinding animal bones that have been previously steamed under pressure.

TANKAGE

The term tankage (without qualification) shall be restricted to meat and bone tankage derived from the rendered, dried and ground by-products from slaughter of animals, or from carcasses of animals that have died otherwise than by slaughter.

FISH TANKAGE, FISH SCRAP, DRY GROUND FISH, FISH MEAL FERTILIZER GRADE

Fish tankage, fish scrap, dry ground fish, fish meal fertilizer grade is the dried ground product derived from rendered or unrendered fish.

GARBAGE TANKAGE

Garbage tankage is the rendered, dried, and ground product derived from waste household food materials.

HOOF AND HORN MEAL

Hoof and horn meal is a product resulting from the processing, drying, and grinding of hoofs and horns.

SUPERPHOSPHATE

Superphosphate is the product resulting from mixing rock phosphate and sulfuric acid and/or phosphoric acid. The grade should always be used as a prefix to the name.

Example: 16% Superphosphate.

It is recommended that the use of the term "Acid Phosphate" be discontinued.

CRUDE, INERT, OR SLOW-ACTING NITROGENOUS MATERIALS

Crude, inert, or slow-acting nitrogenous materials are unprocessed organic substances relatively high in nitrogen but having a very low value as plant food and showing a low activity by both the alkaline and neutral permanganate methods (below fifty per cent (50%) and eighty per cent (80%) respectively).

ACTIVITY OF WATER-SOLUBLE NITROGEN IN MIXED FERTILIZERS

The alkaline and neutral permanganate methods distinguish between the better and the poorer sources of water-soluble nitrogen, and do not show the percentage availablity of the material. The available nitrogen of any product can be measured only after carefully conducted vegetation experiments.

(a) The methods shall be used on mixed fertilizers containing water-soluble nitrogen amounting to three-tenths of one per cent (0.3%) or more of the weight of the material. In the event of a total nitrogen exceeding the minimum guarantee, accompanied by a low activity of the insoluble nitrogen, the over-run may be taken into consideration in determining the classification of the water-insoluble nitrogen.

(b) The water-insoluble nitrogen in mixed fertilizers showing an activity below fifty per cent (50%) by the alkaline method and also below eighty per cent (80%) by the neutral method shall be classed as inferior. This necessitates the use of both methods before classifying as inferior.

CLASSIFIED FERTILIZER SALES SINCE 1883

Since the Indiana Fertilizer Law was passed in 1881 a tremendous change has taken place in the sale of commercial fertilizer in Indiana.

From 8,000 tons sold in 1883, more than 90% of which was bone, we pass to 291,193 tons sold in 1929, where less than 1% was bone. Thus we pass from an organic source of nitrogen found in bone to a mineral source of nitrogen found in nitrogen salts. The mineral source of nitrogen found in nitrogen salts may be either natural or synthetic. These are for the most part water-soluble forms of nitrogen while the organic source of nitrogen in bone is not water soluble to a very large extent.

During the early years farmers depended on the natural fertility of their farms for potash while today they make applications of potash either in the form of potash salts or in mixed fertilizers. Sales of raw materials such as superphosphates, nitrogen salts and potash salts fluctuate, but the increase of sales of mixed fertilizers in which they are an ingredient largely compensates for these fluctuations.

The first appearance of superphosphates on the Indiana market was noted in the years 1886 and 1887. Mixtures of superphosphate and potash appeared at about the same time. Rock phosphate first appeared on the Indiana market in 1897. Sales of this material have never been high.

Bulletin of 1906 reported that up to that time nitrate of soda, ammonium sulphate, and calcium nitrate were used very little, if at all, in fertilizers sold in this state. The sale of these products was first reported in the 1909 Bulletin. In the year 1918, when the United States was in the World War, the importation of potash salts was reduced and they were almost completely eliminated from the market.

The following table illustrates these facts:

TABLE II. CLASSIFIED FERTILIZER SALES SINCE 1883

Year	Total Tons	Tons Nitrogen Salts	Tons Potash Salts	Tons Super-Phosphate	Tons Bone	Tons Raw Rock Phosphate	Tons Phosphate Potash	Tons Ammoniated Super-Phosphate	Tons Com-Plete
1883........	8,000	....	....	....	8,000	....	....	....	....
1888........	10,000	....	....	‡	10,000	....	‡	‡	‡
1893........	38,000	....	....	1,000	14,000	....	1,000	4,000	18,000
1895........	45,000	....	....	1,000	15,000	....	1,000	3,800	20,300
1897........	49,400	....	....	7,200	13,900	50	1,500	5,200	21,450
1909........	134,064	268*	2,146	8,111	13,004	804	18,769	1,009	89,287
1914........	219,139	123*	3,576	12,878	11,023	2,400	40,462	1,184	148,126
1918........	244,446	82*	....	57,984	13,300	1,079	9,822	83,111	78,302
1923........	195,702	1,550†	3,251	49,501	8,669	....	35,494	4,309	91,220
1927........	240,498	3,530†	5,200	32,041	5,050	719	41,785	520	151,112
1928........	221,082	1,350†	1,700	26,997	2,782	968	40,451	....	145,709
1929........	291,193	3,140	1,800	21,655	2,848	844	45,000	62	214,010

* Largely Nitrate of Soda.
† Nitrate of Soda and Ammonium Sulphate.
‡ Light Sales.

WHY THE MULTIPLICITY OF ANALYSES

For the past eight years our records show that about 200 different analyses are being kept alive by manufacturers. This is costly and useless. By following the recommendations of the Purdue University Agricultural Experiment Station (Circular No. 162. Fertilizer for Indiana Soils and Crops) the number of the analyses and the cost of the same could be reduced.

While the analyses listed below are not all recognized recommendations, it shows what might be done by reducing the number and it also shows the uselessness of keeping alive so many registrations.

TABLE I.—Showing tons sold under 33 different analyses for past eight years—calculated from tag sales. A glance at the last two columns shows the difference in tons calculated by tag sales and that reported by Manufacturers as being sold under these 33 analyses for 1929.

ANALYSIS	Year 1922	Year 1923	Year 1924	Year 1925	Year 1926	Year 1927	Year 1928	Year 1929	Rpt. by Mfrs. Year 1929
Nitrate of Soda.....	575	650	400	500	350	433	450	1,740	728
Ammonium Sulphate	200	2,650	1,250	4,100	2,350	3,090	900	1,400	545
0–16– 0..............	47,128	35,549	28,907	23,282	16,744	12,665	8,053	6,241	7,223
0–20– 0..............	8,498	8,693	15,912	21,093	19,518	16,281	13,000	12,826	12,790
0–40– 0..............	....	2,062	8,336	11,186	9,375	2,905	3,689	1,563	1,438
Potash Salts.........	2,890	4,250	5,850	10,000	5,700	4,500	1,600	1,800	1,560
Raw Bone...........	3,100	1,962	2,519	2,266	900	1,750	813	869	‖ *3,477
Steamed Bone.......	6,294	6,394	6,488	3,025	4,175	2,706	1,094	1,781	
2– 8– 2..............	7,221	3,737	2,511	2,990	1,340	1,260	594	2,063	403
2– 8– 5..............	1,881	1,460	1,581	1,656	2,625	1,053	1,906	1,531	849
2– 8–10..............	900	1,200	1,468	1,125	1,650	656	1,125	1,463	592
2– 8–16..............	....	2,143	2,156	2,150	282	2,650	2,531	3,919	2,390
2–10– 4..............	1,781	1,187	893	875	1,750	1,625	2,169	1,146	1,074
2–12– 2..............	21,157	22,570	24,006	31,044	41,237	45,109	43,606	36,550	26,501
2–12– 4..............	728	2,303	2,557	2,406	4,154	4,375	2,906	2,688	1,632
2–12– 6..............	1,609	6,920	8,075	21,881	23,580	37,290	43,078	74,850	81,417
2–14– 4..............	....	....	250	....	....	....	2,760	9,906	7,493
2–16– 2..............	6,034	5,640	4,393	4,400	4,562	4,821	2,813	2,575	922
2–16– 8..............	....	....	....	740	1,081	2,018	2,250	2,769	2,524
4–24– 4..............	93	125	656	1,562	2,812	5,275	3,603	4,150	3,415
4–24–12..............	....	....	375	718	687	906	3,331	7,853	6,434
0– 8–24..............	....	1,567	2,868	2,400	2,687	3,962	1,681	1,750	2.480
0–10–10..............	13,122	14,139	10,900	10,843	10,481	15,525	11,969	7,744	9,016
0–12–12..............	....	4,475	3,531	5,325	5,031	5,312	3,438	6,813	9,192
0–20–20..............	31	375	150	531	1,156	2,531	2,281	1,313	2,430
0–12– 6..............	....	3,575	3,781	4,187	4,056	5,312	3,438	1,954	2,135
0–14– 4..............	....	....	875	1,750	3,156	4,312	3,750	1,625	1,179
0–14– 6..............	....	....	....	....	....	....	2,063	9,150	9,661
0– 8–32..............	....	....	....	....	....	....	343	856	499
0–16– 4..............	....	....	....	....	....	....	2,250	313	593
0–14–14..............	....	....	....	....	625	718	463	813	964
0–16– 8..............	....	2,254	....	....	500	593	1,313	844	967
0–12– 8..............	....	....	156	31	....	....	....	1,844	1,898
33*..................	123,242	135,880	140,844	172,066	172,564	189,633	175,260	214,702	204,421
167†.................	84,259	59,822	48,308	54,082	55,716	50,865	45,822	76,491	....
200‡.................	207,501	195,702	189,152	226,148	228,280	240,498	221,082	291,193	¶237,590

* Tonnage sold under these 33 analyses per year calculated by tag sales.

† Tonnage sold under these 167 analyses per year calculated by tag sales.

‡ Total yearly tonnage sales calculated by tag sales.

‖ Reported together.

¶ This does not include the 12,611 tons calculated from tag sales of companies that did not report their tonnage sales.

FERTILIZER TONNAGE SOLD IN INDIANA IN 1929 AS REPORTED BY FERTILIZER MANUFACTURERS

A. Raw Materials—

1. Nitrogen Salts—

Nitrate of Soda	Calcium Nitrate	Ammonium Sulphate
728.4	22.0	545.42

2. Phosphates—

Above 40% P205	0-32-0	0-24-0	0-20-0	0-18-0	0-16-0	0-13-0
1,438.1	16.0	72.0	12,790.9	47.3	7,223.3	896.0

3. Potash Salts—

Muriate of Potash	Sulphate of Potash	Manure Salts	Kainit
1,434.6	64.2	37.7	33.0

B. Phosphate and Potash Mixtures—

0-32-8	113.0	0-20-10	38.0	0-12-28	30.0	0-11-15	41 0
0 28-12	548.0	0-20-4	1.5	0-12-20	44.2	0-10-10	9,016 1
0 25-12	12 0	0-16-32	1.0	0-12-18	296.0	0-10-5	193 6
0-24-24	736.4	0-16-8	967.0	0-12-12	9,192.5	0-8-32	499 4
0-24-12	44 0	0-16-4	593.0	0-12-8	1,898.4	0-8-25	93.0
0-22-22	197.0	0-14-14	964.0	0-12-6	2,135.7	0-8-24	2,480.5
0-21-9	227.0	0-14-6	9,661.2	0-12-5	14.2	0-5-15	286.0
0-20-20	2,430.3	0-14-4	1,179.2	0-12-4	7.0		

C. Complete Fertilizer Mixtures—

10-8-6	2.0	4-13-4	19.0	2-20-10	258.0	1-12-2	981.7
10-6-4	118.9	4-12-8	122:5	2-16-8	2,524.9	1-12-1	29.9
9-27-9	26.0	4-12-4	326.6	2-16-6	189.0	1-11-5	2,155.9
9-18-18	27.0	4-10-6	433.2	2-16-2	922.1	1-11-4	37.8
7-5-2	11.0	4-10-0	20.0	2-14-4	7,493.5	1-11-3	3,420.3
6-15-9	19.0	4-8-8	113.0	2-12-12	19.0	1-10-5	326.0
6-12-9	28.0	4-8-6	437.6	2-12-6	81,417.2	1-10-4	80.0
6-8-6	80.9	4-8-4	9.2	2-12-4	1,632.0	1-10-3	473.0
6-8-5	31.0	4-8-3	84.0	2-12-2	26,501.57	1-10-2	779.5
6-6-10	136.7	3-24-6	15.1	2-10-8	507.3	1-10-1	582.9
6-6-5	24.5	3-21-6	621.4	2-10-6	340.0	1-8-10	39.8
5-15-5	42.0	3-18-9	836.0	2-10-4	1,074.7	1-8-8	6.0
5-10-5	45.5	3-18-3	257.0	2-10-3	285.0	1-8-7	37.5
5-10-4	20.9	3-15-12	104.0	2-10-2	158.0	1-8-6	2.0
5-8-7	11.0	3-13-4	1.0	2-8-16	2,390.6	1-8-4	1,738.93
5-8-6	186.0	3-12-12	243.0	2-8-15	175.0	1-8-3	1,048.0
4-28-8	298.0	3-12-7	15.0	2-8-10	592.5	1-8-2	204.0
4-24-12	6,434.7	3-12-4	305.8	2-8-6	315.7	1.5-10-3	1.0
4-24-4	3,415.1	3-12-0	2.0	2-8-5	849.81	.82-8-8	24.0
4-16-32	9.0	3-10-6	352.0	2-8-4	795.1	.82-8-1	10.0
4-16-20	51.0	3-10-4	75.0	2-8-2	403.6	1-10-10-5	12.0
4-16-8	22.0	3-9-18	824.8	1-14-3	191.7	2-6-6-3	825.0
4-16-4	1,601.2	3-8-6	1,208.1	1-14-2	485.0	2-6-6-10	73.1
		3-7-7	115.0	1-13-5	778.6	2-8-8-2	473.4
		3-0-12	1.0	1-12-4	155.2		

D. Bone Products (Steam and Raw Bone—Fertilizer Tankages)—3,477.15.

E. Raw Rock Phosphate—596.8.

F. Miscellaneous—1,164.9.

G. Unclassified (Made up of Superphosphates reported sold in bulk but no definite analysis reported)—63.0.

Summary—

1. Total tons reported—237,590.
2. Tags sales from firms not reporting—12,611.
3. Total tonnage based on reports—250,201 (Items 1 and 2).
4. Total tonnage from tag sales—291,193.

EXPLANATION OF TABLES

Buyers of fertilizer for the Fall of 1930 and the Spring of 1931 should read this circular before buying.

A short study of the column headings will help to a better understanding of the various tables appearing in this circular.

Figures appearing in heavy type indicate the analysis failed to meet the guarantee of the manufacturer. One exception of this rule, namely, heavy type in the third column of Table XI indicates that inferior nitrogen was found in the sample.

The footnotes at the bottom of each page explain whether refund was made, amount of shipment returned to manufacturer, etc.

In case of deficient samples manufacturers were given ten days' advance notice and opportunity to secure a portion of our sample for review of our results by their chemists.

In comparing the standing of the manufacturers, Table X should always be used in connection with Table XI.

The following Table (III) sets forth the total tonnage, retail value, cost per ton, pounds of actual plant food per ton and the cost per pound of plant food for the past 10 years.

TABLE III

Year	Tonnage per year	Retail Value Dollars	Cost per ton Dollars	Pounds per ton actual plant food	Cost per pound Plant Food Cents
1920	231,791	8,637,055	37.26	328	0.114
1921	187,923	6,031,305	32.10	354	0.091
1922	209,310	5,730,536	27.40	372	0.074
1923	198,581	6,293,033	31.70	412	0.077
1924	192,417	6,479,605	33.68	446	0.075
1925	226,148	8,253,670	36.50	458	0.079
1926	228,280	8,464,607	37.22	452	0.082
1927	240,498	8,998,412	37.41	444	0.084
1928	221,082	8,254,591	37.33	444	0.084
1929	291,193	11,327,868	38.89	417	0.094

Year by year the high grade mixed fertilizer is driving low and medium grade mixed fertilizer off the market and this year is no exception as will be seen by inspection of the table below.

The comparison of mixed fertilizer sales for the past ten years follows:

TABLE IV

Mixed Fertilizer	1920 tons	1921 tons	1922 tons	1923 tons	1924 tons	1925 tons	1926 tons	1927 tons	1928 tons	1929 tons
Low and Medium Grade...	84,760	55,887	43,459	25,773	21,759	17,989	16,892	13,722	6,562	10,506
High Grade...	57,881	59,809	89,527	104,990	98,832	127,928	146,177	179,695	179,597	248,566

The following table (V) shows the comparison of tonnage sales for the past nine years with the amount of actual plant food in tons per year with the retail value per year.

TABLE V

Year	Fertilizer tons	Tons of nitrogen, phosphoric acid and potash	Cost Indiana farmers
1920	231,791	37,961.57	$8,637,055.00
1921	187,923	33,170.08	6,031,305.00
1922	209,310	39,026.25	5,730,536.00
1923	198,581	40,929.03	6,293,033.00
1924	192,417	*43,004.72	*6,479,605.00
1925	226,148	51,803.84	8,253,670.00
1926	228,280	51,572.55	8,464,607.00
1927	240,498	53,388.66	8,998,412.00
1928	221,082	49,038.59	8,254,591.00
1929	291,193	60,737.35	11,327,868.00

* Corrected figures for 1924.

A glance at Table VI shows the total nitrogen, potash, available (P_2O_5), Insoluble (P_2O_5), Total (P_2O_5) from bone and Total (P_2O_5) from rock expressed in tons of actual plant food for the past ten years.

TABLE VI.—Plant Food in Tons

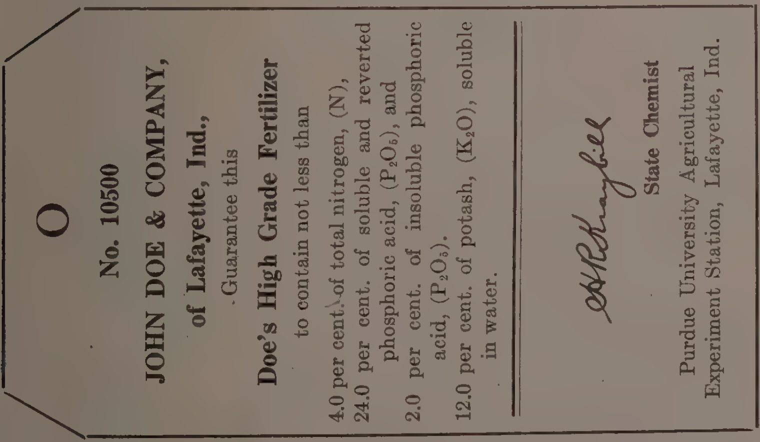
Year	Nitrogen	Available phosphoric acid	Insoluble phosphoric acid	Total phosphoric acid (bone)	Total phosphoric acid (rock)	Potash
1920	1,748.56	25,129.73	3,401.61	2,840.77	1,045.18	3,795.72
1921	1,640.07	21,657.09	2,407.64	2,615.83	289.99	4,559.46
1922	1,887.08	24,870.10	2,791.37	2,778.99	9.28	6,689.43
1923	2,348.63	24,124.84	2,777.82	2,545.94	....	9,131.80
1924	2,159.37	*25,731.53	*2,340.83	2,740.71	....	10,032.16
1925	3,160.08	31,182.63	2,987.80	1,567.16	....	12,906.17
1926	3,167.26	31,811.25	3,196.64	1,529.17	37.13	11,831.11
1927	3,822.06	31,214.50	2,912.51	1,141.05	210.67	14,087.88
1928	3,142.32	30,471.69	1,840.96	708.66	302.02	12,572.95
1929	5,978.96	31,760.58	3,632.01	732.02	274.30	18,361.48

* Corrected figures for 1924.

TABLE VII.—Summary of Inspection for the Past Twenty-eight Years

Year	Number of samples reported	Number equal to guarantee in every particular	Number equal in value to guarantee	Number within 10 per cent of value of guarantee	Number not within 10 per cent of value of guarantee
1902	679	335	564	93	22
1903	674	286	492	139	43
1904	643	248	451	148	44
1905	734	312	528	158	48
1906	879	374	642	176	61
1907	793	265	481	210	102
1908	901	391	683	171	47
1909	969	417	720	215	34
1910	1,118	441	834	242	42
1911	1,095	527	896	180	19
1912	1,220	636	1,034	175	11
1913	1,204	714	1,021	178	5
1914	1,396	727	1,152	239	5
1915	1,368	684	1,145	214	9
1916	1,367	870	1,183	168	16
1917	919	622	830	76	13
1918	1,285	888	1,142	121	22
1919	1,401[1]	936	1,227	141	32
1920	1,491[2]	944	1,267	188	27
1921	1,314	754	1,070	227	17
1922	1,216	812	1,071	132	13
1923	1,325	970	1,214	108	3
1924	1,439	1,072	1,340	94	5
1925	1,442	1,019	1,329	111	2
1926	1,225	798	1,033	183	9
1927	1,450	909	1,277	163	10
1928	1,437	865	1,283	144	9
1929	1,378	854	1,217	155	6
Totals....	32,362	18,670	27,126	4,554	676

[1] One sample not registered.
[2] Nine samples not registered.



No. 10500

JOHN DOE & COMPANY,

of Lafayette, Ind.,

Guarantee this

Doe's High Grade Fertilizer

to contain not less than

4.0 per cent. of total nitrogen, (N),
24.0 per cent. of soluble and reverted phosphoric acid, (P_2O_5), and
2.0 per cent. of insoluble phosphoric acid, (P_2O_5).
12.0 per cent. of potash, (K_2O), soluble in water.

H R Kraybill
State Chemist

Purdue University Agricultural
Experiment Station, Lafayette, Ind.

LABELS

The only label recognized under the law is that bearing the facsimile signature of the State Chemist. (See reproduction.) The label as issued is always printed and contains all the facts required by law; any alteration thereon constitutes a violation of the law.

Label No. 10500 guarantees that each 100 pounds of fertilizer will contain at least 4.0 pounds of total nitrogen (N), 24.0 pounds of soluble and reverted phosphoric acid (P_2O_5), and 2.0 pounds of insoluble phosphoric acid (P_2O_5), and 12.0 pounds of water soluble potash (K_2O).

We hope that it will not again be necessary to file affidavits against agents for distributing unlabeled fertilizer. There can be no excuse for shipping unlabeled fertilizer. Agents receiving same should protect themselves by refusing to accept the car. Wire the manufacturer for official labels and write the State Chemist fully concerning the unlabeled shipment.

TABLE VIII.—Fertilizer Tonnage and Estimated Retail Value, 1929

Class of Fertilizer	Spring 1929 tons	Fall 1929 tons	Total 1929 tons	Estimated 1929 Retail Value Dollars
1. Acid phosphate, 14% and less	188	562	750	19,500.00
2. Acid phosphate, 16%	3,106	3,135	6,241	149,784.00
3. Acid phosphate, 18-20%	3,181	9,645	12,826	357,973.66
4. Acid phosphate above 20%	900	938	1,838	92,910.90
*6. Ammonium acid phosphate (medium)	31	31	62	1,929.44
10. Acid phosphate and potash (high)	1,481	2,438	3,919	109,379.29
10a. Acid phosphate and potash above 20 units	27,925	13,156	41,081	1,588,191.46
11. Complete fertilizer (low)	544	719	1,263	42,942.00
12. Complete fertilizer (medium)	6,088	3,093	9,181	259,087.82
13. Conplete fertilizer (high)	36,009	34,282	70,291	2,502,359.60
13a. Complete fertilizer above 20 units	75,194	58,081	133,275	5,737,821.50
14. Steamed bone	400	469	869	40,843.00
15. Raw bone	688	1,093	1,781	81,926.00
16. Tankage	157	31	188	7,608.00
21. Rock phosphate	281	563	844	15,614.00
†22. Nitrogen salts	3,090	50	3,140	194,648.60
†23. Potash salts	1,700	100	1,800	86,994.00
31. Miscellaneous (peat, dried manure, dried blood, garbage, tankage, etc.)	1,594	250	1,844	38,355.20
Total	162,557	128,636	291,193	$11,327,868.47

† Tonnage in these classes estimated on the 200-pound sack or 10 per ton. All other classes estimated on the 125-pound sack or 16 per ton.

* No samples taken. Value based on last year's prices.

PRICES USED IN SECURING COMPARATIVE VALUE OF FERTILIZERS

These values are not for the purpose of fixing the commercial value of mixed fertilizers, but are for comparative purposes only. They are for use in comparing the value of inspection samples with manufacturers' guarantees, and can be used advantageously by fertilizer purchasers in calculating the relative values of various brands offered for sale by different manufacturers.

For use in determining the comparative values of fertilizer inspected in 1930, the following prices have been adopted:

	Per lb. cts.	Per unit or per cent, $
All fertilizers		
Nitrogen (N)	15.0	3.00
Potash (K_2O) Soluble in water	5.0	1.00
Soluble and reverted phosphoric acid (P_2O_5)	6.0	1.20
Mixed fertilizers containing nitrogen		
Insoluble phosphoric acid (P_2O_5)	2.0	0.40
Precipitated bone		
Available phosphoric acid (P_2O_5)	6.0	1.20
Insoluble phosphoric acid (P_2O_5)	5.0	1.00
Animal by-products, bone, tankage, etc.		
Total phosphoric acid (P_2O_5)	4.5	0.90
Basic slag		
Total phosphoric acid (P_2O_5)	4.5	0.90
Rock phosphate (floats) and low grade slag		
Total phosphoric acid (P_2O_5)	2.0	0.40
Mixed fertilizer, acid phosphate, etc., containing no nitrogen		
Insoluble phosphoric acid	.0	0.00

TABLE IX.—Summary of Inspection on the Basis of Composition, Guaranteed, Found, and Retail Values

Class of Fertilizer	Number of Samples	Nitrogen (N), average per cent.		Available phosphoric acid (P_2O_5), average per cent.		Insoluble phosphoric acid (P_2O_5), average per cent.		Total phosphoric acid (P_2O_5), average per cent.		Potash (K_2O), soluble in water average per cent.		Comparative value per ton, dollars		Retail price per ton, average, dollars	Comparison, retail price and found comparative value per ton, dollars	Range in retail price per ton, dollars
		Guaranteed	Found	Guaranteed	Found	Guaranteed	Found	Guaranteed	Found	Guaranteed	Found	Guaranteed	Found			
1. Acid phosphate, less than 16 per cent available phosphoric acid	2	......	......	11.5	14 2	10.0	5 7	......	......	....	....	13 80	17 04	26 00	+8 96	23 00-26 00
2. Acid phosphate, 16 to 18 per cent available phosphoric acid	41	......	......	16.0	16.8	0.8	1 4	......	......	......	....	19 20	20 16	24 00	+3 84	21 00-27 00
3. Acid phosphate, 18 to 20 per cent available phosphoric acid	74	......	....	20.0	21.1	0.8	1.0	....	....	....	......	24.00	25.32	27 91	+2 59	24.00-30 00
4. Acid phosphate more than 20 per cent available phosphoric acid	26	......	......	40.4	40 4	1.1	1 2	...	......	......	......	48 48	48 48	50 55	+2 07	47.00-54 00
10. Acid phosphate and potash (High grade), 14 or more per cent available plant food	32	......	......	12 4	12.7	1.2	1.3	......	....	5 4	5 8	20 28	21.04	27.91	+6 87	24.00-36 00
10a. Acid phosphate and potash (High grade), 20 or more per cent available plant food	242	......	......	14 2	14.6	0.8	1.2	......	......	12 4	12 6	29 44	30 12	38 66	+8.54	27 00-69.00
11. Complete fertilizer (low grade), less than 12 per cent available plant food	4	1.8	1.9	6.5	8.0	6 0	3 8	......	......	2 5	2 8	19 54	20 96	34 00	+13 04	34 00–
12. Complete fertilizer (medium grade), 12 to 14 per cent available plant food	49	1 3	1 4	8 3	9.1	2 6	2 0	....	....	2 5	2 7	18 44	19 74	28 22	+8 48	24 00-37.00
13. Complete fertilizer (high grade), 14 or more per cent available plant food	282	2.1	2.1	10.9	11 5	0 5	1 2	......	...	3 0	3 2	24 34	25 42	35 60	+10 18	28 00-48 00
13a. Complete fertilizer (high grade), 20 or more per cent available plant food	560	2 6	2.7	14.1	14.8	0.9	1 3	....	....	7 5	7.1	34.66	35.64	43 06	+7 42	30 00-108 00
14. Steamed bone	5	1 5	2.0	......	......	......	......	27 6	29.9	......	......	30 54	34.51	47.00	+12.49	44 00-50 00
15. Raw bone	9	3.3	3.7	......	......	......	......	21 1	22 4	......	......	31.53	34.22	46 00	+11 78	40 00-52 00
16. Tankage	1	3.5	4.8	......	......	......	......	16 0	20 3	......	......	27 70	36 51	41 00	+4 49	41 00–
21. Rock phosphate	4	......	......	......	......	......	......	29 7	32 5	......	......	11.88	13 00	18.50	+4 50	17 00-19.01
22. Nitrogen salts	15	16.9	17.6	......	......	......	......	......	......	....	....	64 22	66 88	61.90	—4.98	56.00-69.00
23. Potash salts	22	......	......	......	......	......	......	......	......	50 4	49.7	50.40	49.70	48.33	—1.37	38.00-59.00
31. Miscellaneous (peat, peat and limestone, dried manure, dried blood, garbage tankage, etc.)	10	5.0	5.8	......	......	......	......	1.5	1 8	1 9	3.6	22.25	27.26	20 80	—6 46	15 00-45.00

TABLE X.—Standing of Manufacturers Determined by Inspection of 1929

Manufacturers	Number of samples reported	Number equal to guarantee in every particular	Number equal in value to guarantee	Number within 10 per cent of value of guarantee	Number not within 10 per cent of value of guarantee	Number with inferior nitrogen	Total number with nitrogen
American Agricultural Chemical Co., The, Cincinnati, Ohio	1	1	1	....	....	....	....
American Agricultural Chemical Co., The, Detroit Sales Dept.	1	1	1	....	....	....	1
American Agricultural Chemical Co., The, New York, N. Y.	78	62	76	2	....	....	63
Anaconda Copper Mining Co.	1	1	1	....	....	....	....
Armour Fertilizer Works, Chicago, Ill.	149	108	141	8	....	....	105
Buhner Fertilizer Co., The	63	14	50	13	....	1	50
Clendenin & Co.	5	....	4	1	....	....	3
Clendenin Fertilizer Co.	4	1	2	2	....	....	2
Consolidated Chemical Co.	16	8	13	3	....	....	11
Crabbs Reynolds Taylor Co., Crawfordsville, Ind.	1	1	1	....	....	....	1
Darling & Co.	36	31	35	1	....	....	25
Diamond Fertilizer Co.	9	6	8	1	....	....	2
D. & K. Fertilizer Co.	59	25	51	5	3	....	16
Empire Guano Co., New Albany Sales Dept.	1	1	1	....	....	....	1
Evansville Fertilizer Co.	6	3	6	....	....	....	4
Farmers Fertilizer Co.	1	1	1	....	....	....	....
Farmers Grain Dealers Ass'n, Indianapolis, Ind.	24	16	22	2	....	....	13
Federal Chemical Co., Inc.	95	72	89	6	....	1	76
Fox Chemical Co.	1	1	1	....	....	....	....
Globe Fertilizer Co.	1	1	1	....	....	....	1
Groves Chemical Co., Columbus, Ohio	30	13	25	5	....	....	23
Haines Chemical Co., A. K.	8	5	5	1	2	....	....
Hilgemeier & Bro., Inc., F., Indianapolis, Ind.	1	1	1	....	....	....	1
Hopkins Fertilizer Co.	47	31	44	3	....	4	44
Hutchins Bros. Mineral Works	1	....	1	....	....	....	1
Indiana Consumers & Gas By-Products Co.	1	1	1	....	....	....	1
Indiana Farm Bureau Purchasing Dept., Inc.	227	155	203	24	....	....	121
International Agricultural Corp., Cincinnati Works	2	2	2	....	....	....	1
International Agricultural Corp., Middle West Division	82	41	70	12	....	....	60
Jarecki Chemical Co., The (Armour Owned)	8	8	8	....	....	....	4
Johnson, Inc., J. Oliver	1	1	1	....	....	1*	1
Jones Phosphate Co., Robin	1	1	1	....	....	....	....
Joslin-Schmidt Corp., (Groves Fertilizer Works)	51	17	35	16	....	....	23
Kendallville Fertilizer Co.	2	1	2	....	....	....	2
Louisville Fertilizer Co. (Armour Owned), Cincinnati, Ohio	1	....	....	1	....	....	1
Louisville Fertilizer Co., (Armour Owned), Louisville, Ky.	1	1	1	....	....	....	....
Major Bros. Packing Co., The	1	1	1	....	....	....	1
Miami Fertilizer Co., Dayton, O.	13	9	12	1	....	....	8
National Chemical Co., Louisville, Ky.	1	1	1	....	....	....	....
Nitrate Fertilizer Co., The, Columbus, Ohio	1	1	1	....	....	....	....
Norris Fertilizer Co.	16	7	15	1	....	....	16
North American Fertilizer Co.	17	9	16	1	....	....	11
Old Gardener Fertilizer Co., The Pittsburgh, Pa.	1	1	1	....	....	....	1
Price Chemical Co.	15	8	13	2	....	....	10
Rauh & Sons Fertilizer Co., E.	67	39	59	8	....	....	44
Read Phosphate Co., Nashville, Tenn.	1	1	1	....	....	....	1
Read Phosphate Co., New Albany, Ind.	5	4	5	....	....	....	5

Manufacturers	Number of samples reported	Number equal to guarantee in every particular	Number equal in value to guarantee	Number within 10 per cent of value of guarantee	Number not within 10 per cent of value of guarantee	Number with inferior nitrogen	Total number with nitrogen
Read Phosphate Co., New Albany Sales Department	1	....	....	....	1	....	....
Royster Guano Co., The F. S.	13	10	12	1	....	....	9
Ruhm Phosphate Chemical Co.	2	2	2	....	....	....	....
Smith Agricultural Chemical Co., Indianapolis Factory	73	48	59	14	....	....	40
Swift & Co., Fertilizer Works	61	36	51	10	....	....	47
Synthetic Nitrogen Corp.	3	2	3	....	....	....	3
Tripp Hardware Co., Fred H.	1	....	1	....	....	....	1
United States Guano Co.	3	1	1	2	....	....	....
Virginia-Carolina Chemical Co., Cincinnati Division	2	1	2	....	....	....	1
Virginia-Carolina Chemical Corp., Cincinnati Division	47	29	41	6	....	....	22
Virginia-Carolina Chemical Corp., Richmond, Va.	1	1	1	....	....	....	1
Welch Chemical Co.	17	11	14	3	....	....	12
Totals	1,378	854	1,217	155	6	7	920

* Sheep Manure—Manufacturers not responsible for the quality of the nitrogen in Sheep Manure.

TABLE XI.—Report of Inspection of Fertilizer Collected in 1929

Labels and names of persons from whom samples were secured	Official No.	Inspection No. H. H.	Samples taken at		Nitrogen (N)				Phosphoric acid (P_2O_5)			Potash (K_2O), soluble in water, per cent
					Water soluble as nitrates, ammonia salts and organic, per cent	Active water insoluble organic, per cent	Inactive water insoluble organic, per cent	Total per cent	Soluble and reverted (available), per cent	Insoluble, per cent	Total per cent	
American Agricultural Chemical Company, The, Cincinnati, Ohio.												
A. A. C. Basic Lime Phosphate	9023	.....	.....	guaranteed	.....	.....	.....	.....	13.0	.....		.....
Roy Smith[1]	9023	4072	Rossville	found	.....	.....	.....	.....	13.5	2.8	.....	.....
American Agricultural Chemical Company, The, Detroit Sales Department, Detroit, Mich.												
Fine Ground Bone	6796	.....	.....	guaranteed	.....	.....	.....	1.6	.....	.....	27.0	.....
James E. Turley	6796	3603	English	found	0.21	1.11	0.48	1.8	.....	.....	30.9	.....
American Agricultural Chemical Company, The, New York, N. Y.												
A. A. Circle Mixture	9402	.....	.....	guaranteed	.....	.....	.....	.....	12.0	0.5	.....	12.0
J. S. Littrell[2]	9402	3852	Reynolds	found	.....	.....	.....	.....	12.1	0.9	.....	12.3
Joseph Zimmerman[3]	9402	4287	Buck Creek	found	.....	.....	.....	.....	12.1	1.4	.....	12.0
A. A. Atlas Mixture	9403	.....	.....	guaranteed	.....	.....	.....	.....	12.0	0.5	.....	6.0
Warren Elevator Co.	9403	3639	Warren	found	.....	.....	.....	.....	12.2	1.0	.....	6.1
W. E. Jenner & Son	9403	3806	Marengo	found	.....	.....	.....	.....	12.4	1.1	.....	7.6
Victor Samuelson[4]	9403	4005	Donaldson	found	.....	.....	.....	.....	12.7	0.9	.....	12.3
Gurney Alexander	9403	4132	Silver Lake	found	.....	.....	.....	.....	13.2	0.6	.....	6.1
E. J. Lowe[5]	9403	4279	Butler	found	.....	.....	.....	.....	13.2	1.4	.....	6.0
Michigan Carbon Homestead Superior Superphosphate	9422	.....	.....	guaranteed	.....	.....	.....	.....	16.0	0.5	.....	.....
King Elevator Co.	9422	3419	Wabash	found	.....	.....	.....	.....	16.3	2.2	.....	.....
Packer's Boar Head 20% Superphosphate	9432	.....	.....	guaranteed	.....	.....	.....	.....	20.0	0.5	.....	.....
Home Grain Co.	9432	4394	Lagrange	found	.....	.....	.....	.....	21.5	2.1	.....	.....
Michigan Carbon Homestead Extra Superphosphate	9483	.....	.....	guaranteed	.....	.....	.....	.....	20.0	0.5	.....	.....
Warren Elevator Co.	9483	3641	Warren	found	.....	.....	.....	.....	22.3	.....	.....	.....
A. A. Boss Mixture	9707	.....	.....	guaranteed	.....	.....	.....	.....	10.0	.....	.....	5.0
James S. Bicknel	9707	3780	Centerville	found	.....	.....	.....	.....	10.1	1.3	.....	5.0
James E. Turley	9707	4562	English	found	.....	.....	.....	.....	10.5	1.0	.....	5.1

Where 60.0 per cent or more of the total nitrogen guaranteed was found to be water soluble, the active and inactive insoluble organic nitrogen was not determined.
Percentages appearing in bold type in the "Inactive water insoluble organic" column denote inferior nitrogen.

[1] Purchased from Bruce Bowen.

[2] Purchased from E. C. Kellenberger.

[3] Purchased from Henry McCormick.

[4] Sold as 0–12–12.

[5] Purchased from Wm. J. Whetsel.

TABLE XI.—Report of Inspection of Fertilizer Collected in 1929—Continued

Labels and names of persons from whom samples were secured	Official No.	Inspection No. H. H.	Samples taken at		Nitrogen (N): Water soluble as nitrates, ammonia salts and organic, per cent	Nitrogen (N): Active water insoluble organic, per cent	Nitrogen (N): Inactive water insoluble organic, per cent	Nitrogen (N): Total per cent	Phosphoric acid (P_2O_5): Soluble and reverted (available), per cent	Phosphoric acid (P_2O_5): Insoluble, per cent	Phosphoric acid (P_2O_5): Total per cent	Potash (K_2O), soluble in water, per cent
Northwestern Horse Shoe 20% Superphosphate	238a	....	....	guaranteed	....	....	....	....	20.0	0.5	....	....
A. V. Maple[5]	238a	4486	Sharpsville	found	....	....	....	....	20.1	1.7	....	....
Northwestern Horse Shoe Higrade Vegetable Fertilizer 2-8-5	241a	....	....	guaranteed	....	....	....	2.0	8.0	0.5	....	5.0
Bornwasser & Gwin Implement Co.	241a	3810	New Albany	found	1.89	....	....	2.1	8.1	1.0	....	5.0
Northwestern Horse Shoe Common Sense Fertilizer	242a	....	....	guaranteed	....	....	....	2.0	12.0	0.5	....	2.0
Gurney Alexander[7]	242a	4121	Silver Lake	found	1.82	....	....	2.1	12.5	1.3	....	2.3
George Rentschler	242a	4255	Fulton	found	2.03	....	....	2.2	12.6	1.6	....	2.2
Henry McCormick	242a	4286	Buck Creek	found	1.88	....	....	2.1	12.0	1.9	....	2.4
Northwestern Horse Shoe Bison Fertilizer	243a	....	....	guaranteed	....	....	....	1.0	10.0	0.5	....	3.0
Dave Kabel Tractor Co.	243a	4308	Winchester	found	0.92	....	....	1.2	11.2	1.2	....	3.3
Michigan Carbon Homestead Higrade Garden & Vegetable Fertilizer 2-8-5	245a	....	....	guaranteed	....	....	....	2.0	8.0	0.5	....	5.0
L. A. Mauck	245a	3815	Corydon	found	1.89	....	....	2.1	8.7	0.4	....	4.6
C. L. Graf	245a	4584	New Albany	found	1.89	....	....	2.2	8.5	0.5	....	5.1
Michigan Carbon Red Line Crop Fertilizer	246a	....	....	guaranteed	....	....	....	2.0	8.0	0.5	....	10.0
Warren Elevator Co.	246a	3634	Warren	found	1.79	....	....	2.0	9.4	0.1	....	9.9
Michigan Carbon Homestead Bone Black Fertilizer	247a	....	....	guaranteed	....	....	....	2.0	12.0	0.5	....	2.0
King Elevator Company	247a	3418	Wabash	found	1.71	....	....	2.1	12.3	1.3	....	2.2
Farmers Co-operative Co.	247a	4130	Treaty	found	1.99	....	....	2.2	12.3	1.2	....	2.0
LaRue & Showalter[8]	247a	4276	Butler	found	2.00	....	....	2.2	12.1	2.4	....	2.1
Michigan Carbon Red Line Complete Fertilizer 2-10-2	248a	....	....	guaranteed	....	....	....	2.0	10.0	0.5	....	2.0
Paoli Hardware Co.	248a	3600	Paoli	found	1.79	....	....	2.1	10.7	1.4	....	1.8
Bowker's Harvest Queen Fertilizer	249a	....	....	guaranteed	....	....	....	1.0	8.0	0.5	....	4.0
Culbertson Bros.	249a	3305	Vevay	found	0.78	....	....	1.0	10.1	0.1	....	4.0
R. A. Sawdon	249a	4513	Aurora	found	1.03	....	....	1.2	8.2	0.8	....	3.8
Bowker's Harvest Moon Fertilizer	250a	....	....	guaranteed	....	....	....	2.1	10.0	1.4	....	2.0
R. A. Sawdon	250a	4515	Aurora	found	1.82	....	....	2.1	10.0	1.4	....	2.0
Bowker's Harvest Jewel Fertilizer	252a	....	....	guaranteed	....	....	....	2.0	8.0	0.5	....	5.0
Culbertson Bros.	252a	3307	Vevay	found	1.80	....	....	2.0	8.2	0.9	....	4.8
John Schmocker	252a	4450	Batesville	found	1.79	....	....	2.1	7.5	1.4	....	5.0
Bowker's Liberty Bell Fertilizer	253a	....	....	guaranteed	....	....	....	2.0	12.0	0.5	....	2.0
James S. Bicknel	253a	3776	Centerville	found	1.89	....	....	2.1	12.3	2.0	....	2.0
George Steckley	253a	4397	Kendallville	found	2.06	....	....	2.3	12.9	1.6	....	2.2
Agrico for Grain 2-12-4	256a	....	....	guaranteed	....	....	....	2.0	12.0	0.5	....	4.0
James Bicknel	256a	3786	Centerville	found	1.93	....	....	2.1	13.7	....	....	3.8
Frank J. Singer	256a	3932	Haubstadt	found	1.72	....	....	2.0	12.0	1.5	....	4.3

John Schmocker	256a	4451	Batesville	found	1.92			2.2	12.5	0.4		4.2
Agrico for Potatoes 4-8-6	257a			guaranteed				4.0	8.0	0.5		6.0
R. A. Sawdon[9]	257a	3303	Aurora	found	3.43			3.6	9.0	0.1		5.8
Warren Elevator Co.	257a	3635	Warren	found	3.79			4.1	8.0	1.2		6.3
Agrico for Corn 3-10-6	259a			guaranteed				3.0	10.0	0.5		6.0
George Struewing	259a	3891	Batesville	found	2.80			3.0	10.7	1.5		6.0
A. A. Sure Crop Fertilizer 1-8-4	261a			guaranteed				1.0	8.0	0.5		4.0
Bornwasser & Gwin Implement Co.	261a	3797	New Albany	found	1.03			1.2	9.3	1.1		4.3
L. A. Mauck	261a	4582	Corydon	found	1.13			1.7	8.9	0.4		3.8
A. A. Climax Fertilizer	262a			guaranteed				2.0	10.0	0.5		2.0
P. E. Jackson & Son	262a	4506	Lawrenceburg	found	1.75			2.1	10.3	1.0		2.2
A. A. Special Tobacco Fertilizer 3-8-6	263a			guaranteed				3.0	8.0	0.5		6.0
R. A. Sawdon	263a	3299	Aurora	found	2.79			3.0	9.2	1.1		5.9
Culbertson Bros.	263a	3306	Vevay	found	2.93			3.1	8.8	0.8		6.0
Bornwasser & Gwin Implement Co.	263a	3817	New Albany	found	2.86			3.0	9.1	0.7		5.4
A. A. Red Dragon 2-12-2	269a			guaranteed				2.0	12.0	0.5		2.0
Frank J. Singer	269a	3938	Haubstadt	found	1.65			2.0	12.4	1.4		2.0
Flora Artificial Stone Co.	269a	4156	Flora	found	1.99			2.2	12.1	1.3		2.1
A. A. New Rival Fertilizer	270a			guaranteed				2.0	12.0	0.5		4.0
Flora Artificial Stone Co.	270a	4157	Flora	found	1.90			2.1	12.5	1.4		4.0
A. A. Antler Fertilizer	271a			guaranteed				2.0	12.0	0.5		6.0
King Elevator Co.	271a	3412	Wabash	found	1.96			2.1	12.9	1.8		6.0
Warren Elevator Co.	271a	3640	Warren	found	1.40			2.0	13.6	0.9		6.2
Broadie & Anderson	271a	3695	Williamsport	found	2.09			2.2	12.8	0.9		6.2
A. A. Hoover	271a	4048	Rensselaer	found	1.88			2.1	12.7	1.2		6.1
Roy Smith[10]	271a	4071	Rossville	found	1.96			2.1	12.2	1.4		6.0
Farmers Co-operative Co.	271a	4129	Treaty	found	1.89			2.1	12.3	0.5		6.0
Bunker Hill Elevator Co.	271a	4134	Bunker Hill	found	1.95			2.1	12.9	1.3		6.1
Henry McCormick	271a	4290	Buck Creek	found	2.03			2.2	13.1	0.6		6.0
Wm. Peirce	271a	4319	Muncie	found	2.13			2.3	11.8	1.4		6.4
Home Grain Co.	271a	4395	Lagrange	found	1.96			2.2	13.6	1.3		6.0
George Steckley	271a	4399	Kendallville	found	2.03			2.2	12.4	1.5		6.4
John Schmocker	271a	4498	Batesville	found	1.99			2.2	12.2	1.2		6.0
L. A. Mauck	271a	4585	Corydon	found	1.95			2.2	12.3	1.3		6.0
A. A. Tomato Special Fertilizer 2-12-6	272a			guaranteed				2.0	12.0	0.5		6.0
Paoli Hardware Co.	272a	3589	Paoli	found	1.92			2.2	11.8	1.8		6.0
Horace Swindell[11]	272a	3751	Newcastle	found	1.99			2.1	13.7			6.2
Bornwasser & Gwin Implement Co.	272a	3818	New Albany	found	2.00			2.2	12.3	1.1		6.0
C. L. Graf	272a	4577	New Albany	found	1.95			2.2	13.1	1.0		6.4
A. A. Gilt Edge Fertilizer	273a			guaranteed				2.0	16.0	0.5		2.0
Bunker Hill Elevator Co.	273a	4142	Bunker Hill	found	1.97			2.1	17.0	1.6		2.3
Home Grain Co.	273a	4444	Lagrange	found	1.79			2.1	16.6	2.1		2.0
A. A. Double Strength Fertilizer	274a			guaranteed				2.0	16.0	0.5		8.0
R. A. Sawdon	274a	3304	Aurora	found	1.89			2.0	19.2			8.1
Bruce Bowen	274a	4066	Cambria	found	2.01			2.2	16.3	1.4		8.1
Rich Valley Co-operative Elevator Co.	274a	4138	Rich Valley	found	2.08			2.2	16.2	1.2		8.0

Where 60.0 per cent or more of the total nitrogen guaranteed was found to be water soluble, the active and inactive insoluble organic nitrogen was not determined.

Percentages appearing in bold type in the "Inactive water insoluble organic" column denote inferior nitrogen.

[6] Purchased from Emmett Harper.

[7] Not tagged. Labels furnished.

[8] Purchased from Wm. J. Whetsel.

[9] Sample to manufacturer. Refund $1.52.

[10] Purchased from Bruce Bowen.

[11] Purchased from J. J. Pickering.

TABLE XI.—Report of Inspection of Fertilizer Collected in 1929—Continued

Labels and names of persons from whom samples were secured	Official No.	Inspection No. H. H.	Samples taken at		Nitrogen (N)				Phosphoric acid (P₂O₅)			Potash (K₂O), soluble in water, per cent
					Water soluble as nitrates, ammonia salts and organic, per cent	Active water insoluble organic, per cent	Inactive water insoluble organic, per cent	Total per cent	Soluble and reverted (available), per cent	Insoluble, per cent	Total per cent	
A. A. Two In One Fertilizer	276a			guaranteed				4.0	16.0	0.5		4.0
Paoli Hardware Co.	276a	3593	Paoli	found	3.96			4.1	15.6	1.9		3.7
Rich Valley Co-operative Elevator Co.	276a	4143	Rich Valley	found	3.89			4.1	18.1	1.4		4.0
A. A. Hawkeye Fertilizer	277a			guaranteed				4.0	24.0	0.5		4.0
James S. Bicknel[12]	277a	3782	Centerville	found	3.53			3.7	23.7	1.0		4.2
Farmers Co-operative Co.	277a	4126	Treaty	found	3.64			4.1	24.0	1.7		4.2
Bunker Hill Elevator Co.	277a	4136	Bunker Hill	found	3.68			4.0	24.3	1.8		4.5
A. A. Double Ten Mixture	278a		Wabash	guaranteed					10.0	0.5		10.0
King Elevator Co.	278a	3407	Wabash	found					11.0	0.6		9.7
J. C. Kellenberger	278a	3860	Reynolds	found					11.0	0.8		10.0
Walter Cherry[13]	278a	4277	Butler	found					10.7	1.6		10.0
Packers Boars Head Sure Growth Fertilizer	279a			guaranteed				2.0	12.0	0.5		2.0
Home Grain Co.	279a	4380	Lagrange	found	2.00			2.3	12.4	1.9		2.2
Anaconda Copper Mining Company, Chicago, Ill.												
Anaconda Treble Superphosphate	649a			guaranteed					43.0			
The Heldt Co.	649a	3946	Evansville	found					43.6	2.3		
Armour Fertilizer Works, Chicago, Ill.												
Sulphate of Potash	3479			guaranteed								50.0
W. Trow Co.[14]	3479	3278	Madison	found								47.5
Armour's Sulphate of Ammonia	7472			guaranteed				20.6				
W. Trow Co.	7472	3293	Madison	found				21.1				
Armour's Big Crop 16% Superphosphate	7629			guaranteed					16.0	0.5		
Farmers Feed & Coal Co.	7629	3495	Bloomington	found					16.4	1.2		
J. F. Colher	7629	3730	Mitchell	found					17.0	0.4		
J. A. Bertch & Son	7629	3908	Liberty	found					16.6	2.0		
Floyd Gladish	7629	4538	Petersburg	found					16.3	1.4		
Big Crop 10–10 Fertilizer	7713			guaranteed					10.0	0.5		10.0
W. Trow Co.	7713	3289	Madison	found					11.0	0.6		9.8
Frank Morgan	7713	3669	Plainville	found					11.2	0.2		10.0
South Side Lumber Co.	7713	4212	Kokomo	found					12.0	0.8		9.2
Armour's Nitrate of Soda	7986			guaranteed				14.8				
W. Trow Co.	7986	3292	Madison	found				15.4				
Herman Helfenbein	7986	3950	Petersburg	found				15.8				

Armour's Big Crop 0–12–6 Fertilizer	8664			guaranteed					12.0	0.5		6.0
R. C. Fretz	8664	3477	Waterloo	found					12.5	0.8		6.0
Clay Syler	8664	4124	N. Manchester	found					12.0	1.3		6.2
Armour's Big Crop 20% Superphosphate	9210			guaranteed					20.0	0.5		
Michael Ripperger	9210	3301	Brookville	found					20.4	0.3		
R. C. Fretz	9210	3473	Waterloo	found					20.7	1.1		
Farmers Feed & Coal Co.	9210	3491	Bloomington	found					19.8	1.0		
Clay Syler	9210	4125	N. Manchester	found					20.0	1.4		
Armour's Big Crop 0–16–8 Fertilizer	9367			guaranteed					16.0	0.5		8.0
South Side Lumber Co.	9367	3436	Kokomo	found					16.4	1.1		8.3
Frank Morgan[15]	9367	3665	Plainville	found					17.4			8.8
The Greenfield Packing Co., Inc	9367	3788	Greenfield	found					17.0	0.3		7.8
Bobs Hardware Co.	9367	3933	Elberfeld	found					16.8	0.9		7.9
Floyd Gladish	9367	3942	Petersburg	found					16.8	0.3		8.4
Peru Grain & Coal Co.	9367	4144	Peru	found					16.0	1.3		8.2
Frank Morgan	9367	4533	Plainville	found					16.3	1.2		8.1
Armour's Big Crop 0–14–14 Fertilizer	9368			guaranteed					14.0	0.5		14.0
Soils and Crops Dept., Purdue	9368	3386	Wilson Farm	found					15.1	0.4		14.4
Logansport Elevator Co.	9368	3404	Logansport	found					14.8	0.4		14.5
Milford Grain & Milling Co.	9368	3552	Milford	found					14.3	0.8		14.4
Farmers Equity Exchange	9368	3642	Van Buren	found					15.7			15.2
Wm. Raff[16]	9368	3965	Lake Village R.D.	found					14.3	1.2		13.4
J. J. Lawler	9368	3966	Fair Oaks	found					14.5	0.7		13.8
John Brown & Sons[17]	9368	3977	Shelby, R. F. D.	found					15.3	0.8		14.3
Frank Parks[17]	9368	3978	Pogue	found					15.2	0.5		14.3
Will Timmons[17]	9368	3979	Randle	found					14.8	0.4		14.4
James Scheurich[17]	9368	3983	Rensselaer, R. 5	found					15.5	0.5		14.5
James Scheurich[17]	9368	3984	Rensselaer, R. 5	found					16.1	0.1		15.2
John Brown & Son[17]	9368	3985	Shelby	found					14.9	0.6		14.8
J. J. Lawler	9368	3987	Roselawn, R.F.D.	found					15.6	0.3		15.3
Kraus & Apfelbaum	9368	4269	Argos	found					14.8	1.2		13.3
Armour's Big Crop 3–18–3 Fertilizer	9584			guaranteed				2.4	18.0	0.5		3.0
E. A. Doud	9584		Cory	found	2.20			2.4	17.5	0.6		3.1
Armour's Big Crop 0–20–20 Fertilizer	21a	3656		guaranteed					20.0	0.5		20.0
Regal Packing Company	21a	3444	Windfall	found					20.6	1.3		19.8
R. C. Fretz Feed Store[18]	21a	3475	Waterloo	found					20.1	2.0		18.0
J. H. O'Loughlen	21a	3506	North Judson	found					19.7	2.6		20.3
Bristol Mills, Inc.	21a	4439	Bristol	found					21.9	1.8		20.3
Armour's Big Crop 24% Superphosphate	33a			guaranteed					24.0	0.5		
R. C. Fretz Feed Store	33a	4283	Waterloo	found					24.0	2.6		
Armour's Big Crop Multiphos	54a			guaranteed					45.0	0.5		
Ray Dunk	54a	4069	Cambria	found					45.0	2.6		
Armour's 1–8–4 Fertilizer	317a			guaranteed				1.0	8.0			4.0
J. F. Colher	317a	3735	Mitchell	found	1.06			1.2	8.5			3.9
Alfas Batman	317a	3825	Marengo	found	0.96			1.1	8.4	0.6		4.2

Where 60.0 per cent or more of the total nitrogen guaranteed was found to be water soluble, the active and inactive insoluble organic nitrogen was not determined.

Percentages appearing in bold type in the "Inactive water insoluble organic" column denote inferior nitrogen.

[12] Sample to manufacturer. Refund $2.65.

[13] Purchased from Wm. J. Whetsel.

[14] Not tagged. Labels furnished. Sample to manufacturer. Refund $2.50.

[15] Sample received in the spring.

[16] Not tagged. Labels furnished. Purchased from J. J. Lawler.

[17] Purchased from J. J. Lawler.

[18] Sample to manufacturer. Refund $8.00.

TABLE XI.—Report of Inspection of Fertilizer Collected in 1929—Continued

Labels and names of persons from whom samples were secured	Official No.	Inspection No. H. H.	Samples taken at		Nitrogen (N)				Phosphoric acid (P₂O₅)			Potash (K₂O), soluble in water, per cent
					Water soluble as nitrates, ammonia salts and organic, per cent	Active water insoluble organic, per cent	Inactive water insoluble organic, per cent	Total per cent	Soluble and reverted (available), per cent	Insoluble, per cent	Total per cent	
Armour's 2-8-2 Fertilizer	318a			guaranteed				2 0	8 0			2 0
Michael Ripperger	318a	3302	Brookville	found	1 83			2 0	9 4			1 9
Paoli Hardware Co.	318a	3597	Paoli	found	1.83			2 0	8 2	0 5		2 1
Armour's Big Crop 2-12-2 Fertilizer	319a			guaranteed				2 0	12 0			2 0
Michael Ripperger	319a	3300	Brookville	found	1 80			2 0	12 6	0 8		1 8
Logansport Elevator Co.[19]	319a	3400	Logansport	found	1 89			2 0	12 9	0 7		2 3
Sheridan Fence Co.	319a	3863	Sheridan	found	1 69			2 0	13 5	0 4		2 6
Whiteman Bros. & Co.	319a	3875	Ockley	found	1 80			2 0	12 2	0 8		2 3
J. A. Bertch & Son[19]	319a	3905	Liberty	found	1 82			2 0	13.1	1 0		2 3
Bobs Hardware Co.	319a	3937	Elberfeld	found	1 82			2 1	12.2	0 9		2 2
Floyd Gladish[19]	319a	3952	Petersburg	found	1 82			2 1	11.7	0 8		2 4
Albert Sink[20]	319a	4068	Cambria	found	1 86			2 0	12.4	0 5		2 0
John W. Reed	319a	4106	Mulberry	found	1.80			2 0	12 1	0 5		2 0
Clay Syler	319a	4119	N. Manchester	found	1.78			2 0	12 9	0 5		2 2
Peru Grain & Coal Co.	319a	4140	Peru	found	1 83			2 0	12.4	0 4		2 2
Logansport Elevator Co.	319a	4151	Logansport	found	1 78			2 0	13 2	1 1		2 2
J. A. Bertch & Son	319a	4336	Liberty	found	1 65			2 1	12 1	1 6		2 0
Floyd Gladish	319a	4542	Petersburg	found	2 07			2 2	12.0	1.4		2 0
Armour's Big Crop 2-12-6 Fertilizer	320a			guaranteed				2.0	12 0			6 0
Farmers Feed & Coal Co.	320a	3490	Bloomington	found	1 95			2 0	12 0	0 9		5 8
Johnson Chenoweth	320a	3630	Shoals	found	1 86			2 0	12 4	0 7		6 0
Frank Morgan	320a	3667	Plainville	found	1 76			1 9	13 7	0 3		5 6
J. A. Bertch & Son	320a	3906	Liberty	found	1 72			2 0	12 1	1 3		6 4
Clay Syler	320a	4128	N. Manchester	found	1 86			2 0	12 9	0 9		6 0
Logansport Elevator Co.	320a	4153	Logansport	found	1 90			2 1	12 0	1 2		6 0
W. C. Smock & Co.	320a	4161	Burrows	found	2 07			2 2	12 3	0 9		6 3
Hobbs Grain Co.	320a	4169	Hobbs	found	1 90			2 1	13 2	0 9		6 0
South Side Lumber Co.	320a	4210	Kokomo	found	2.13			2.3	12 0	0 8		6 4
W. S. Wisehart	320a	4342	Millville	found	1.75			2 1	12 8	0 5		6 0
Worthington Grain Co.	320a	4461	Worthington	found	1.79			2.1	11.9	0 9		6.1
Floyd Gladish	320a	4541	Petersburg	found	1.71			2 1	12.4	0.8		6 4
Paoli Hardware Co.	320a	4558	Paoli	found	2.03			2 2	11.9	1 0		6 1
J. F. Collier	320a	4568	Mitchell	found	1.92			2.2	12.4	0 4		6 0
L. Thorn & Sons	320a	4576	New Albany	found	1.95			2 2	12 2	0 8		6 5
J. Spriesterback	320a	4592	Charlestown	found	1.90			2 1	13 0	0 2		6 4
Scottsburg Milling Co.	320a	4599	Scottsburg	found	2 03			2.2	12.3	0.5		6 4

Armour's Big Crop Hoosier Tomato Grower 2–12–6	321a			guaranteed				2.0	12.0			6.0
W. Trow Co.	321a	3290	Madison	found	1.84			2.0	12.7	0.8		5.7
Clay Syler	321a	3326	N. Manchester	found	1.99			2.1	12 7	0 7		6.1
Logansport Elevator Co.	321a	3389	Logansport	found	2.23			2.3	11.9	0 8		6 2
South Side Lumber Co.	321a	3437	Kokomo	found	1.89			2.0	12 0	0 9		6 4
R. C. Fretz Feed Store	321a	3476	Waterloo	found	1.92			2.0	12.6	1 5		6.0
Farmers Equity Exchange	321a	3638	Van Buren	found	1.95			2.1	12.5	0 7		6.2
E. D. Wyatt	321a	3718	Alexandria	found	2.09			2 2	12.1	0.5		6 4
Knecht Milling Co.	321a	3721	Hartford City	found	1.96			2.0	12.7	0.4		6 2
Scottsburg Milling Co.	321a	3988	Scottsburg	found	1.99			2.1	12.6	0.7		6.3
Peru Canning Co.	321a	4013	Peru	found	1.89			2.0	13.3	0.6		6.5
Armour's Big Crop Burley Tobacco Grower 3–8–6	322a			guaranteed				3 0	8.0			6.0
W. Trow Co.	322a	3291	Madison	found	2 36			3 0	11.1	0 5		5.7
Buddenburg Bros.	322a	3298	Patriot	found	2 26			3.1	8.5	0.8		5.6
Brown & Turley	322a	3820	Corydon	found	2.28			3.0	8.4	0.4		6.0
Armour's Big Crop Plant Bed Special	323a			guaranteed				4.0	8 0			3 0
W. Trow Co.	323a	3264	Madison	found	3.01			4.1	8.4	0.5		3.0
Armour's Big Crop 2–16–8 Fertilizer	324a			guaranteed				2.0	16 0			8 0
South Side Lumber Co.	324a	3434	Kokomo	found	1.99			2.1	16.0	1.0		7.7
Frank Morgan	324a	3666	Plainville	found	1.61			2.0	17.3	0.5		8.6
E. D. Wyatt	324a	3719	Alexandria	found	1.86			2.0	16.8	0.5		8.3
Bobs Hardware Co.	324a	3934	Elberfeld	found	1.93			2.1	16.0	0.8		8.4
Vincennes Packing Corp.	324a	3947	Vincennes	found	1 99			2.1	16 9	0 8		8 5
Floyd Gladish	324a	3953	Petersburg	found	1 79			2 0	15 6	0.8		8 3
Scottsburg Milling Co.	324a	3986	Scottsburg	found	1 96			2 1	17 2	0 7		8 4
Logansport Elevator Co.	324a	4147	Logansport	found	1 88			2.1	16 5	1 2		8 0
Worthington Grain Co.	324a	4468	Worthington	found	1 99			2 2	16 3	1 3		8 4
Frank Morgan	324a	4532	Plainville	found	2 06			2.2	16 0	1 6		8.5
Floyd Gladish	324a	4543	Petersburg	found	2 03			2.2	15 9	1 5		8 2
Armour's Big Crop 4–16–4 Fertilizer	325a			guaranteed				4.0	16 0			4 0
J. F. Colher	325a	3739	Mitchell	found	4.04			4.1	15.6	0.9		4.7
Farmers Canning Co.	325a	3779	Dunreith	found	4.13			4.3	15.8	0.5		4.2
Moe Hirsch	325a	4087	Attica	found	3.92			4.1	16.7	0.5		4.2
South Side Lumber Co.	325a	4209	Kokomo	found	3.80			4.0	16.0	1.0		4.3
R. C. Fretz Feed Store	325a	4278	Waterloo	found	4.03			4.2	16.5	1.3		4.0
Bristol Mills, Inc.	325a	4433	Bristol	found	3.72			4.0	16.3	0.4		4.2
J. Gienger & Co.	325a	4578	Jeffersonville	found	4.25			4.5	16.9	0.9		4.2
Scottsburg Milling Co.	325a	4596	Scottsburg	found	4 24			4 4	17 0	0 4		4 6
W. M. Mullenix	325a	4601	Spencer	found	3.82			4.1	16.5	1.0		4.0
Armour's Big Crop 3–18–3 Fertilizer	326a			guaranteed				3 0	18 0			3 0
Maxwell-Marshall Hardware Co.	326a	3959	Martinsville	found	2 89			3 1	18 2	0 2		3 6
Scottsburg Milling Co.	326a	3989	Scottsburg	found	2.99			3.2	20.3	0.4		3.5
Farmers Produce Co.	326a	4569	Salem	found	3.01			3.2	18.4	0.5		2.9
Armour's Big Crop High Grade Burley Tobacco Grower 4–12–8	327a			guaranteed				4 0	12 0			8 0
Buddenburg Bros.	327a	3297	Patriot	found	3.23			4.0	11.9	0.8		7.8
Geo. Niemeyer & Son	327a	4514	Dillsboro	found	3 16			4 0	12 8	0 8		8 0
Armour's Big Crop 3–18–9 Fertilizer	361a			guaranteed				3 0	18 0			9 0
Logansport Elevator Co.[21]	361a	3392	Logansport	found	3.26			3.4	19.2	1.3		9.5

Where 60.0 per cent or more of the total nitrogen guaranteed was found to be water soluble, the active and inactive insoluble organic nitrogen was not determined.

Percentages appearing in bold type in the "Inactive water insoluble organic" column denote inferior nitrogen.

[19] Sample received in the spring.

[20] Purchased from Ray Dunk.

[21] Sample received in the spring.

TABLE XI.—Report of Inspection of Fertilizer Collected in 1929—Continued

Labels and names of persons from whom samples were secured	Official No.	Inspection No. H. H.	Samples taken at		Nitrogen (N)				Phosphoric acid (P_2O_5)			Potash (K_2O), soluble in water, per cent
					Water soluble as nitrates, ammonia salts and organic, per cent	Active water insoluble organic, per cent	Inactive water insoluble organic, per cent	Total per cent	Soluble and reverted (available), per cent	Insoluble, per cent	Total per cent	
Regal Packing Co.	361a	3445	Windfall	found	2.99			3.1	19.0	1.4		9.6
Milford Grain Co.	361a	3549	Milford	found	2.73			3.0	18.6	1.2		9.5
Farmers Equity Exchange	361a	3637	Van Buren	found	2.96			3.1	19.2	1.0		9.4
E. D. Wyatt	361a	3717	Alexandria	found	3.43			3.6	17.9	1.3		9.9
Peru Canning Co.	361a	4012	Peru	found	2.79			3.0	19.5	1.2		9.2
J. C. Phillips	361a	4053	Star City	found	2.68			2.9	19.0	0.7		8.5
John W. Reed	361a	4107	Mulberry	found	2.99			3.2	18.0	0.9		9.4
Peru Grain & Coal Co.	361a	4137	Peru	found	2.86			3.1	18.9	0.8		9.6
Logansport Elevator Co.	361a	4149	Logansport	found	2.81			3.0	18.0	1.4		9.5
Bluffton Milling Co.	361a	4182	Bluffton	found	2.93			3.1	18.6	0.8		9.3
E. N. Cook[22]	361a	4270	Plymouth	found	2.92			3.1	18.1	1.9		8.5
Kraus & Apfelbaum	361a	4273	Argos	found	2.85			3.1	18.0	1.4		9.2
Bristol Mills, Inc.	361a	4438	Bristol	found	2.73			3.0	17.7	1.5		9.0
Armour's Big Crop 3-15-12 Fertilizer	362a			guaranteed				3.0	15.0			12.0
J. H. O'Loughlen	362a	3507	North Judson	found	2.93			3.0	16.3	0.8		11.3
Armour's Big Crop 0-21-9	363a			guaranteed					21.0			9.0
Regal Packing Co.	363a	3443	Windfall	found					21.4	0.9		10.3
Armour's Big Crop 0-8-32 Fertilizer	364a			guaranteed					8.0			32.0
R. C. Fretz Feed Store	364a	3531	Waterloo	found					8.6	0.1		31.1
Peru Canning Co.	364a	4011	Peru	found					8.1	0.5		33.0
Armour's Big Crop Bone Meal 2.5-24	366a			guaranteed				2.5			24.0	
Scottsburg Milling Co.	366a	4595	Scottsburg	found	0.70	1.50	0.20	2.4			30.2	
Armour's Big Crop Raw Bone Meal 3.7-22	368a			guaranteed				3.7			22.0	
South Side Lumber Co.	368a	3432	Kokomo	found	0.49	2.54	0.97	4.0			22.7	
Armour's Big Crop 3-9-18 Fertilizer	543a			guaranteed				3.0	9.0			18.0
R. C. Fretz Feed Store	543a	3479	Waterloo	found	2.90			3.0	9.3	0.8		17.6
Armour's Big Crop 4-16-8 Fertilizer	544a			guaranteed				4.0	16.0			8.0
Bristol Mills, Inc.	544a	4440	Bristol	found	4.32			4.6	16.2	1.9		8.1
Armour's Big Crop 2-16-2 Fertilizer	546a			guaranteed				2.0	16.0			2.0
John W. Reed	546a	4105	Mulberry	found	1.83			2.0	16.0	0.4		2.3
Clay Syler	546a	4120	N. Manchester	found	1.83			2.0	16.4	1.4		2.4
Jacob Schulanacher	546a	4196	Hartford City	found	1.85			2.1	17.3	0.8		2.6
Armour's Big Crop 4-24-12 Fertilizer	547a			guaranteed				4.0	24.0			12.0
Erby Patty[23]	547a	4073	Cambria	found	3.83			4.1	24.8	1.7		12.4
N. P. K. 9-27-9 Fertilizer	582a			guaranteed				9.0	27.0			9.0
J. C. Phillips[24]	582a	4058	Star City	found	7.85			8.1	25.8	0.4		8.1

Armour's Big Crop 2-8-16 Fertilizer	621a			guaranteed				2.0	8.0			16.0
North Judson Milling Co.	621a	3516	North Judson	found	1.89			2.0	9.3	0.7		16.5
Milford Grain & Milling Co.	621a	3565	Milford	found	4.56			4.7	14.0	0.7		10.6
Buhner Fertilizer Company, The, Seymour, Ind.												
16% Superphosphate	6696			guaranteed					16.0			
Clyde L. Culbertson	6696	4536	Vevay	found					16.6	1.3		
Buhner's 12-12	8888			guaranteed					12.0			12.0
Crabbs Reynolds Taylor Co.[25]	8888	3848	Reynolds	found					**11.0**	2.0		**11.6**
Buhner's 20% Superphosphate	9195			guaranteed					20.0			
W. E. Brown[26]	9195	4245	West Point	found					20.3	2.6		
Buhner's Sterilized Tobacco Stem Mixture 2-8-4	9824			guaranteed				1.6	8.0	1.0		4.0
J. Teggart & Co.[27]	9824	3803	New Albany	found	1.05			1.6	9.5	1.5		**3.3**
Buhner's 0-14-6	9928			guaranteed					14.0			6.0
Crabbs Reynolds Taylor Co.	9928	3377	Lafayette	found					15.7			6.0
C. Eckerty & Son[28]	9928	3808	Eckerty	found					14.4	2.1		4.9
N. Reising & Sons	9928	3922	Poseyville	found					14.8	1.8		5.8
Buhner's 0-20-20	9930			guaranteed					20.0			20.0
Crabbs Reynolds Taylor Co.[29]	9930	3378	Lafayette	found					22.0	0.4		18.8
Buhner's 0-10-10	9931			guaranteed					10.0			10.0
Crabbs Reynolds Taylor Co.	9931	3379	Lafayette	found					10.0	1.7		9.6
Anderson Mercantile Exchange[30]	9931	3701	Anderson	found					9.6	2.0		9.4
Isaac Louderback[31]	9931	3849	Reynolds	found					10.2	2.4		9.9
Clyde L. Culbertson[32]	9931	4527	Vevay	found					9.6	2.7		**9.0**
Buhner's 2-14-4	9932			guaranteed				1.6	14.0			4.0
Campbellsburg Milling Co.	9932	3736	Campbellsburg	found	1.51			1.9	13.5	1.0		3.7
Buhner's 2-12-6	287a			guaranteed				2.0	12.0			6.0
Crabbs Reynolds Taylor Co.[33]	287a	3380	Lafayette	found	1.85			2.2	12.5	0.2		4.6
L. N. Jobe & Son	287a	3607	English	found	1.57			2.1	12.6	2.3		5.6
Crabbs Reynolds Taylor Co.[34]	287a	3696	West Point	found	1.51			2.0	12.7	1.5		5.3
Charlestown Milling Co.[35]	287a	3793	Charlestown	found	1.51			2.0	**11.3**	1.9		5.0
C. Eckerty & Son	287a	3804	Eckerty	found	1.64			2.2	**11.7**	1.9		6.4
Crabbs Reynolds Taylor Co.	287a	3861	Reynolds	found	1.67			2.2	12.1	0.9		5.8
Rainey McCoy[36]	287a	4038	South Raub	found	1.64			2.2	12.0	1.5		4.9
Wolcott Grain Co.	287a	4059	Wolcott	found	1.61			2.2	12.0	1.2		6.4
Warren Replogle	287a	4216	Marion	found	1.54			2.2	**11.2**	2.1		6.0
Crabbs Reynolds Taylor Co.	287a	4241	West Point	found	1.61			2.2	12.0	1.7		6.0
L. N. Jobe & Son	287a	4557	English	found	1.89			2.5	11.8	1.5		5.8
Charlestown Milling Co.[37]	287a	4593	Charlestown	found	1.61			2.2	13.0	1.0		4.2
Buhner's 2-14-4	288a			guaranteed				2.0	14.0			4.0
C. O. Patton	288a	3683	Milroy	found	1.75			2.0	14.0	1.6		4.0
Charlestown Milling Co.	288a	3801	Charlestown	found	1.58			2.0	14.5	1.1		3.7

Where 60.0 per cent or more of the total nitrogen guaranteed was found to be water soluble, the active and inactive insoluble organic nitrogen was not determined.

Percentages appearing in bold type in the "Inactive water insoluble organic" column denote inferior nitrogen.

[22] Not tagged. Labels furnished. Purchased from B. E. Williams.

[23] Purchased from Ray Dunk.

[24] Refund $5.60. Used on own farm.

[25] Refund $8.00.

[26] Purchased from Crabbs Reynolds Taylor Co., West Point, Ind.

[27] Old goods.

[28] Refund $4.40.

[29] Refund $9.60.

[30] Refund $4.32.

[31] Purchased from Crabbs Reynolds Taylor Co., Reynolds, Ind.

[32] Refund $7.89.

[33] Refund $7.00.

[34] Sample received in the spring.

[35] Refund $8.00.

[36] Refund $7.70. Purchased from Crabbs Reynolds Taylor Co., Lafayette, Ind.

[37] Refund $12.60.

TABLE XI.—Report of Inspection of Fertilizer Collected in 1929—Continued

Labels and names of persons from whom samples were secured	Official No.	Inspection No. H. H.	Samples taken at		Nitrogen (N) Water soluble as nitrates, ammonia salts and organic, per cent	Nitrogen (N) Active water insoluble organic, per cent	Nitrogen (N) Inactive water insoluble organic, per cent	Nitrogen (N) Total per cent	Phosphoric acid (P₂O₅) Soluble and reverted (available), per cent	Phosphoric acid (P₂O₅) Insoluble, per cent	Phosphoric acid (P₂O₅) Total per cent	Potash (K₂O), soluble in water, per cent
Henryville Supply Co.	288a	3802	Henryville	found	1.58			2.0	14.0	1.1		3.6
Geo. Struewing	288a	3899	Batesville	found	1.61			2.0	15.0	1.3		3.9
Reutepohler Hardware Co.	288a	4632	Huntingburg	found	1.75			2.1	14.5	2.4		4.2
Buhner's 2-8-4	289a			guaranteed				2.0	8.0			4.0
Anderson Mercantile Exchange	289a	3703	Anderson	found	1.51			2.0	8.6	0.9		3.8
O. L. Cauble	289a	3740	Salem	found	1.31			1.9	8.2	1.1		3.9
Henryville Supply Co.	289a	3791	Henryville	found	1.54			2.0	8.3	0.7		4.0
George Struewing	289a	3886	Batesville	found	1.33			2.0	8.0	1.5		3.7
Campbellsburg Milling Co.	289a	3924	Campbellsburg	found	1.57			2.1	8.7	0.8		3.9
Buhner's 3-10-4	290a			guaranteed				3.0	10.0			4.0
Crabbs Reynolds Taylor Co.[38]	290a	3381	Lafayette	found	1.67			2.3	12.8			3.7
J. Teggart & Co.	290a	4587	New Albany	found	2.38			3.2	10.3	2.1		4.3
Buhner's 4-10-6	291a			guaranteed				4.0	10.0			6.0
N. Reising & Sons	291a	3918	Poseyville	found	3.29			4.2	10.0	2.3		6.0
Buhner's 4-24-12	292a			guaranteed				4.0	24.0			12.0
Crabbs Reynolds Taylor Co.[39]	292a	3382	Lafayette	found	3.11			3.3	25.3			12.2
Earl D. Johnson[40]	292a	3970	Wolcott	found	3.61			4.1	19.1	1.1		13.2
Beck Grain & Feed Co.	292a	4456	Shelbyville	found	3.51			3.9	25.7	1.4		10.7
Buhner's Special Crop Grower 2-8-6	293a			guaranteed				2.0	8.0	4.0		6.0
Reutepohler Hardware Co.[41]	293a	3609	Huntingburg	found	1.05	0.48	0.47	2.0	7.9	3.6		6.2
Anderson Mercantile Exchange	293a	3702	Anderson	found	0.91	0.73	0.56	2.2	7.6	2.6		5.7
O. L. Cauble[42]	293a	3738	Salem	found	0.70	0.45	0.45	1.5	8.7	3.1		5.9
Johnson & Chenoweth	293a	4031	Shoals	found	1.03	0.54	0.43	2.0	7.6	2.2		6.5
Lawrence Kerkhoff[43]	293a	4042	South Raub	found	1.17			2.0	8.6	2.9		6.0
F. F. Buhner	293a	4589	Seymour	found	1.19			2.0	9.3	2.1		6.6
Scottsburg Elevator Co.	293a	4598	Scottsburg	found	1.22			2.2	8.7	2.4		7.2
Reutepohler Hardware Co.	293a	4630	Huntingburg	found	1.12	0.70	0.28	2.1	9.2	0.8		8.0
Buhner's 4-24-4	388a			guaranteed				4.0	24.0			4.0
Beck Grain & Feed Co.[44]	388a	4459	Shelbyville	found	3.55			4.0	20.8	2.6		4.2
Buhner's 2-8-2	390a			guaranteed				2.0	8.0			2.0
Reutepohler Hardware Co.	388a	3594	Huntingburg	found	1.37			2.0	7.6	1.9		2.1
Clyde L. Culbertson	390a	4524	Vevay	found	1.61			2.2	7.2	1.6		2.8
Buhner's Crop Grower	391a			guaranteed				2.0	8.0	4.0		2.0
Anderson Mercantile Exchange	391a	3700	Anderson	found	1.12			2.1	7.9	4.0		2.1
Beck Grain & Feed Co.	391a	4496	Shelbyville	found	1.96			2.3	8.2	2.6		2.3
Cauble Grain Co.	391a	4573	Salem	found	1.54			2.3	8.7	2.1		2.7
Reutepohler Hardware Co.	391a	4629	Huntingburg	found	1.30			2.0	7.3	2.4		4.8

Buhner's 2-12-2	392a			guaranteed				2.0	12.0			2.0
Anderson Mercantile Exchange	392a	3704	Anderson	found	1.61			2.0	11.8	1.4		2.5
Lawrence Kerkhoff[45]	392a	4039	South Raub	found	1.58			2.1	12.3	1.7		2.4
F. J. Kerkhoff[45]	392a	4043	South Raub	found	1.64			2.2	12.1	1.3		2.0
Crabbs Reynolds Taylor Co.	392a	4240	West Point	found	1.59			2.2	12.0	1.7		2.0
Lemon Milling Co.	392a	4575	Bedford	found	1.71			2.2	13.2	1.0		1.9
F. F. Buhner Co.	392a	4590	Seymour	found	1.68			2.2	12.5	1.2		1.9
Buhner's 1-8-3	490a			guaranteed				1.0	8.0			3.0
L. N. Jobe & Son	490a	3590	English	found	0.49	0.27	0.34	1.1	7.8	1.9		3.1
Clendenin and Company, Richmond, Ind.												
2-12-2	8970			guaranteed				1.6	12.0			2.0
Clendenin & Co.	8970	3771	Richmond	found	1.54			2.0	12.2	1.0		1.8
Fourteen-Four	9259			guaranteed					14.0			4.0
Clendenin & Co.	9259	3768	Richmond	found					15.2	0.2		3.3
Two-Twelve-Six	9276			guaranteed				1.6	12.0			6.0
Clendenin & Co.	9276	3772	Richmond	found	1.10			1.8	11.9	0.5		6.0
Flowers, Garden and Lawn Fertilizer	644a			guaranteed				4.0	7.0			8.0
Clendenin & Co.[46]	644a	3769	Richmond	found	3.54			4.1	8.3	0.1		6.9
Two-Twelve-Two	662a			guaranteed				2.0	12.0			2.0
Clendenin & Co.	662a	4325	Richmond	found	1.27			1.9	11.1	2.2		2.1
Clendenin Fertilizer Company, Richmond, Ind.												
Bone Phosphate and Potash	4753			guaranteed				1.6	12.0	7.0		2.0
Clendenin & Co.	4753	3767	Richmond	found	0.84	0.46	0.15	1.4	12.5	7.3		2.0
Clendenin Fertilizer Co.	4753	4337	Richmond	found	0.91			1.4	12.3	7.7		2.0
Acid Phosphate	6609			guaranteed					16.0			
Clendenin & Co.	6609	3773	Richmond	found					18.9	0.4		
Clendenin Fertilizer Co.	6609	4339	Richmond	found					20.1	0.7		
Consolidated Chemical Company, Louisville, Ky.												
Camel Brand Ten-Ten Fertilizer	8822			guaranteed					10.0			10.0
Thomas B. Carroll	8822	3844	R. 1, Otterbein	found					10.1			9.6
James Russell[47]	8822	3980	Rensselaer	found					10.7	0.5		10.0
Camel Brand Eight-Twenty-Four Fertilizer	9901			guaranteed					8.0			24.0
Charles Rodenberger[48]	9901	3843	R. 1, Otterbein	found					8.1	0.1		24.2
Camel Brand Twenty-Twenty Fertilizer	9902			guaranteed					20.0			20.0
J. W. Ogle[49]	9902	3967	Pleasant Ridge	found					20.9	1.1		19.7
Camel Brand 40% Superphosphate	47a			guaranteed					40.0			
Thomas B. Carroll[50]	47a	3845	R. 1, Otterbein	found					38.8	1.6		

Where 60.0 per cent or more of the total nitrogen guaranteed was found to be water soluble, the active and inactive insoluble organic nitrogen was not determined. Percentages appearing in bold type in the "Inactive water insoluble organic" column denote inferior nitrogen.

[38] Refund $18.62.

[39] Refund $2.56.

[40] Refund $13.80. Purchased from Wolcott Grain Co.

[41] Sample received in the spring.

[42] Refund $15.96.

[43] Purchased from Crabbs Reynolds Taylor Co., Lafayette, Ind.

[44] Refund $31.20.

[45] Purchased from Crabbs Reynolds Taylor Co., Lafayette, Ind.

[46] Refund $2.75. Remixed.

[47] Purchased from H. E. White.

[48] Purchased from Thomas B. Carroll.

[49] Purchased from H. E. White.

[50] Refund $1.35.

TABLE XI.—Report of Inspection of Fertilizer Collected in 1929—Continued

Labels and names of persons from whom samples were secured	Official No.	Inspection No. H. H.	Samples taken at		Nitrogen (N)				Phosphoric acid (P_2O_5)			Potash (K_2O), soluble in water, per cent
					Water soluble as nitrates, ammonia salts and organic, per cent	Active water insoluble organic, per cent	Inactive water insoluble organic, per cent	Total per cent	Soluble and reverted (available), per cent	Insoluble, per cent	Total per cent	
Camel Brand One-Eight-Three	169a			guaranteed				1 0	8 0			3 0
Tower & Merryman	169a	3809	Marengo	found	0 85			1 2	8 6			3 0
Camel Brand Indiana Special	171a			guaranteed				2 0	12 0			2 0
Campbell Bros.	171a	3372	Filmore	found	1 70			2 3	12 8			2 2
T. A. Pass	171a	3955	Sellersburg	found	1.45			1 8	14 0	0 1		2 3
P. W. Keiser	171a	4228	Crown Point	found	1 65			2 2	12 6	0 5		2 2
Camel Brand Tomato Special 2–12–6	172a			guaranteed				2 0	12 0			6 0
Campbell Bros.	172a	3374	Filmore	found	1 75			2 3	13.0	0 2		5 6
Camel Brand A.1 Grain Grower	173a			guaranteed				2 0	12.0			6 0
Campbell Bros.	173a	3375	Filmore	found	1 66			2 5	12 7			5 1
Victoria Mill & Elevator Co.	173a	3610	Jasper	found	1 47			2 0	11 6	0 8		6 0
J. W. Ogle[51]	173a	3968	Pleasant Ridge	found	1 61			2 1	11 8	0 5		6.4
T. A. Pass	173a	3982	Sellersburg	found	1 68			2 1	13 8	0 4		6.0
P. W. Keiser	173a	4221	Crown Point	found	1.87			2 4	12 8	0 6		6.5
Camel Brand Economy Grain	595a			guaranteed				1 0	11 0			3.0
Campbell Bros.	595a	3376	Filmore	found	1.10			1 3	12 2	0 2		5 0
Crabbs Reynolds Taylor Company, Crawfordsville, Ind.												
Nitrate of Soda	7496			guaranteed				15 0				
Crabbs Reynolds Taylor Co.	7496	3258	Lafayette	found				15.3				
Darling and Company, Chicago, Ill.												
Darling's 16% Superphosphate	6372			guaranteed					16 0			
Aiman & Jones	6372	3362	Leroy	found					17 7	0 1		
Paoli Hardware Co.[52]	6372	3733	Paoli	found					16 5			
Paoli Hardware Co.[53]	6372	4028	Paoli	found					16.7	2.1		
Farmers Co-operative Co.	6372	4372	Centerville	found					16.6	1.2		
Darling's 20% Superphosphate	9017			guaranteed					20 0			
Aiman & Jones	9017	3295	Leroy	found					20 3	0.9		
Reed Elevator Co.	9017	4191	Decatur	found					20.1	1 6		
Lowell Grain & Hay Co.	9017	4231	Lowell	found					20 0	1 0		
Farmers Mill & Elevator Co.	9017	4422	Columbia City	found					21.0	0 8		
Darling's Ten-Ten	9462			guaranteed					10 0	0.5		10 0
Farmers Co-operative Elevator[54]	9462	3835	Ade, P. O. Brook	found					10 7	0.1		9 6

Reed Elevator Co.[54]	9462	4190	Decatur	found					11.1	1 0		9 3
Frank E. Bard	9462	4418	Corunna	found					10 0	0 6		10.0
Darling's Truck Grower	374a			guaranteed				3 0	12 0	0 5		12 0
Ed. Newland	374a	3903	Alquina	found	2 64			3 0	13 2	1.1		11 3
Darling's Farmers Favorite	375a			guaranteed				3 0	8 0	0 5		6 0
Adam Leohr	375a	3659	Clay City	found	2 80			3 0	11 7			6 2
Darling's Big Harvest	376a			guaranteed				2 0	12 0	0 5		2 0
Wolcottville Elevator Co.[54]	376a	3536	Wolcottville	found	1 51			1 9	12 1	0 9		2 7
Adam Leohr[54]	376a	3657	Clay City	found	1 89			2 2	12 0	0 7		2 2
Paoli Hardware Co.	376a	4032	Paoli	found	1 85			2 1	12 6	1 2		2 4
Hartman & Dotterer	376a	4186	Bluffton	found	1 88			2 2	12 5	0 8		2 5
Ed. Corbin[55]	376a	4232	Lowell	found	1 86			2 2	12 1	0 9		2 4
Farmers Co-operative Co.	376a	4378	Centerville	found	1 85			2 2	12 8	0 8		2 3
Darling's Special Crop 2-8-16	377a			guaranteed				2 0	8.0	0 5		16 0
Al. Konovsky	377a	3327	DeMotte	found	2 04			2 2	8 3	0 4		8 0
Walter G. Brown[56]	377a	3912	R. 9, Connersville	found	1.82			2.1	7.8	0.9		16.3
Darling's Sure Winner 1-10-4	378a			guaranteed				1 0	10 0	0 5		4 0
Paoli Hardware Co.	378a	3599	Paoli	found	0.71			1.0	10.0	1.5		4.4
Darling's Crop King	379a			guaranteed				2 0	12 5	0 5		6 0
Wolcottville Elevator Co.	379a	3540	Wolcottville	found	1.69			2.0	12.9	0.5		6 4
Farmers Co-operative Elevator	379a	3840	Ade, P. O. Brook	found	1 78			2 0	12 9	0 4		6 3
Herbert Cully[56]	379a	3910	Alquina	found	1.82			2.0	12.4	1.0		6.0
John H. Snap	379a	3951	Oaktown	found	1.65			2.0	12.8	0.8		6.3
Paoli Hardware Co.[57]	379a	4030	Paoli	found	1.22			2.0	12.5	1.0		4.9
Hartman & Dotterer	379a	4183	Bluffton	found	2.02			2.3	12.1	0.6		6.7
Jesse Kuhn	379a	4233	Lowell	found	2 17			2 3	12 1	1 0		6 5
Farmers Elevator	379a	4253	Monticello	found	1.85			2.2	12.8	0.5		6.0
Farmers Co-operative Co.	379a	4332	Centerville	found	1.85			2.2	13.3	0.3		6.4
George Steckley	379a	4401	Kendallville	found	1 90			2 2	12 0	1 1		6 3
Farmers Mill & Elevator Co.	379a	4402	Columbia City	found	1 85			2 2	12 6	0 8		6 0
Darling's General Crop	381a			guaranteed				2 0	16 0	0 5		6 0
Farmers Co-operative Elevator Co.	381a	4257	Monticello	found	1.81			2 0	16 0	0 8		6 0
Darling's Tomato 2-12-6	382a			guaranteed				2 0	12 0	0 5		6 0
Adam Leohr	382a	3658	Clay City	found	1 68			2 0	12 1	0 7		6 3
Darling's Grain Grower 1-8 3	385a			guaranteed				1 0	8 0	0 5		3 0
Paoli Hardware Co.	385a	4029	Paoli	found	0.92			1.2	9.6	1.0		4.5
Diamond Fertilizer Company, Sandusky, Ohio												
Diamond 16% Superphosphate	8053			guaranteed					16 0	1 0		
Geneva Equity Exchange	8053	4193	Geneva	found					16 0	1 0		
Diamond Potash Mixture	8465			guaranteed					10 0	1 0		10 0
Aloin Hulka[58]	8465	3511	North Judson	found					10.0	0.9		10.2
Diamond 20% Superphosphate	8515			guaranteed					20 0	1 0		
Kellerman & Son	8515	3512	North Judson	found					20 2	1 7		
Geneva Equity Exchange	8515	4184	Geneva	found					20.6	0.5		

Where 60.0 per cent or more of the total nitrogen guaranteed was found to be water soluble, the active and inactive insoluble organic nitrogen was not determined.
Percentages appearing in bold type in the "Inactive water insoluble organic" column denote inferior nitrogen.

[51] Purchased from H. E. White.

[52] Sample to manufacturer. Sample received in the spring.

[53] Sample to manufacturer.

[54] Sample to manufacturer.

[55] Purchased from Lowell Grain and Hay Co.

[56] Purchased from Ed. Newland.

[57] Sample to manufacturer. Refund $5.50.

[58] Purchased from Kellerman & Son.

TABLE XI.—Report of Inspection of Fertilizer Collected in 1929—Continued

Labels and names of persons from whom samples were secured	Official No.	Inspection No. H. H.	Samples taken at		Nitrogen (N)				Phosphoric acid (P_2O_5)			Potash (K_2O), soluble in water, per cent
					Water soluble as nitrates, ammonia salts and organic, per cent	Active water insoluble organic, per cent	Inactive water insoluble organic, per cent	Total per cent	Soluble and reverted (available), per cent	Insoluble, per cent	Total per cent	
Diamond Two-Twelve-Six	495a			guaranteed				2.0	12.0			6.0
J. C. Phillips	495a	3993	Star City	found	1.75			2.0	13.0	0.2		6.6
Diamond Two-Eight-Sixteen	497a			guaranteed				2.0	8.0			16.0
Kellerman & Son	497a	3514	North Judson	found	1.59			1.8	9.0	0.5		16.2
Diamond 0-20-20	500a			guaranteed					20.0			20.0
J. C. Phillips	500a	4000	Star City	found					19.1	1.3		21.0
Diamond Twelve-Twelve	502a			guaranteed					12.0			12.0
Kellerman & Son	502a	3517	North Judson	found					12.0	0.8		12.6
Muriate of Potash	622a			guaranteed								50.0
Kellerman & Son	622a	3518	North Judson	found								50.5
D. & K. Fertilizer Company, Indianapolis, Ind.												
D. & K. 10-10	5362			guaranteed					10.0			10.0
Lon Dellan[59]	5362	3755	Indianapolis	found					7.5	0.8		15.0
Crane Elevator Co.	5362	3830	Pence	found					10.0	1.0		10.0
Central Indiana Canneries	5362	3879	Knightstown	found					10.7	1.2		9.7
D. & K. 20% Superphosphate	7466			guaranteed					20.0			
Jones Bros.	7466	4086	West Lebanon	found					20.0	1.2		
New Ross Grain & Lumber Co.	7466	4094	Indianapolis	found					21.3	1.9		
Ben Shers[60]	7466	4638	R. 12, Lebanon	found					47.4	1.1		
D. & K. 0-20-20	9314			guaranteed					20.0			20.0
M. S. Strawn[61]	9314	3762	Indianapolis	found					22.5	0.4		18.3
D. & K. 0-20-10	9318			guaranteed					20.0			10.0
D. & K. Fertiizer Co.[62]	9318	3757	Indianapolis	found					19.1	1.8		10.1
Virgil Hadley	9318	4096	Indianapolis	found					20.0	1.3		10.8
D. & K. 0-12-6	9558			guaranteed					12.0			6.0
Chas. & Geo. Stanley	9558	3754	Indianapolis	found					9.7	1.1		10.1
Central Indiana Canneries	9558	3873	Knightstown	found					12.0	1.3		6.6
D. & K. 2-20-10	602a			guaranteed				2.0	20.0			10.0
John Hurley[63]	602a	3832	R.D., Williamsport	found	1.82			2.1	18.9	1.9		10.4
Gus Wolf[64]	602a	3897	Bentonville	found	1.79			2.0	18.6	1.6		10.1
Reeves Grain & Fuel Co.	602a	4100	Indianapolis	found	1.78			2.0	20.0	1.5		11.3
D. & K. 3-18-9	603a			guaranteed				3.0	18.0			9.0
D. & K. Fertilizer Co.	603a	4103	Indianapolis	found	2.62			3.0	17.8	1.9		8.7
D. & K. 4-24-4	604a			guaranteed				4.0	24.0			4.0
Johnson & Burton, Inc.[65]	604a	3578	Orleans	found	3.02			3.3	20.7	1.7		4.5

H. W. Lindsay[67]	604a	3759	Indianapolis	found	2.88			3.2	20.5	1.7		4.4
Marion Smiley[66]	604a	3872	Milton	found	2.83			3.2	20.1	1.4		4.8
Chesterfield Grain Co.	604a	4092	R. 1, Williamsport	found	4.03			4.3	24.0	0.7		4.0
D. & K. 4-24-12	604a	4099	Indianapolis	found	3.77			4.2	23.5	1.7		4.0
D. & K. Fertilizer Co.[69]	605a			guaranteed				4.0	24.0			12.0
Davis Grain Co.	605a	3756	Indianapolis	found	3.36			3.6	22.3	1.6		12.1
Crane Elevator Co.	605a	4090	Judyville	found	3.75			4.2	24.2	2.4		11.4
Linwood Grain Co.[70]	605a	4098	Indianapolis	found	3.58			4.0	24.0	2.4		11.7
D. & K. 4-16-4	605a	4164	Linwood	found	3.34			3.7	24.2	2.1		10.2
David Findler	606a			guaranteed				4.0	16.0			4.0
Warren County Farm Bureau[68]	606a	3760	Indianapolis	found	4.03			4.2	14.7	0.8		5.0
D. & K. 2-16-8	606a	4089	R. 1, Williamsport	found	3.66			4.0	16.4	1.7		3.7
C. F. Cripe	607a			guaranteed				2.0	16.0			8.0
Kemp Bros. Packing Co.	607a	5753	Indianapolis	found	2.06			2.2	15.9	0.8		8.3
Walter Brown	607a	3827	Frankfort	found	1.99			2.2	16.6	0.4		8.4
Kemp Bros. Packing Co.	607a	3945	Royalton on Highway	found	1.92			2.0	14.8	1.0		9.2
Ed. Davis[65]	607a	3998	Kempton	found	1.65			2.0	15.6	1.8		9.8
D. & K. 2-12-6	607a	4088	R. 1, Williamsport	found	1.85			2.1	16.1	2.7		7.8
Johnson & Burton, Inc.	608a			guaranteed				2.0	12.0			6.0
D. & K. Fertilizer Co.	608a	3574	Orleans	found	1.75			2.0	12.0	0.9		6.8
Crane Elevator Co.	608a	3761	Indianapolis	found	1.65			2.0	11.5	1.1		6.2
Central Indiana Canneries	608a	3829	Pence	found	1.58			2.0	12.0	1.5		6.4
Hugh Fagan	608a	3867	Knightstown	found	1.68			2.0	11.6	1.5		6.6
Reeves Grain & Fuel Co.	608a	3868	Cambridge City	found	1.71			2.1	11.5	1.4		6.3
Jim Scott[71]	608a	3874	Charlottesville	found	1.69			2.0	11.6	1.4		6.2
Linwood Grain Co.	608a	3896	Falmouth	found	1.61			2.0	12.0			6.9
Lee Butler[72]	608a	3996	Linwood	found	1.65			2.0	12.3	1.8		6.1
Virgil Hadley	608a	4093	R. 1, Williamsport	found	2.09			2.4	12.2	1.9		5.0
Davis Grain Co.[73]	608a	4095	Indianapolis	found	1.69			2.0	12.1	1.7		6.0
Armor Moore[74]	608a	4102	Indianapolis	found	1.76			2.2	12.0	2.3		5.0
D. & K. 2-12-2	608a	4320	R. 10, Anderson	found	1.72			2.0	11.3	0.8		8.7
Johnson & Burton, Inc.	609a			guaranteed				2.0	12.0			2.0
R. A. Lawler	609a	3575	Orleans	found	1.98			2.4	12.3	1.8		2.9
Linwood Grain Co.[75]	609a	3752	Indianapolis	found	1.68			2.1	12.3			2.7
Jones Bros.	609a	4001	Linwood	found	1.89			2.2	19.5	1.5		4.5
D. B. Bowen	609a	4091	West Lebanon	found	1.68			2.1	12.3	0.9		2.4
Hall Seed & Feed Co.	609a	4097	Indianapolis	found	1.80			2.2	12.5	2.0		3.7
F. T. Bryant[76]	609a	4180	Noblesville	found	2.00			2.2	12.0	0.5		3.2
Linwood Grain Co.	609a	4181	R. 5, Noblesville	found	1.61			2.1	12.0	1.6		2.9
	609a	4307	Linwood	found	1.69			2.1	12.1	2.5		2.0

Where 60.0 per cent or more of the total nitrogen guaranteed was found to be water soluble, the active and inactive insoluble organic nitrogen was not determined.

Percentages appearing in bold type in the "Inactive water insoluble organic" column denote inferior nitrogen.

[59] Purchased from Chas. Stanley.

[60] Purchased from L. A. Wyatt. Sold as 47% available phosphoric acid.

[61] Refund $2.55.

[62] Refund $2.16.

[63] Purchased from Crane Elevator Co.

[64] Refund $11.34. Purchased from R. A. Davis.

[65] Refund $32.64.

[66] Refund $4.29.

[67] Refund $6.00. Purchased from Milton Grain & Fuel Co.

[68] Purchased from Davis Grain Co.

[69] Refund $33.84.

[70] Refund $1.50.

[71] Purchased from R. A. Davis.

[72] Refund $16.00. Purchased from Davis Grain Co.

[73] Refund $3.00.

[74] Purchased from Pritcherd & Rafert.

[75] Sample received in the spring.

[76] Purchased from Hall Seed & Feed Co.

TABLE XI.—Report of Inspection of Fertilizer Collected in 1929—Continued

Labels and names of persons from whom samples were secured	Official No.	Inspection No. H. H.	Samples taken at		Nitrogen (N)				Phosphoric acid (P_2O_5)			Potash (K_2O), soluble in water, per cent
					Water soluble as nitrates, ammonia salts and organic, per cent	Active water insoluble organic, per cent	Inactive water insoluble organic, per cent	Total per cent	Soluble and reverted (available), per cent	Insoluble, per cent	Total per cent	
Farmers Grain Co.	609a	4341	Germantown	found	1.85	.....	.....	2.2	11.8	2.0	.....	3.8
F. A. Thomas	609a	4405	Markle	found	1.82	.....	.....	2.3	11.8	1.5	.....	2.5
D. & K. 1-10-5	610a	.....	.....	guaranteed	.....	.....	.....	1.0	10.0	.....	.....	5.0
D. & K. Fertilizer Co.	610a	3758	Indianapolis	found	0.92	.....	.....	1.2	9.6	1.1	.....	5.4
Charles Pearson[77]	610a	3869	R.3,Charlottesville	found	0.65	.....	.....	1.1	9.4	1.3	.....	5.0
D. & K. 4-8-6	611a	.....	.....	guaranteed	.....	.....	.....	4.0	8.0	.....	.....	6.0
Jim M. Scott[78]	611a	3902	Falmouth	found	4.92	.....	.....	5.2	10.8	1.2	.....	6.2
D. & K. 0-21 9	673a	.....	.....	guaranteed	.....	.....	.....	.....	21.0	.....	.....	9.0
Ellis & Co.[79]	673a	4101	Indianapolis	found	.....	.....	.....	.....	21.1	2.1	.....	7.8
D. & K. 0-14-6	674a	.....	.....	guaranteed	.....	.....	.....	.....	14.0	.....	.....	6.0
Farmers Grain Co.	674a	4355	Germantown	found	.....	.....	.....	.....	14.1	1.6	.....	6.0
Calcium Nitrate—Nitrate of Lime	.....	.....	.....	guaranteed	.....	.....	.....	15.0	.....	.....	.....	.....
Ben C. Shers[80]	.....	4620	R. 5, Lebanon	found	.....	.....	.....	15.1	.....	.....	.....	.....
Empire Guano Company,												
New Albany, Ind.												
General Crop Grower	474a	.....	.....	guaranteed	.....	.....	.....	2.0	12.0	1.0	.....	2.0
Gilbert Combs	474a	4466	Bloomfield	found	1.71	.....	.....	2.2	12.9	1.4	.....	2.4
Evansville Fertilizer Company,												
Evansville, Ind.												
Corn and Wheat Special (1-12-3)	9285	.....	.....	guaranteed	.....	.....	.....	0.8	12.3	0.3	.....	3.0
Evansville Fertilizer Co.	9285	4548	Evansville	found	0.84	.....	.....	1.5	12.5	2.3	.....	3.4
16% Superphosphate	9286	.....	.....	guaranteed	.....	.....	.....	.....	16.0	0.2	.....	.....
Evansville Fertilizer Co.	9286	4616	Evansville	found	.....	.....	.....	.....	17.7	2.3	.....	.....
Superb Ten & Ten	9304	.....	.....	guaranteed	.....	.....	.....	.....	10.0	0.2	.....	10.0
Evansville Fertilizer Co.[81]	9304	4549	Evansville	found	.....	.....	.....	.....	15.2	1.6	.....	6.6
Superb Soil Mixture 2-16-8	642a	.....	.....	guaranteed	.....	.....	.....	2.0	16.0	0.2	.....	8.0
Evansville Fertilizer Co.	642a	4546	Evansville	found	1.33	.....	.....	2.1	17.7	2.4	.....	7.4
Superb Farmers Choice 2-12-2	714a	.....	.....	guaranteed	.....	.....	.....	2.0	12.0	.....	.....	2.0
Evansville Fertilizer Co.[82]	714a	4544	Evansville	found	1.89	.....	.....	2.1	13.2	2.0	.....	2.2
Superb High Line 2-12-6	715a	.....	.....	guaranteed	.....	.....	.....	2.0	12.0	.....	.....	6.0
Evansville Fertilizer Co.[82]	715a	4545	Evansville	found	1.29	.....	.....	2.2	11.1	3.5	.....	6.2

Farmers Fertilizer Company, Columbus, Ohio.												
Hart's Formula "K" (0-6-6-10)	8473			guaranteed					6.0	6.0		10.0
Frank Hudlow[83]	8473	4027	LaFontaine	found					7.0	6.2		10.7
Farmers Grain Dealers Association of Indiana, Indianapolis, Ind.												
Farmers Elevator 0-10-10	9834			guaranteed					10.0	1.0		10.0
Farmers Elevator Co.	9834	3323	South Whitley	found					10.0	0.6		10.8
Farmers Grain & Lumber Co.	9834	4266	South Wanatah	found					10.3	1.0		10.4
Farmers Elevator 0-12-12	9835			guaranteed					12.0	1.0		12.0
Farmers Co-operative Elevator Co.	9835	3503	Knox	found					12.2	0.8		13.0
Russell Shilling[84]	9835	4262	Knox	found					13.2	1.0		12.2
Farmers Elevator 0-20-20	9836			guaranteed					20.0	1.0		20.0
F. J. Kingman[85]	9836	4047	Francesville	found					20.4	0.6		20.0
Hiram Shilling[84]	9836	4274	R. 4, Knox	found					20.9	0.8		20.0
16% Superphosphate	9837			guaranteed					16.0	1.0		
Huntington Equity Exchange	9837	3447	Huntington	found					15.9	0.6		
20% Superphosphate	9838			guaranteed					20.0	1.0		
Farmers Elevator	9838	4076	Otterbein	found					20.2	2.3		
Farmers Co-operative Elevator Co.	9838	4261	Knox	found					21.1	1.4		
Huntington Equity Exchange	9838	4412	Huntington	found					20.3	1.3		
Farmers Elevator 0-8-32	179a			guaranteed					8.0	0.5		32.0
F. J. Kingman[85]	179a	4045	Francesville	found					8.8	0.9		32.0
Farmers Elevator 2-12-6	429a			guaranteed				2.0	12.0	0.5		6.0
Farmers Elevator Co.	429a	3318	South Whitley	found	1.58			2.0	12.7	0.9		6.2
Wanatah Mercantile Co.	429a	3346	Wanatah	found	1.44			2.0	12.5	0.6		5.9
Mexico Elevator Co.	429a	3409	Mexico	found	1.51			2.0	11.9	0.6		6.7
Huntington Equity Exchange	429a	3446	Huntington	found	1.65			2.0	13.8			6.6
Farmers Co-operative Elevator Co.	429a	3722	Yorktown	found	1.48			2.1	12.8	1.0		6.4
Farmers Elevator	429a	4078	Otterbein	found	1.79			2.1	12.0	1.2		7.1
Rochester Co-operative Elevator Co.	429a	4116	Rochester	found	1.47			2.0	12.3	1.1		8.5
Farmers Elevator 2-12-2	430a			guaranteed				2.0	12.0	0.5		2.0
Farmers Elevator Co.	430a	3315	South Whitley	found	1.71			2.1	14.2	0.8		2.3
Wanatah Mercantile Co.	430a	3347	Wanatah	found	1.61			2.0	12.4	1.0		2.4
Huntington Equity Exchange	430a	3449	Huntington	found	1.61			2.1	11.8	0.8		2.2
Farmers Elevator 4-24-12	431a			guaranteed				4.0	24.0	0.5		12.0
Mexico Elevator Co.	431a	3410	Mexico	found	4.03			4.6	20.1	0.8		14.3
Farmers Co-operative Elevator Co.[86]	431a	4115	Rochester	found	3.40			3.9	22.1	0.5		11.4
Farmers Elevator 4-24-4	432a			guaranteed				4.0	24.0	0.5		4.0
Mexico Elevator Co.	432a	3414	Mexico	found	2.83			3.6	23.6	1.5		5.2

Where 60.0 per cent or more of the total nitrogen guaranteed was found to be water soluble, the active and inactive insoluble organic nitrogen was not determined.

Percentages appearing in bold type in the "Inactive water insoluble organic" column denote inferior nitrogen.

[77] Purchased from Reeves Grain & Fuel Co.

[78] Purchased from R. A. Davis.

[79] Refund $3.00.

[80] Not registered.

[81] Refund $6.80.

[82] Not tagged. Labels furnished.

[83] Purchased from Mr. Hart.

[84] Purchased from Farmers Cooperative Elevator.

[85] Purchased from Cooperative Elevator Co.

[86] Refund $6.76.

TABLE XI.—Report of Inspection of Fertilizer Collected in 1929—Continued

Labels and names of persons from whom samples were secured	Official No.	Inspection No. H. H.	Samples taken at		Nitrogen (N)				Phosphoric acid (P_2O_5)			
					Water soluble as nitrates, ammonia salts and organic, per cent	Active water insoluble organic, per cent	Inactive water insoluble organic, per cent	Total per cent	Soluble and reverted (available), per cent	Insoluble, per cent	Total per cent	Potash (K_2O), soluble in water, per cent
Federal Chemical Company, Inc., Louisville, Ky.												
Daybreak 16% Superphosphate	5016			guaranteed					16.0			
Lloyd Starnes	5016	3494	Ellettsville	found					15.6	1.2		
N. R. Johnson[87]	5016	4248	Stockwell	found					16.2	0.8		
Ground Phosphate Rock	5023			guaranteed							28.0	
Joe McKnight[88]	5023	3990	R. D., Westfield	found							32.9	
W. A. Hart Formula H	7241			guaranteed					10.0	10.0		
James E. Turley	7241	3598	English	found					14.9	8.5		
Ten-Ten Potash Fertilizer	7904			guaranteed					10.0			10.0
William Cyr	7904	3622	Barce, P. O. Fowler	found					10.3	0.5		10.2
Berne Grain & Hay Co.	7904	3648	Berne	found					12.3			9.8
Oscar Strole	7904	4243	Stockwell	found					12.8	0.9		10.0
Boonville Implement Co.	7904	4613	Boonville	found					10.6	4.6		9.1
Official Formula 8–24	8577			guaranteed					8.0			24.0
R. C. Fretz Feed Store[89]	8577	3474	Waterloo	found					8.6	0.5		22.6
20% Superphosphate	8608			guaranteed					20.0			
Carl Hardy	8608	4148	Logansport	found					20.7	0.8		
Seth Hershberger	8608	4436	Shipshewana	found					20.5	0.7		
Official Formula 0–12–6	8773			guaranteed					12.0			6.0
Carl Hardy[90]	8773	4139	Logansport	found					12.3	0.5		4.9
Carl Hardy	8773	4146	Logansport	found					12.2	0.7		6.1
Geneva Milling Co.	8773	4188	Geneva	found					12.9	1.3		5.1
W. M. Arndt[91]	8773	4246	Stockwell	found					13.2	0.8		5.2
Twelve-Twelve Potash Formula	9773			guaranteed					12.0			12.0
William Cyr	9773	3627	Barce, P. O. Fowler	found					12.3	0.5		12.5
Ben G. Worley[92]	9773	3997	R. D., Brook	found					11.4	7.3		12.8
Farmers Co-operative Co.	9773	4173	Cicero	found					12.4	0.8		12.0
Twenty-Twenty Potash Formula	9780			guaranteed					20.0			20.0
R. C. Fretz Feed Store[93]	9780	3478	Waterloo	found					21.1	1.1		18.3
R. C. Yeoman[94]	9780	4002	R. 3, Rensselaer	found					19.7	3.7		19.3
Carl Hardy	9780	4145	Logansport	found					20.1	0.9		20.0
Raw Bone	9828			guaranteed				3.3			20.0	
George W. McElhinney	9828	4604	Bloomington	found	0.45	2.16	0.89	3.4			22.3	
Joe Dauby & Son	9828	4633	Tell City	found	0.42	2.51	0.57	3.5			19.2	

Official Formula 4-24-4	393a			guaranteed				4.0	24.0			4.0
Jacob Funk[91]	393a	4247	Stockwell	found	3.01			4.2	24.2	1.1		4.3
Charles Pence[95]	393a	4622	Forest	found	3.51			4.0	25.9	0.4		13.0
Official Formula 3-8-6	395a			guaranteed				3.0	8.0			6.0
McElhinney Feed Store	395a	3496	Bloomington	found	1.31			3.0	8.7	1.2		5.9
Double Formula 2-16-8	397a			guaranteed				2.0	16.0			8.0
Farmers Co-operative Co.	397a	4175	Cicero	found	1.35			2.1	16.1	0.8		8.3
Special Tobacco Grower 2-8-6	398a			guaranteed				2.0	8.0			6.0
E. C. Reese Canning Co.	398a	3888	Waldron	found	1.50			2.2	7.9	1.2		5.3
Vegetable Grower 2-8-6	399a			guaranteed				2.0	8.0			6.0
Lloyd Starnes	399a	3493	Ellettsville	found	1.97			2.6	8.4	1.1		5.8
James E. Turley	399a	3601	English	found	1.47			2.0	9.1	1.6		6.5
Boonville Implement Co.	399a	3926	Boonville	found	1.81			2.4	9.0	1.3		5.6
George W. McElhinney	399a	4603	Bloomington	found	1.47			2.1	8.3	1.3		6.4
Kentucky Standard Tobacco Grower 2-8-6	400a			guaranteed				2.0	8.0			6.0
Fred Buttler	400a	3941	Oakland City	found	1.58			2.0	9.9	0.7		6.6
Official Formula 2-14-4	401a			guaranteed				2.0	14.0			4.0
George W. Hinds	401a	4602	Bloomington	found	1.29			2.2	14.1	1.4		4.0
Wheat and Corn Special 1-10-1	404a			guaranteed				1.0	10.0			1.0
Lloyd Starnes	404a	3579	Ellettsville	found	0.65			1.0	10.1	1.0		1.3
Blood, Bone Phosphate and Potash	405a			guaranteed				1.0	10.0			1.0
James E. Turley[96]	405a	3596	English	found	0.63			1.0	10.1	1.5		1.1
C. F. Edmondson Hardware Co.[96]	405a	3671	Clayton	found	0.70			1.1	10.5	0.8		1.6
V. H. Bulleit & Sons[96]	405a	3823	Corydon	found	0.71			1.1	10.8	1.1		1.0
Wyatt Elevator Co.	405a	3949	Petersburg	found	0.91			1.3	10.7	1.0		1.9
C. F. Edmondson Hardware Co.	405a	4490	Clayton	found	1.05			1.3	11.0	0.8		1.4
James E. Turley	405a	4565	English	found	0.88			1.3	10.5	0.5		1.1
V. H. Bulleit & Sons	405a	4581	Corydon	found	0.71			1.3	10.4	0.9		1.1
Braden Formula	407a			guaranteed				1.0	11.0			3.0
Berne Grain & Hay Co.	407a	3647	Berne	found	0.91			1.3	11.0	0.6		3.5
V. H. Bulleit & Sons	407a	3811	Corydon	found	0.84			1.1	11.5	0.9		3.3
Joe Dauby & Sons[96]	407a	3929	Tell City	found	0.67			1.1	11.0	1.5		3.7
Joe Dauby & Sons	407a	4637	Tell City	found	0.88			1.3	11.2	1.0		3.0
Fox Formula 1-11-3	408a			guaranteed				1.0	11.0			3.0
Elsworth Cox	408a	4218	Russiaville	found	0.67			1.2	11.8	1.2		3.0
O. K. High Grade Mixture	410a			guaranteed				1.0	11.0			3.0
Kraus & Apfelbaum	410a	3465	Auburn	found	0.73			1.1	11.2	1.0		3.1
Standard Crop Grower 1-8-4	411a			guaranteed				1.0	8.0			4.0
Armen Apple	411a	3821	Taswell	found	0.55			1.0	8.7	1.0		4.1
E. C. Reese Canning Co.	411a	3881	Waldron	found	0.61			1.1	8.4	1.2		4.0
R. B. Eckhart	411a	4293	Buck Creek	found	0.71			1.2	8.0	0.5		4.2
Loam Land Fertilizer	412a			guaranteed				2.0	12.0			2.0
Loyd Hartsough	412a	3547	Millersburg	found	1.61			2.2	12.0	0.6		2.8
Lloyd Starnes	412a	3611	Ellettsville	found	0.95	0.53	**0.62**	2.1	13.3	0.4		2.3
William Cyr	412a	3625	Barce, P. O. Fowler	found	1.33			2.0	12.0	0.6		2.2
Berne Grain & Hay Co.	412a	3644	Berne	found	1.30			2.0	12.1	0.8		2.7

Where 60.0 per cent or more of the total nitrogen guaranteed was found to be water soluble, the active and inactive insoluble organic nitrogen was not determined.
Percentages appearing in bold type in the "Inactive water insoluble organic" column denote inferior nitrogen.

[87]Purchased from C. W. Funk.

[88]Purchased from Kendall-Goodrich Co.

[89]Refund $1.58.

[90]Refund $8.80.

[91]Purchased from C. W. Funk.

[92]Purchased from Chas. F. Battleday.

[93]Refund $12.75.

[94]Refund $12.72. Purchased from Chas. F. Battleday.

[95]4-24-4 sold under 4-24-12. 4-24-12 tag furnished.

[96]Sample received in the spring.

TABLE XI.—Report of Inspection of Fertilizer Collected in 1929—Continued

Labels and names of persons from whom samples were secured	Official No.	Inspection No. H. H.	Samples taken at		Nitrogen (N) Water soluble as nitrates, ammonia salts and organic, per cent	Nitrogen (N) Active water insoluble organic, per cent	Nitrogen (N) Inactive water insoluble organic, per cent	Nitrogen (N) Total per cent	Phosphoric acid (P_2O_5) Soluble and reverted (available), per cent	Phosphoric acid (P_2O_5) Insoluble, per cent	Phosphoric acid (P_2O_5) Total per cent	Potash (K_2O), soluble in water, per cent
C. F. Edmondson Hardware Co.[97]	412a	3676	Clayton	found	1.64	.....	.....	2.2	12.9	1.2	.....	2.5
E. C. Reese Canning Co.	412a	3883	Waldron	found	1.54	.....	.....	2.2	12.0	1.6	.....	2.7
Joe Dauby & Sons	412a	3930	Tell City	found	1.57	.....	.....	2.2	12.1	1.0	.....	2.5
Carl Hardy	412a	4152	Logansport	found	1.55	.....	.....	2.1	13.2	1.1	.....	2.4
Farmers Co-operative Co.	412a	4171	Cicero	found	1.30	.....	.....	2.2	12.3	0.8	.....	2.3
Foster-Kendall Co.	412a	4176	Carmel	found	1.27	.....	.....	2.1	12.4	0.4	.....	2.3
N. R. Johnson[98]	412a	4249	Stockwell	found	1.32	.....	.....	2.3	11.3	1.5	.....	3.0
R. C. Fretz Feed Store	412a	4280	Waterloo	found	1.71	.....	.....	2.2	12.5	1.2	.....	2.3
C. F. Edmondson Hardware Co.	412a	4491	Clayton	found	1.47	.....	.....	2.2	12.6	0.5	.....	2.5
Home Lumber & Coal Co.	412a	4503	Waldron	found	1.29	.....	.....	2.2	12.3	1.4	.....	2.0
Butler Feed Store	412a	4540	Oakland City	found	1.64	.....	.....	2.0	13.2	2.4	.....	2.0
John P. Foreman[99]	412a	4639	R. 1, Forest	found	1.54	.....	.....	2.0	11.4	1.1	.....	2.1
Carl Louck	412a	4640	R. 1, Michigantown	found	1.43	.....	.....	2.2	11.8	1.2	.....	2.0
Old Reliable 2-10-4	413a	.....	.....	guaranteed	.....	.....	.....	2.0	10.0	.....	.....	4.0
Lloyd Starnes	413a	3602	Ellettsville	found	1.47	.....	.....	2.1	10.0	1.4	.....	4.2
Official Formula 2-12-6	414a	.....	.....	guaranteed	.....	.....	.....	2.0	12.0	.....	.....	6.0
Loyd Hartsough	414a	3546	Millersburg	found	1.58	.....	.....	2.2	12.2	1.1	.....	6.5
McElhinney Feed Store	414a	3580	Bloomington	found	1.58	.....	.....	2.1	12.4	1.0	.....	7.0
Berne Grain & Hay Co.	414a	3653	Berne	found	1.71	.....	.....	2.2	12.2	1.3	.....	6.5
C. F. Edmondson Hardware Co.[100]	414a	3673	Clayton	found	1.61	.....	.....	2.1	13.3	1.3	.....	6.1
St. Paul Canning Co.	414a	3885	St. Paul	found	1.51	.....	.....	2.0	12.2	1.4	.....	5.8
Joe Giesting[101]	414a	3900	R. 2, Batesville	found	1.71	.....	.....	2.2	13.7	1.5	.....	6.3
Foster-Kendall Co.	414a	4170	Carmel	found	1.20	.....	.....	2.1	12.0	1.0	.....	6.0
Farmers Co-operative Co.	414a	4172	Cicero	found	1.48	.....	.....	2.2	12.0	1.0	.....	6.0
Geneva Milling Co.	414a	4189	Geneva	found	1.37	.....	.....	2.1	12.4	1.1	.....	6.1
Oscar Strole	414a	4242	Stockwell	found	1.45	.....	.....	2.2	12.1	1.0	.....	6.0
Lee Coal & Feed Co.	414a	4306	Alexandria	found	1.64	.....	.....	2.1	12.0	1.4	.....	6.6
Wm. Nading Grain Co.	414a	4453	Adams	found	1.50	.....	.....	2.2	12.6	1.5	.....	6.0
C. E. Johnson[102]	414a	4487	Coatesville	found	1.19	.....	.....	2.2	11.2	1.7	.....	6.7
C. F. Edmondson Hardware Co.	414a	4492	Clayton	found	1.96	.....	.....	2.2	12.3	0.6	.....	5.7
Butler Feed Store	414a	4537	Oakland City	found	2.17	.....	.....	2.5	12.3	1.8	.....	6.0
V. H. Bulleit & Sons	414a	4580	Corydon	found	1.50	.....	.....	2.2	12.7	0.6	.....	6.2
Boonville Implement Co.	414a	4615	Boonville	found	1.19	.....	.....	2.1	12.3	2.1	.....	6.2
Joe Dauby & Sons	414a	4623	Tell City	found	1.85	.....	.....	2.2	12.9	0.7	.....	5.8
Indiana Special 1-11-5	572a	.....	.....	guaranteed	.....	.....	.....	1.0	11.0	.....	.....	5.0
W. M. Snider	572a	3805	Marengo	found	0.89	.....	.....	1.2	11.0	1.0	.....	5.1
Wm. Nading Grain Co.[100]	572a	3880	Greensburg	found	0.75	.....	.....	1.1	12.2	1.0	.....	4.7

Farmers Co-operative Co.	572a	4174	Cicero	found	0.84			1.4	11.2	1.2		6.1
Oscar Strole	572a	4244	Stockwell	found	0.74			1.3	10.8	1.0		5.0
Wm. Nading Grain Co.	572a	4455	Adams	found	0 74			1.3	11.5	1.8		5 0
Progress Fertilizer	598a			guaranteed				1.0	10 0			2.0
Joe Dauby & Sons	598a	4621	Tell City	found	0.98			1.4	12.4			2.1
Eagle Corn and Wheat Grower 2-8-2	612a			guaranteed				2.0	8.0			2 0
McElhinney Feed Store	612a	3581	Bloomington	found	1.50			2 0	9 0	0 1		2 6
James E. Turley	612a	4564	English	found	1.64			2.2	8.6	0.4		2.3
Fox Chemical Company, Louisville, Ky.												
Fox 16% Superphosphate	3607			guaranteed					16 0			
Wm. Nading Grain Co.	3607	4510	Adams	found					17.7	0.6		
Globe Fertilizer Company, Louisville, Ky.												
Eagle Corn and Wheat Grower 2-8-2	2727			guaranteed				1.6	8.0			2.0
Ragsdale & Owen Feed Co.	2727	3577	Bedford	found	0.98			1 6	8.1	1.6		2 0
Groves Chemical Company, Columbus, Ohio.												
16% Superphosphate	8359			guaranteed					16 0	1 0		
Farmers Co-operative Co.	8359	4318	Yorktown	found					15 5	2 2		
Black Soil Special	8517			guaranteed					10 0			10 0
Thomas Summerville	8517	3664	Elnora	found					10.7	1.1		9.9
H. H. Crum	8517	3895	Milan	found					10.5	1.0		9.5
R. J. Palmore	8517	4065	R. A, West Point	found					10 0	0 9		10 0
W. T. Summerville	8517	4528	Elnora	found					10.4	2.1		9.2
20% Superphosphate	8832			guaranteed					20 0	1 0		
A. V. Maple[103]	8832	4485	Sharpsville	found					21 5	1 0		
Economy Brand	9337			guaranteed					14 0	1 0		4 0
Stoops Bros.	9337	3420	Wabash	found					13.6	1.7		4.4
Complete Bone Mixture	531a			guaranteed				2.0	8.0	8.0		2.0
Stoops Bros.	531a	3411	Wabash	found	1.58			1.9	8.3	8.7		3.7
Fayette Grain Co.	531a	4368	Connersville	found	1.12	0.59	0.29	2.0	8.9	9.4		2.0
Campbell Bros.	531a	4483	Greencastle	found	1.44			2.0	8.4	8.7		2.0
W. T. Summerville	531a	4522	Elnora	found	1.65			2.0	8.4	9.0		2.2
Clover Leaf Special	533a			guaranteed				2 0	12 0	1 0		2 0
Stoops Bros.	533a	3456	Wabash	found	1.69			2.0	11.5	1.8		1.8
Farmers Grain & Supply Co.	533a	4350	Modoc	found	1.63			2 0	12 2	1 7		2 0
Fayette Grain Co.	533a	4365	Connersville	found	1.61			2.0	12.0	1.9		2.0
Pieper & Smith	533a	4512	Dillsboro	found	1.68			2.1	11.6	2.1		2.0
Potato Special 2-8-10	535a			guaranteed				2.0	8 0	1.0		10 0
Stoops Bros.	535a	3416	Wabash	found	1.68			2.0	9.6	1.2		9.5
W. T. Summerville[104]	535a	4531	Elnora	found	1.72			2.0	11.1	1.0		7.2
Tomato Grower 2-12-6	536a			guaranteed				2.0	12.0	1.0		6.0
Thomas Summerville	536a	3668	Elnora	found	1.68			1.9	12.9	1.5		5.7

Where 60.0 per cent or more of the total nitrogen guaranteed was found to be water soluble, the active and inactive insoluble organic nitrogen was not determined.
Percentages appearing in bold type in the "Inactive water insoluble organic" column denote inferior nitrogen.

[97] Sample received in the spring.

[98] Purchased from C. W. Funk.

[99] Purchased from Canter & Son.

[100] Sample received in the spring.

[101] Not tagged. Labels furnished.

[102] Purchased from George Wallace.

[103] Purchased from Emmett Harper.

[104] Refund $5.60.

TABLE XI.—Report of Inspection of Fertilizer Collected in 1929—Continued

Labels and names of persons from whom samples were secured	Official No.	Inspection No. H. H.	Samples taken at		Nitrogen (N)				Phosphoric acid (P_2O_5)			
					Water soluble as nitrates, ammonia salts and organic, per cent	Active water insoluble organic, per cent	Inactive water insoluble organic, per cent	Total per cent	Soluble and reverted (available), per cent	Insoluble, per cent	Total per cent	Potash (K_2O), soluble in water, per cent
Osgood Grain Co.	536a	3890	Osgood	found	1.69			2.0	12.4	1.9		6.2
Lawrence Palmore[105]	536a	4064	Lafayette	found	1.69			2.0	12.0	1.4		5.6
Farmers Grain & Supply Co.	536a	4353	Modoc	found	1.70			2.0	12.6	1.1		6.0
Fayette Grain Co.	536a	4370	Connersville	found	1.63			2.0	12.6	1.9		6.5
J. Frank Martin[106]	536a	4447	Sandusky	found	1.54			2.0	12.3	1.6		5.6
James Harper[107]	536a	4482	Sharpsville	found	1.54			2.1	12.0	1.8		5.8
Lula Cheever[108]	536a	4508	Aberdeen	found	1.57			2.2	11.7	1.9		6.1
Concentrated Mixture	539a			guaranteed				4.0	24.0	1.0		4.0
Stoops Bros.	539a	3415	Wabash	found	3.72			4.0	23.6	1.8		4.3
Favorite	540a			guaranteed				1.0	13.0	1.0		5.0
Stoops Bros.[109]	540a	3413	Wabash	found	0.50			0.7	13.2	1.5		4.5
Pieper & Smith	540a	4505	Dillsboro	found	0.68			1.1	13.6	1.4		4.8
Nitrate of Soda	655a			guaranteed				14.7				
Stoops Bros.[110]	655a	3402	Wabash	found				15.0				
Muriate of Potash	666a			guaranteed								50.0
Stoops Bros.[110]	666a	3408	Wabash	found								50.9
Haines Chemical Company, A. K., Versailles, Ohio.												
N Brand Fertilizer	629a			guaranteed								2.0
Frank J. Murphy[111]	629a	3680	Glenwood	found								1.5
C. V. Graft[112]	629a	3714	Winchester	found								1.7
Newcastle Elevator Co.[113]	629a	3748	Newcastle	found								1.8
A. K. Haines Chemical Co.	629a	4033	Union City	found								3.4
Jacob Theiner	629a	4034	R. 4, Portland	found								5.7
Crabbs Reynolds Taylor Co.	629a	4035	Crawfordsville	found								6.0
Paul Theuner	629a	4036	R. 3, Recovery, O.	found								4.2
A. K. Haines Chemical Co.	629a	4037	Union City	found								4.3
Hilgemeier and Brothers, Inc., F., Indianapolis, Ind.												
Dried Blood Fertilizer	7137			guaranteed				8.0				
F. Hilgemeier & Bros., Inc.	7137	4015	Indianapolis	found	1.74	5.74	2.02	9.5				

Hopkins Fertilizer Company, New Albany, Ind.												
Hopkins "Old Time Pure Raw Bone"	3430			guaranteed				3.5			21.5	
Gilbert Combs	3430	4467	Bloomfield	found	0.15	2.27	1.58	4.0			21.7	
Arcadian Sulphate of Ammonia	8882			guaranteed				20.7				
A. B. Spurgin	8882	3259	Columbus	found				21.1				
Hopkins Old Time Ten-Ten	9492			guaranteed					10.0	1.0		10.0
Farmers Co-operative Co.	9492	3871	Sheridan	found					10.7	1.1		9.7
Gibson County Shipping Ass'n	9492	3935	Princeton	found					10.0	1.3		9.3
Old Time Mix with Bone Tankage	447a			guaranteed				2.0	6.0	6.0		2.0
A. M. Bohnert & Son	447a	3595	Jasper	found	1.01	0.83	0.26	2.1	8.3	5.0		3.1
North Madison Coal Co.	447a	4526	North Judson	found	0.84	0.86	0.50	2.2	8.6	4.6		3.3
William Link	447a	4609	Chrisney	found	0.91	0.98	0.31	2.2	7.9	5.4		3.0
Potato Grower (3-7-7)	449a			guaranteed				3.0	7.0	1.0		7.0
William Link	449a	4612	Chrisney	found	1.95			3.0	8.0	1.0		6.9
Burley Grower	450a			guaranteed				3.0	8.0	1.0		6.0
A. B. Spurgin	450a	3260	Columbus	found	2.26			3.1	9.1	0.5		6.0
William Link	450a	4608	Chrisney	found	2.81			3.3	8.8	2.0		6.0
Tomato Grower 2-12-6	451a			guaranteed				2.0	12.0	1.0		6.0
A. B. Spurgin	451a	3261	Columbus	found	1.72			2.0	12.9	0.2		5.9
Bussey Hardware Co.	451a	3826	Marysville	found	1.65			2.0	12.9	0.9		5.7
Farmers Co-operative Elevator Co.	451a	3862	Sheridan	found	1.57			2.1	13.2	0.8		6.2
William Link	451a	3916	Chrisney	found	1.65			2.0	13.1	0.8		6.1
Gibson County Shipping Ass'n	451a	3931	Princeton	found	1.71			2.2	12.4	0.8		5.8
Two-Twelve-Six	452a			guaranteed				2.0	12.0	1.0		6.0
A. B. Spurgin	452a	3288	Columbus	found	1.75			2.0	14.5	0.5		5.8
A. M. Bohnert & Son	452a	3608	Jasper	found	1.82			2.2	12.5	1.2		6.3
Milltown Concrete Co.	452a	3824	Milltown	found	1.52			2.0	13.8	0.8		5.8
Gibson County Shipping Ass'n	452a	3936	Princeton	found	1.65			2.0	12.9	1.1		5.5
Fred Cash & Vern Foust	452a	4203	Montpelier	found	1.68			2.1	12.7	0.6		6.2
Avilla Feed Mill	452a	4382	Avilla	found	1.65			2.1	12.0	2.2		6.0
North Madison Coal Co.	452a	4534	North Madison	found	2.38			2.5	12.0	2.0		6.6
W. Trow Co.	452a	4535	Madison	found	2.15			2.5	12.8	1.4		6.5
Gibson County Shipping Ass'n	452a	4539	Princeton	found	1.43			2.4	11.6	2.3		6.7
S. W. Perigo & Son	452a	4556	Chandler	found	1.71			2.2	12.8	0.6		6.2
C. W. Wedeking & Co.	452a	4635	Dale	found	1.68			2.2	13.6	0.6		6.1
General Crop Grower	454a			guaranteed				2.0	12.0	1.0		2.0
A. B. Spurgin	454a	3262	Columbus	found	1.50			2.0	12.6	0.9		2.1
Gilbert Combs	454a	3663	Bloomfield	found	1.33			2.0	13.5	1.0		1.9
Farmers Co-operative Co.	454a	3870	Sheridan	found	1.51			2.0	13.8	0.8		2.2
Avilla Feed Mill	454a	4398	Avilla	found	1.47			2.2	11.8	2.3		2.1
S. W. Perigo & Son	454a	4555	Chandler	found	1.57			2.2	12.5	1.5		2.6
Hopkins Fertilizer Co.	454a	4586	New Albany	found	1.50			2.2	12.6	1.3		2.0
Royal Grain Grower 2-10-3	455a			guaranteed				2.0	10.0	1.0		3.0
T. J. Shepard & Son	455a	3732	Orleans	found	1.05	0.56	0.39	2.0	11.5	0.9		3.0

Where 60.0 per cent or more of the total nitrogen guaranteed was found to be water soluble, the active and inactive insoluble organic nitrogen was not determined.

Percentages appearing in bold type in the "Inactive water insoluble organic" column denote inferior nitrogen.

[105] Purchased from R. J. Palmore.

[106] Not tagged. Labels furnished.

[107] Purchased from Emmett Harper.

[108] Purchased from M. V. Turner.

[109] Refund $3.60.

[110] Not tagged. Labels furnished.

[111] Refund $5.63.

[112] Refund $49.50.

[113] Refund $30.00.

TABLE XI.—Report of Inspection of Fertilizer Collected in 1929—Continued

Labels and names of persons from whom samples were secured	Official No.	Inspection No. H. H.	Samples taken at		Nitrogen (N): Water soluble as nitrates, ammonia salts and organic, per cent	Nitrogen (N): Active water insoluble organic, per cent	Nitrogen (N): Inactive water insoluble organic, per cent	Nitrogen (N): Total per cent	Phosphoric acid (P₂O₅): Soluble and reverted (available), per cent	Phosphoric acid (P₂O₅): Insoluble, per cent	Phosphoric acid (P₂O₅): Total per cent	Potash (K₂O), soluble in water, per cent
William Link	455a	4611	Chrisney	found	1.19	......	......	2.2	10.3	1.9	......	3.3
C. W. Wedeking & Co.	455a	4631	Dale	found	1.68	......	......	2.3	10.5	1.4	......	3.3
Red Banner Special 1-8-3	456a	......	......	guaranteed	......	......	......	1.0	8.0	1.0	......	3.0
A. M. Bohnert & Son	456a	3605	Jasper	found	0.00	0.40	0.60	1.0	7.9	0.7	......	3.2
Gilbert Combs	456a	3662	Bloomfield	found	0.95		......	1.1	9.5	0.4	......	3.1
Hayes & Dodds	456a	3731	Campbellsburg	found	0.25	0.34	0.41	1.0	8.2	0.3	......	3.0
Math Gayser[114]	456a	3915	Troy	found	0.07	0.39	0.54	1.0	8.2	0.6	......	3.0
Math Gayser	456a	4625	Troy	found	0.28	0.46	0.46	1.2	9.4	...	......	3.2
C. W. Wedeking & Co.	456a	4634	Dale	found	0.35	0.65	0.30	1.3	8.8	0.9	......	3.2
Indiana Special	457a	......	......	guaranteed	......	......	......	1.0	14.0	1.0	......	2.0
Hopkins Fertilizer Co.	457a	4579	New Albany	found	0.84	......	......	1.3	14.3	2.8	......	2.1
William Link	457a	4610	Chrisney	found	0.80	......	......	1.3	14.9	1.5	......	2.1
Wheat and Corn Grower 1-10-2	458a	......	......	guaranteed	......	......	......	1.0	10.0	1.0	......	2.0
Hayes & Dodds	458a	3741	Campbellsburg	found	0.28	0.42	0.40	1.1	10.0	1.7	......	1.8
Milltown Concrete Co.	458a	3814	Milltown	found	0.14	0.35	0.51	1.0	11.5	0.7	......	2.0
V. H. Bulleit & Sons	458a	3822	Corydon	found	0.18	0.42	0.40	1.1	10.7	0.8	......	2.5
S. W. Perigo & Son	458a	4554	Chandler	found	0.81	......	......	1.3	11.3	0.4	......	2.0
Hutchins Bros. Mineral Works, Hillsboro, Ind.												
H. B. 2-12-6	616a	......	......	guaranteed	......	......	......	2.0	12.0	......	......	6.0
Hutchins Bros.	616a	3428	Hillsboro	found	2.18	......	......	2.4	12.3	0.7	......	5.8
Indiana Consumers Gas and By-Products Company, Terre Haute, Ind.												
Sulphate of Ammonia	661a	......	......	guaranteed	......	......	......	20.5	......	......	......	......
Indiana Consumers Gas and By-Products Co.	661a	3974	Terre Haute	found	......	......	......	21.1	......	......	......	......
Indiana Farm Bureau Purchasing Department, Inc., Indianapolis, Ind.												
Farm Bureau 2-12-6	9074	......	......	guaranteed	......	......	......	1.6	12.0	......	......	6.0
Farmers Marketing Ass'n	9074	3286	Columbus	found	1.47	......	......	1.8	13.5	2.1	......	6.0
Decatur County Co-operative Co.	9074	3360	Greensburg	found	1.55	......	......	1.9	12.8	1.2	......	6.0
Farm Bureau 2-12-2	9075	......	......	guaranteed	......	......	......	1.6	12.0	......	......	2.0
Farmers Marketing Ass'n	9075	3283	Columbus	found	1.47	......	......	1.8	13.1	0.2	......	2.0
Decatur County Co-operative Co.	9075	3329	Greensburg	found	1.62	......	......	1.9	11.9	2.1	......	2.2
Farmers Feed & Coal Co.	9075	3487	Bloomington	found	1.55	......	......	1.8	14.3	0.4	......	2.2

Farm Bureau 0-8-24	9082			guaranteed					8.0			24.0
W. H. Wortley[115]	9082	3956	**R. 4, Rensselaer**	found					8.5	0.3		25.3
Farm Bureau 0-20-0	9084			guaranteed					20.0			
Farmers Marketing Ass'n	9084	3281	Columbus	found					20.6	0.4		
Lake County Farm Bureau	9084	3348	Crown Point	found					19.7	1.0		
Roy M. Sherrill	9084	3396	Logansport	found					20.6	0.8		
Farmers Feed & Coal Co.	9084	3492	Bloomington	found					20.7	0.8		
Farmers Retail Market	9084	3614	Marion	found					21.4			
Harle & Foster[116]	9084	3689	R. 3, Connersville	found					21.1			
Randolph County Farm Bureau[117]	9084	3713	Winchester	found					21.4	0.1		
Washington County Farm Bureau	9084	3729	Salem	found					21.4			
Wayne County Farm Bureau	9084	3766	Richmond	found					19.9	1.8		
R. J. Luse	9084	4024	Angola	found					20.4	0.5		
Lagrange County Farm Bureau	9084	4026	Lagrange	found					20.3	0.5		
Miami County Farm Bureau	9084	4133	Peru	found					20.5	0.4		
William E. Smyser	9084	4166	Jacksons	found					21.7	0.5		
Harry Mitchel	9084	4177	Tipton	found					20.8	0.1		
W. P. O'Hern	9084	4204	Montpelier	found					20.2	0.5		
Guy Johnson	9084	4214	Sycamore	found					21.5	0.6		
Clarence Quinn	9084	4263	Woodville	found					21.9	0.5		
Hamlet Co-operative Farm Shipping Office	9084	4272	Hamlet	found					20.9	0.9		
Randolph County Farm Bureau	9084	4312	Winchester	found					20.8	0.5		
Whitley County Farm Bureau	9084	4421	Columbia City	found					20.3	0.6		
Lagrange County Farm Bureau	9084	4442	Lagrange	found					20.0	0.7		
Hancock County Farm Bureau	9084	4493	Greenfield	found					21.8	0.1		
Shelby County Farm Bureau	9084	4509	Shelbyville	found					21.6	0.3		
Davies County Farm Bureau	9084	4529	Washington	found					22.0	0.5		
Harrison County Farm Bureau	9084	4583	Corydon	found					20.9	0.6		
Tri-County Farm Bureau	9084	4618	Evansville	found					21.4	0.9		
Farm Bureau 0-16-0	9085			guaranteed					16.0			
Farmers Marketing Ass'n	9085	3282	Columbus	found					16.0	0.5		
Decatur County Co-operative Co.[118]	9085	3296	Greensburg	found					16.4	1.3		
Farmers Feed & Coal Co.	9085	3489	Bloomington	found					16.5	0.5		
Decatur County Co-operative Co.	9085	3499	Greensburg	found					16.6	0.9		
Farm Bureau	9085	3812	Corydon	found					16.8	1.4		
William E. Smyser	9085	4163	Jacksons	found					17.6	0.6		
Decatur County Co-operative Co.	9085	4458	Greensburg	found					16.7	1.4		
Vigo County Farm Bureau Co-operative Ass'n	9085	4499	Terre Haute	found					17.8	0.3		
Farm Bureau 0-12-12	9086			guaranteed					12.0			12.0
Roy M. Sherrill	9086	3394	Logansport	found					12.2	1.4		11.5
R. J. Luse	9086	3470	Angola	found					12.3	1.9		11.6
Steuben Grain Co.	9086	3481	Pleasant Lake	found					12.0	1.7		11.5
Rochester Co-operative Elevator Co.	9086	3566	Rochester	found					12.6	1.2		12.0
Martin County Farm Bureau	9086	3588	Shoals	found					12.2	1.4		12.2
Farmers Retail Market	9086	3617	Marion	found					13.5	1.0		11.6
Joe Kosta	9086	3969	R. 1, Fair Oaks	found					12.4	1.3		11.9
W. H. Wortley[119]	9086	3976	R. 4, Rensselaer	found					13.2	1.2		12.6
Fred Spencer	9086	4251	Burnettsville	found					12.2	0.8		12.1

Where 60.0 per cent or more of the total nitrogen guaranteed was found to be water soluble, the active and inactive insoluble organic nitrogen was not determined.

Percentages appearing in bold type in the "Inactive water insoluble organic" column denote inferior nitrogen.

[114] Sample received in the spring.

[115] Purchased from Frank Nesius.

[116] Purchased from Harry Suhre.

[117] Sample received in the spring.

[118] Sample received in the spring.

[119] Purchased from Frank Nesius.

TABLE XI.—Report of Inspection of Fertilizer Collected in 1929—Continued

Labels and names of persons from whom samples were secured	Official No.	Inspection No. H. H.	Samples taken at		Nitrogen (N)				Phosphoric acid (P_2O_5)			Potash (K_2O), soluble in water, per cent
					Water soluble as nitrates, ammonia salts and organic, per cent	Active water insoluble organic, per cent	Inactive water insoluble organic, per cent	Total per cent	Soluble and reverted (available), per cent	Insoluble, per cent	Total per cent	
Elkhart County Farm Bureau	9086	4392	Goshen	found					12 1	1 9		12 0
Clay County Farm Bureau	9086	4484	Brazil	found					12 7	0 3		12 2
Knox County Farm Bureau	9086	4516	Vincennes	found					12 7	0 7		12 0
Sulphate of Ammonia	9112			guaranteed				20 0				
Roy M. Sherrill[120]	9112	3406	Logansport	found				21.1				
Steuben Grain Co.	9112	3484	Pleasant Lake	found				20 9				
Muriate of Potash	9135			guaranteed								50 0
Burnettsville Elevator Co.[121]	9135	3284	Burnettsville	found								51 0
Henry Mattheys	9135	3344	South Bend	found								50 2
Wanatah Mercantile Co.	9135	3368	Wanatah	found								49.9
Roy M. Sherrill[121]	9135	3393	Logansport	found								49 5
R. J. Luse	9135	3485	Angola	found								50 0
C. Johnson[122]	9135	3520	R. 1, Grovertown	found								50 0
Howard County Farm Bureau	9135	4205	Kokomo	found								51 2
Wayne County Farm Bureau	9135	4329	Richmond	found								49 7
Farm Bureau 3.6-20 Raw Bone	9181			guaranteed				3 6			20 0	
Perry County Farm Bureau	9181	4624	Tell City	found	1 33	2 32	0 25	3 9			19 1	
Farm Bureau 2-27 Steamed Bone	9182			guaranteed				1 6			27 0	
Washington County Farm Bureau	9182	4572	Salem	found	0 63	1.17	0 40	2 2			28 6	
Farm Bureau 0-14-4	9219			guaranteed					14 0			4 0
Farmers Marketing Ass'n	9219	3287	Columbus	found					13 8	0 9		4 0
Wayne County Farm Bureau	9219	3765	Richmond	found					14 6	1 0		4 6
Fred McFall	9219	3960	Dana	found					14.5	1.2		6 3
Nitrate of Soda	9220			guaranteed				12 8				
Roy M. Sherrill[121]	9220	3405	Logansport	found				15 5				
Farm Bureau 0-20-20	9640			guaranteed					20 0			20 0
Farm Bureau Feed Store	9640	3973	Sullivan	found					21.7	0.2		18 9
Farm Bureau Nitrate of Soda	9734			guaranteed				14 4				
Farmers Marketing Ass'n	9734	3280	Columbus	found				15 5				
Farm Bureau 44% Superphosphate	9942			guaranteed					44.0	1.0		
Farmers Marketing Ass'n[123]	9942	3279	Columbus	found					44.1			
Roy Provines	9942	3462	Auburn	found					44.8	0.4		
Otto Fransen[124]	9942	3501	R. D., Grovertown	found					43 9	0.9		
Elkhart County Farm Bureau	9942	3554	Goshen	found					45.0	0 2		
Farmers Retail Market[125]	9942	3618	Marion	found					42 6			
Wayne County Farm Bureau	9942	3770	Richmond	found					44 3	0 8		
Knox County Farm Bureau	9942	3948	Vincennes	found					44.0	0 5		

William E. Smyser	9942	4165	Jackson	found					**45.1**	0.5		
Howard County Farm Bureau	9942	4211	Kokomo	found					45.0	0.8		
Harry Shull[126]	9942	4298	Auburn	found					44.1	1.0		
Wayne County Farm Bureau	9942	4330	Richmond	found					44.7	0.4		
Farmers Marketing Ass'n	9942	4511	Columbus	found					44.6	0.6		
Farm Bureau 2–12–6	350a			guaranteed				2.0	12.0			6.0
Whitley County Co-operative Produce Ass'n	350a	3311	Columbia City	found	1.79			2.1	13.1	1.6		5.8
George A. Niedenthal	350a	3332	Brookville	found	1.75			2.1	12.4	2.3		5.7
Indiana Farm Bureau Purchasing Dept., Inc.	350a	3333	Crown Point	found	1.75			2.1	**11.6**	0.9		5.7
Porter County Farm Bureau	350a	3334	Valparaiso	found	1.75			2.0	12.4	1.8		6.0
Decatur County Co-operative Co.	350a	3358	Greensburg	found	1.75			2.1	13.2	0.6		6.3
Roy M. Sherrill	350a	3395	Logansport	found	1.75			2.1	11.8	2.4		6.0
Farm Bureau Feed Store	350a	3433	Kokomo	found	1.82			2.1	12.4	1.5		6.4
Steuben Grain Co.[127]	350a	3472	Pleasant Lake	found	1.82			2.0	11.9	2.4		6.2
Farmers Feed & Coal Co.	350a	3488	Bloomington	found	1.85			2.1	13.5	1.2		5.9
J. C. Phillips	350a	3522	Star City	found	1.82			2.0	13.2	2.0		5.7
R. J. Luse[127]	350a	3530	Angola	found	1.89			2.1	**11.6**	2.6		6.2
Lagrange County Farm Bureau[127]	350a	3541	Lagrange	found	1.79			2.1	13.7	1.0		6.1
Elkhart County Farm Bureau	350a	3548	Goshen	found	1.79			2.1	12.8	1.9		6.0
Kosciusko County Farm Bureau	350a	3559	Warsaw	found	1.75			2.1	13.4	1.0		6.0
Rochester Co-operative Elevator Co.	350a	3570	Rochester	found	1.72			2.0	12.6	2.0		6.0
Farm Bureau	350a	3582	Spencer	found	1.72			2.0	12.1	2.1		6.3
Martin County Farm Bureau	350a	3587	Shoals	found	1.89			2.1	12.4	1.8		6.2
Farmers Retail Market	350a	3616	Marion	found	1.75			2.1	11.9	2.2		6.1
Randolph County Farm Bureau	350a	3727	Winchester	found	1.69			2.0	12.5	2.2		6.1
Farmers Grain Co.	350a	3746	Carlos	found	1.68			2.0	12.4	1.8		5.8
Paul E. McDaniel[128]	350a	3864	Knightstown	found	1.99			2.2	12.0	2.1		5.8
Farm Bureau	350a	3914	Corydon	found	1.72			2.0	12.0	2.0		6.2
Spencer County Farm Bureau	350a	3920	Chrisney	found	1.85			2.2	12.7	2.0		6.5
Morgan County Farm Bureau[129]	350a	3963	Mooresville	found	1.12			2.0	13.5	1.3		7.3
Farm Bureau Feed Store	350a	3972	Sullivan	found	1.61			2.0	13.3	1.5		6.2
Lagrange County Farm Bureau	350a	4018	Lagrange	found	1.87			2.1	12.4	0.9		6.5
R. J. Luse	350a	4023	Angola	found	1.78			2.0	12.5	1.1		6.2
Don D. Nayer	350a	4110	Akron	found	1.81			2.1	12.0	1.7		5.9
Miami County Farm Bureau	350a	4141	Peru	found	1.72			2.0	12.8	0.9		7.1
W. C. Smock & Co.	350a	4155	Burrows	found	1.82			2.1	12.4	2.1		6.1
William E. Smyser	350a	4168	Jacksons	found	1.75			2.1	13.7	1.4		6.1
W. P. O'Hern	350a	4197	Montpelier	found	2.06			2.2	12.7	0.9		6.8
Wells County Farm Bureau	350a	4199	Bluffton	found	1.78			2.0	12.4	1.0		6.7
Howard County Farm Bureau	350a	4207	Kokomo	found	1.92			2.2	12.8	1.6		6.1
Harlan Grain Co.	350a	4236	Perkins Spur	found	1.90			2.2	12.5	1.8		6.1
Burnettsville Elevator Co.	350a	4250	Burnettsville	found	1.76			2.1	12.4	1.8		6.1
Clarence Quinn	350a	4264	Woodville	found	1.92			2.2	14.0	1.4		6.1
Steuben Grain Co.	350a	4299	Pleasant Lake	found	1.96			2.2	12.9	2.1		6.1
Whitley County Farm Bureau	350a	4415	Columbia City	found	1.78			2.0	13.3	0.8		6.1
Noble County Farm Bureau Co-operative Ass'n	350a	4416	Albion	found	1.75			2.1	12.4	1.4		6.0

Where 60.0 per cent or more of the total nitrogen guaranteed was found to be water soluble, the active and inactive insoluble organic nitrogen was not determined.

Percentages appearing in bold type in the "Inactive water insoluble organic" column denote inferior nitrogen.

[120] Not tagged. Labels furnished.

[121] Not tagged. Labels furnished.

[122] Purchased from Starke County Farm Bureau.

[123] Sample received in the spring.

[124] Purchased from Starke County Farm Bureau.

[125] Refund $0.52.

[126] Purchased from Roy Provines.

[127] Sample received in the spring.

[128] Purchased from Rush Service Bureau.

[129] Sample received in the spring.

TABLE XI.—Report of Inspection of Fertilizer Collected in 1929—Continued

Labels and names of persons from whom samples were secured	Official No.	Inspection No. H. H.	Samples taken at		Nitrogen (N)				Phosphoric acid (P₂O₅)			
					Water soluble as nitrates, ammonia salts and organic, per cent	Active water insoluble organic, per cent	Inactive water insoluble organic, per cent	Total per cent	Soluble and reverted (available), per cent	Insoluble, per cent	Total per cent	Potash (K₂O), soluble in water, per cent
Morgan County Farm Bureau	350a	4427	Martinsville	found	1.75	....	....	2.0	12.8	1.2	....	6.1
Morgan County Farm Bureau	350a	4429	Mooresville	found	1.89	....	....	2.2	11.6	1.8	....	5.8
Shelby County Farm Bureau	350a	4454	Shelbyville	found	1.85	....	....	2.2	11.3	1.6	....	6.0
Sullivan County Farm Bureau	350a	4464	Sullivan	found	1.90	....	....	2.1	12.2	1.6	....	6.6
Vigo County Farm Bureau Co-operative Ass'n	350a	4472	Terre Haute	found	1.85	....	....	2.2	12.4	1.8	....	6.0
Parke State Bank[130]	350a	4478	Rockville	found	1.82	....	....	2.2	11.8	1.8	....	6.9
Farmers Co-operative Supply Co.	350a	4502	North Vernon	found	1.75	....	....	2.1	12.8	0.9	....	6.0
Knox County Farm Bureau	350a	4521	Vincennes	found	1.99	....	....	2.2	12.9	1.3	....	6.1
Daviess County Farm Bureau	350a	4530	Washington	found	1.89	....	....	2.2	11.5	1.8	....	6.0
Tri County Farm Bureau Co-operative Ass'n	350a	4550	Evansville	found	2.03	....	....	2.2	12.8	2.0	....	6.0
Washington County Farm Bureau	350a	4574	Salem	found	1.92	....	....	2.2	13.9	1.0	....	5.7
Perry County Farm Bureau	350a	4627	Tell City	found	1.89	....	....	2.2	13.1	1.4	....	5.7
Farm Bureau 2 14–4	351a	....	....	guaranteed	....	....	....	2.0	14.0	....	....	4.0
George A. Niedenthal	351a	3363	Brookville	found	1.65	....	....	2.0	14.6	1.6	....	4.3
Lake County Farm Bureau	351a	3365	Crown Point	found	1.76	....	....	2.1	16.5	....	....	4.1
Lagrange County Farm Bureau[131]	351a	3537	Lagrange	found	1.92	....	....	2.3	14.3	2.8	....	3.8
Indiana Dairy Marketing Ass'n	351a	3724	Muncie	found	1.75	....	....	2.1	14.7	1.8	....	3.8
Hancock County Farm Bureau Co-operative Ass'n, Inc.	351a	3789	Greenfield	found	1.92	....	....	2.2	14.4	3.2	....	3.8
Shelby County Farm Bureau	351a	3882	Shelbyville	found	1.72	....	....	2.0	16.3	1.2	....	4.0
Lagrange County Farm Bureau	351a	4022	Lagrange	found	1.81	....	....	2.1	14.6	0.7	....	4.2
Wabash County Farm Bureau	351a	4122	Wabash	found	1.75	....	....	2.1	13.3	2.6	....	4.3
Wabash County Farm Bureau	351a	4131	Wabash	found	1.89	....	....	2.2	14.2	1.3	....	4.2
Wells County Farm Bureau	351a	4198	Bluffton	found	1.95	....	....	2.2	14.0	1.5	....	4.2
Clarence Quinn	351a	4265	Woodville	found	2.04	....	....	2.2	14.8	1.7	....	4.0
Farmers Grain & Lumber Co.	351a	4268	South Whitley	found	1.95	....	....	2.2	14.3	1.7	....	4.3
Steuben Grain Co.	351a	4300	Pleasant Lake	found	2.03	....	....	2.2	14.0	1.5	....	4.1
Randolph County Farm Bureau	351a	4357	Winchester	found	1.90	....	....	2.2	13.5	2.4	....	4.2
Monk Lang[132]	351a	4425	Mooresville	found	1.85	....	....	2.2	13.9	1.4	....	4.1
Morgan County Farm Bureau	351a	4426	Martinsville	found	1.85	....	....	2.1	13.8	1.6	....	4.0
Farmers Marketing Ass'n	351a	4500	Columbus	found	1.68	....	....	2.0	15.2	1.8	....	4.2
Daviess County Farm Bureau	351a	4523	Washington	found	1.75	....	....	2.2	14.9	1.5	....	4.0
Farm Bureau 3–9–18	352a	....	....	guaranteed	....	....	....	3.0	9.0	....	....	18.0
Whitley County Co-operative Produce Ass'n	352a	3319	Columbia City	found	2.72	....	....	3.0	10.0	0.7	....	17.1
R. J. Luse	352a	3482	Angola	found	2.93	....	....	3.1	10.3	1.9	....	18.1
Steuben Grain Co.[133]	352a	3483	Pleasant Lake	found	2.78	....	....	3.0	10.2	1.1	....	16.9
Lagrange County Farm Bureau	352a	3539	Lagrange	found	2.82	....	....	3.1	10.0	1.2	....	18.6
Elkhart County Farm Bureau	352a	3553	Goshen	found	2.80	....	....	3.0	10.3	1.6	....	17.9

Farm Bureau 4-10-6	353a			guaranteed				4.0	10.0			6.0
Wells County Farm Bureau	353a	3631	Bluffton	found	3.96			4.1	11.7	0.7		6.0
Morgan County Farm Bureau[134]	353a	3962	Mooresville	found	2.48			2.9	13.1	1.0		6.0
Farm Bureau 4-12-4	354a			guaranteed				4.0	12.0			4.0
Lake County Farm Bureau	354a	3341	Crown Point	found	3.56			3.9	12.9	1.7		4.6
Roy M. Sherrill	354a	3391	Logansport	found	3.60			3.9	11.8	1.7		4.0
Lagrange County Farm Bureau	354a	3538	Lagrange	found	3.80			4.0	14.7	1.2		3.9
Spencer County Farm Bureau	354a	3921	Chrisney	found	3.78			4.1	12.4	3.1		4.2
Farm Bureau 4-24-12	355a			guaranteed				4.0	24.0			12.0
George A. Niedenthal	355a	3309	Brookville	found	3.85			4.2	23.5	1.5		12.0
Roy M. Sherrill	355a	3399	Logansport	found	3.82			4.1	23.5	1.4		12.0
Farm Bureau Feed Store	355a	3438	Kokomo	found	3.72			4.0	24.3	1.3		**11.6**
Farmers Retail Market	355a	3615	Marion	found	3.72			4.0	24.3	0.8		12.0
Indiana Dairy Marketing Ass'n	355a	3709	Muncie	found	3.65			**3.7**	24.5	1.3		11.6
Hancock County Farm Bureau Co-operative Ass'n, Inc.	355a	3790	Greenfield	found	3.72			4.0	24.9	1.5		**11.7**
Farmers Feed Store	355a	3893	Milan	found	3.65			4.0	24.0	1.4		11.6
Knox County Farm Bureau[135]	355a	3939	Vincennes	found	2.85			3.3	24.0	1.3		11.5
Dr. Stern	355a	3975	Dana	found	3.65			4.0	23.5	1.9		11.7
Lagrange County Farm Bureau	355a	4025	Lagrange	found	3.39			3.8	24.2	0.6		12.0
Miami County Farm Bureau	355a	4135	Peru	found	3.64			4.0	24.7	0.5		12.6
William E. Smyser	355a	4167	Jackson	found	3.68			4.1	24.4	0.9		12.4
Guy Johnson	355a	4215	Sycamore	found	3.68			4.1	24.8	0.9		12.3
Burnettsville Elevator Co.	355a	4256	Burnettsville	found	3.92			4.2	24.4	0.9		12.0
Randolph County Farm Bureau[136]	355a	4313	Winchester	found	3.35			**3.6**	**22.3**	1.0		10.6
Wayne County Farm Bureau	355a	4331	Richmond	found	3.75			4.1	23.8	1.3		12.4
Morgan County Farm Bureau	355a	4424	Mooresville	found	3.75			4.1	24.2	0.8		12.4
Shelby County Farm Bureau	355a	4460	Shelbyville	found	3.71			4.1	25.5	0.6		12.1
Sullivan County Farm Bureau	355a	4465	Sullivan	found	3.63			4.0	23.9	0.7		11.9
Knox County Farm Bureau	355a	4520	Vincennes	found	3.92			4.1	24.8	1.2		12.0
Daviess County Farm Bureau	355a	4525	Washington	found	3.92			4.2	24.2	0.9		12.6
Clinton County Farm Bureau	355a	4628	Frankfort	found	3.65			4.0	24.6	1.0		12.4
Farm Bureau 6-8-6	356a			guaranteed				6.0	8.0			6.0
Steuben Grain Co.	356a	3480	Pleasant Lake	found	5.79			6.0	7.7	2.0		7.2
Farm Bureau 10-6-4	357a			guaranteed				10.0	6.0			4.0
R. J. Luse[137]	357a	3471	Angola	found	8.49			8.8	8.0	1.7		5.4
Farm Bureau 0-14-6	358a			guaranteed					14.0			6.0
George A. Niedenthal	358a	3308	Brookville	found					14.2	1.2		6.0
Decatur County Co-operative Co.	358a	3331	Greensburg	found					13.9	1.0		6.0
Lake County Farm Bureau	358a	3349	Crown Point	found					16.3	0.2		5.8
Porter County Farm Bureau	358a	3369	Valparaiso	found					15.3			5.8
Lagrange County Farm Bureau[138]	358a	3542	Lagrange	found					14.0	1.1		6.2
Farmers Retail Market	358a	3613	Marion	found					14.6	1.5		6.6
Charles Bell[139]	358a	3694	R. 1, Connersville	found					15.2	1.2		6.3
Randolph County Farm Bureau[138]	358a	3726	Winchester	found					15.2	0.6		6.2
Joe Holscher[140]	358a	3842	R. 5, Fowler	found					14.5	1.4		6.2

Where 60.0 per cent or more of the total nitrogen guaranteed was found to be water soluble, the active and inactive insoluble organic nitrogen was not determined.

Percentages appearing in bold type in the "Inactive water insoluble organic" column denote inferior nitrogen.

[130] Purchased from Parke County Farm Bureau.

[131] Sample received in the spring.

[132] Purchased from Morgan County Farm Bureau.

[133] Refund $5.50.

[134] Refund $4.18.

[135] Refund $10.56.

[136] Refund $18.87.

[137] Refund $2.28.

[138] Sample received in the spring.

[139] Purchased from Harry Suhre.

[140] Purchased from Starz Bros.

TABLE XI.—Report of Inspection of Fertilizer Collected in 1929—Continued

Labels and names of persons from whom samples were secured	Official No.	Inspection No. H. H.	Samples taken at		Nitrogen (N)				Phosphoric acid (P$_2$O$_5$)			Potash (K$_2$O), soluble in water, per cent
					Water soluble as nitrates, ammonia salts and organic, per cent	Active water insoluble organic, per cent	Inactive water insoluble organic, per cent	Total per cent	Soluble and reverted (available), per cent	Insoluble, per cent	Total per cent	
Clarence Moore	358a	3964	Farmersburg	found	......	......	......	......	15.5	1.0	......	6.3
Lagrange County Farm Bureau	358a	4019	Lagrange	found	......	......	......	......	14.1	1.6	......	6.3
Harlan Grain Co.	358a	4237	Perkins Spur	found	......	......	......	......	14.4	0.9	......	6.2
Randolph County Farm Bureau	358a	4310	Winchester	found	......	......	......	......	14.9	1.6	......	6.3
Wayne County Farm Bureau	358a	4338	Richmond	found	......	......	......	......	14.3	1.3	......	6.5
Huntington County Farm Bureau	358a	4386	Huntington	found	......	......	......	......	14.3	2.2	......	6.2
Elkhart County Farm Bureau	358a	4393	Goshen	found	......	......	......	......	14.6	1.2	......	5.7
Parke County Farm Bureau	358a	4473	Rockville	found	......	......	......	......	16.2	0.9	......	5.9
Decatur County Co-operative Co.	358a	4507	Greensburg	found	......	......	......	......	14.8	0.8	......	6.0
Knox County Farm Bureau	358a	4519	Vincennes	found	......	......	......	......	14.8	0.8	......	6.0
Tri-County Farm Bureau Co-operative Ass'n	358a	4547	Evansville	found	......	......	......	......	14.0	1.0	......	6.0
W. W. Spain	358a	4626	Rockport	found	......	......	......	......	17.7	0.8	......	6.0
Farm Bureau 0–24–24	359a	......	......	guaranteed	......	......	......	......	24.0	......	......	24.0
Roy M. Sherrill[141]	359a	3390	Logansport	found	......	......	......	......	22.9	0.3	......	21.9
Farm Bureau Feed Store	359a	3441	Kokomo	found	......	......	......	......	23.6	0.7	......	23.8
Will Benner[142]	359a	3621	Fowler	found	......	......	......	......	24.1	1.0	......	25.0
Rine Cyr[140]	359a	3851	R. 5, Fowler	found	......	......	......	......	24.0	0.4	......	24.5
Farm Bureau 0–12–8	369a	......	......	guaranteed	......	......	......	......	12.0	......	......	8.0
Porter County Farm Bureau[143]	369a	3350	Valparaiso	found	......	......	......	......	13.8	0.3	......	7.0
Farm Bureau Feed Store	369a	3439	Kokomo	found	......	......	......	......	13.7	1.5	......	8.5
R. J. Luse	369a	3533	Angola	found	......	......	......	......	11.9	1.6	......	7.6
Kosciusko County Farm Bureau Co-operative Ass'n, Inc.	369a	3571	Warsaw	found	......	......	......	......	12.6	1.6	......	8.8
Martin County Farm Bureau	369a	3583	Shoals	found	......	......	......	......	12.6	1.3	......	8.1
Fowler Grain Dealers	369a	3620	Fowler	found	......	......	......	......	12.8	1.7	......	8.0
Randolph County Farm Bureau	369a	3725	Winchester	found	......	......	......	......	13.4	0.8	......	8.2
Washington County Farm Bureau	369a	3728	Salem	found	......	......	......	......	13.6	0.6	......	8.1
Burnettsville Elevator Co.	369a	4254	Burnettsville	found	......	......	......	......	12.1	0.8	......	9.0
Farm Bureau 0–8–32	370a	......	......	guaranteed	......	......	......	......	8.0	......	......	32.0
Farm Bureau Feed Store[144]	370a	3431	Kokomo	found	......	......	......	......	8.3	1.0	......	30.1
Farm Bureau 2–12–2	686a	......	......	guaranteed	......	......	......	2.0	12.0	......	......	2.0
Wells County Farm Bureau	686a	4202	Bluffton	found	1.82	......	......	2.1	12.0	1.4	......	2.9
Rush Service Bureau	686a	4371	Rushville	found	1.78	......	......	2.2	12.2	1.1	......	2.0
Decatur County Farm Bureau	686a	4457	Greensburg	found	1.85	......	......	2.2	12.2	1.5	......	2.0
Clay County Farm Bureau	686a	4481	Brazil	found	1.89	......	......	2.2	12.4	1.4	......	2.9
Farm Bureau 4–24–4 Fertilizer	701a	......	......	guaranteed	......	......	......	4.0	24.0	......	......	4.0
Howard County Farm Bureau	701a	4206	Kokomo	found	3.64	......	......	4.0	23.5	0.8	......	4.5

International Agricultural Corporation, Cincinnati Works, Cincinnati, Ohio.												
Sulphate of Ammonia	8878			guaranteed				20.0				
O. Ben Richey[145]	8878	3267	R. 2, Churubusco	found				20.9				
Multiple Strength Twenty-Twenty	9233			guaranteed					20.0	1.0		20.0
Farmers Co-operative Elevator Co.	9233	4588	Seymour	found					21.8	0.2		20.3
International Agricultural Corporation, Middle West Division, Cincinnati, Ohio.												
Nitrate of Soda	7667			guaranteed				15.0				
Henry Mattheys[146]	7667	3354	South Bend	found				**14.6**				
International 16% Superphosphate	7881			guaranteed					16.0	1.0		
William H. Brubaker	7881	4108	Rochester	found					17.3	1.2		
Roanoke Elevator Co.	7881	4409	Roanoke	found					17.0	1.7		
Heise Bros. & Co.	7881	4570	Mitchell	found					16.8	1.5		
I. A. C. Twelve-Twelve	9038			guaranteed					12.0	1.0		12.0
J. W. Swick	9038	4113	Akron	found					12.0	0.6		12.0
I. A. C. 20% Superphosphate (Acid Phosphate)	9040			guaranteed					20.0	1.0		
L. D. Robbins	9040	3464	Auburn	found					21.5	0.4		
Farmers Co-operative Co.	9040	4322	Yorktown	found					20.4	0.8		
Roanoke Elevator Co.	9040	4404	Roanoke	found					21.5	0.3		
Farmers Elevator Co.	9040	4552	Mount Vernon	found					20.9	0.3		
Farmers Co-operative Elevator Co.	9040	4597	Seymour	found					22.4	0.1		
International Ten-Ten	9922			guaranteed					10.0			10.0
L. N. Jobe & Son	9922	4559	English	found					10.2	1.4		10.0
International 40% Multiple Superphosphate	9923			guaranteed					40.0			
W. R. Wedrick[147]	9923	3257	Silver Lake	found					39.8	1.5		
O. Ben Richey[147]	9923	3266	R. 2, Churubusco	found					40.8	1.2		
Henry Mattheys[148]	9923	3357	South Bend	found					38.1			
B. I. Holser & Co.[149]	9923	4017	Walkerton	found					38.2	1.1		
J. C. Phillips[150]	9923	4051	Star City	found					38.0	1.2		
Roberts Feed & Produce Co.	9923	4345	Brookville	found					40.2	0.9		
International Multiple Strength 4-24-12	141a			guaranteed				4.0	24.0			12.0
Farmers Co-operative Elevator Co.[151]	141a	3275	Seymour	found	2.85			3.8	27.1	2.3		5.5
Herman Miller	141a	3632	Bluffton	found	3.09			4.0	25.9	0.6		12.0
Farmers Co-operative Co.	141a	4321	Yorktown	found	3.73			3.9	23.1	1.2		14.0
Farmers Grain Co.	141a	4326	Germantown	found	3.78			4.0	23.3	2.8		10.8
Roberts Feed & Produce Co.[152]	141a	4348	Brookville	found	2.82			3.1	25.7	2.8		8.9
International Multiple Strength 4-24-4	143a			guaranteed				4.0	24.0			4.0
Farmers Elevator Co.	143a	3274	Seymour	found	3.29			4.1	24.0	1.4		4.7
Leoras G. Bowers	143a	4314	Parker	found	3.79			4.1	22.3	2.2		5.4
Roberts Feed & Produce Co.	143a	4367	Brookville	found	3.65			4.0	24.0	1.6		4.5
Roanoke Elevator Co.	143a	4406	Roanoke	found	3.69			4.0	23.5	1.5		5.8
Farmers Elevator Co.	143a	4553	Mount Vernon	found	3.69			4.0	22.4	2.8		6.3
International Multiple Strength	144a			guaranteed					28.0			12.0

Where 60.0 per cent or more of the total nitrogen guaranteed was found to be water soluble, the active and inactive insoluble organic nitrogen was not determined.
Percentages appearing in bold type in the "Inactive water insoluble organic" column denote inferior nitrogen.

[141] Refund $3.32.

[142] Purchased from Fowler Grain Dealers.

[143] Refund $0.75.

[144] Refund $1.90.

[145] Purchased from Ort & Co.

[146] Refund $3.04.

[147] Purchased from Ort & Co.

[148] Refund $20.52.

[149] Refund $8.64. Sample to manufacturer.

[150] Refund $6.00. Sample to manufacturer.

[151] Refund $32.50.

[152] Refund $10.08.

TABLE XI.—Report of Inspection of Fertilizer Collected in 1929—Continued

Labels and names of persons from whom samples were secured	Official No.	Inspection No. H. H.	Samples taken at		Nitrogen (N)				Phosphoric acid (P₂O₅)			
					Water soluble as nitrates, ammonia salts and organic, per cent	Active water insoluble organic, per cent	Inactive water insoluble organic, per cent	Total per cent	Soluble and reverted (available), per cent	Insoluble, per cent	Total per cent	Potash (K_2O), soluble in water, per cent
Herman Miller	144a	3633	Bluffton	found	......	......	......	......	27.3	1.0	......	12.0
J. W. Swick	144a	4112	Akron	found	......	......	......	......	28.2	0.4	......	12.7
Roberts Feed & Produce Co.[153]	144a	4351	Brookville	found	......	......	......	......	28.6	0.9	......	11.0
International Early Onion Grower 2-8-16	146a	......	......	guaranteed	......	......	......	2.0	8.0	......	......	16.0
Leonard Schrader	146a	3320	Columbia City	found	1.27	......	......	2.0	7.3	0.9	......	17.3
Columbia Farms	146a	3321	Columbia City	found	1.61	......	......	2.0	7.4	0.6	......	16.6
Lee Akers Farms	146a	3322	Columbia City	found	1.61	......	......	2.0	7.7	0.6	......	16.9
L. D. Robbins	146a	3463	Auburn	found	1.54	......	......	2.2	7.7	0.8	......	15.2
Fred Kellerman	146a	3509	R. 2, North Judson	found	1.47	......	......	2.0	9.1	1.1	......	15.7
International Tomato Special 2-12-6	148a	......	......	guaranteed	......	......	......	2.0	12.0	......	......	6.0
Bussey Hardware Co.	148a	3798	Marysville	found	1.47	......	......	2.1	11.7	1.0	......	5.9
Roy Nedderman	148a	3887	Sunman	found	1.51	......	......	2.0	11.7	1.7	......	6.4
Heise Bros. & Co.	148a	3913	Mitchell	found	1.61	......	......	2.0	12.3	1.3	......	6.3
Farmers Elevator Co.[154]	148a	3928	Mount Vernon	found	1.23	......	......	2.0	14.7	1.5	......	5.9
International Extra High Grade 2-12-6	149a	......	......	guaranteed	......	......	......	2.0	12.0	......	......	6.0
Farmers Co-operative Co.	149a	3272	Seymour	found	1.47	......	......	2.0	11.7	0.8	......	6.1
L. D. Robbins	149a	3460	Auburn	found	1.55	......	......	2.0	11.8	1.1	......	6.6
Richard Dawson[155]	149a	3678	Glenwood	found	1.30	......	......	2.0	12.2	1.4	......	5.9
Belshaw Farmers & Gleaners[156]	149a	3994	Belshaw	found	1.20	......	......	1.9	11.6	0.6	......	9.1
B. I. Holser & Co.[156]	149a	4016	Walkerton	found	1.22	......	......	2.1	12.0	6.0	......	6.6
J. C. Phillips	149a	4056	Star City	found	1.20	......	......	2.0	12.0	0.7	......	6.8
Don O. Nayer	149a	4111	Akron	found	1.61	......	......	2.0	13.0	0.9	......	5.8
William H. Brubaker	149a	4114	Rochester	found	1.61	......	......	2.0	12.2	0.9	......	7.0
Paul Hill[157]	149a	4311	Parker	found	1.74	......	......	2.1	12.0	1.4	......	6.1
Roberts Feed & Produce Co.	149a	4333	Brookville	found	1.75	......	......	2.2	12.4	1.2	......	7.2
J. A. Bertch	149a	4369	Liberty	found	1.58	......	......	2.0	12.4	2.0	......	6.2
Cyril Gord[158]	149a	4471	Staunton	found	1.75	......	......	2.2	12.1	1.8	......	6.9
Walter Powell	149a	4497	Vernon	found	2.03	......	......	2.2	12.0	1.5	......	6.0
Fred H. Tripp Hardware Co.	149a	4501	North Vernon	found	1.89	......	......	2.2	11.8	1.4	......	6.4
Farmers Co-operative Elevator Co.	149a	4591	Seymour	found	1.61	......	......	2.0	13.1	1.0	......	6.3
International Farmer's Favorite 2-14-4	152a	......	......	guaranteed	......	......	......	2.0	14.0	......	......	4.0
Roy Nedderman	152a	3894	Sunman	found	1.92	......	......	2.0	15.4	1.2	......	4.1
Farmers Elevator Co.	152a	3907	Mount Vernon	found	1.47	......	......	2.0	13.6	1.7	......	4.5
International Potato and Vegetable 4-8-8	153a	......	......	guaranteed	......	......	......	4.0	8.0	......	......	8.0
H. Ona[159]	153a	3508	R. 2, Denham	found	2.32	......	......	4.0	8.2	0.7	......	8.0
International Ideal Wheat and Corn 2-10-4	154a	......	......	guaranteed	......	......	......	2.0	10.0	......	......	4.0
Farmers Co-operative Elevator Co.	154a	3273	Seymour	found	1.42	......	......	2.0	9.6	0.8	......	4.0

Bussey Hardware Co.	154a	3831	Marysville	found	1.47			2.0	11.0	0.5		4.3
Roy Nedderman[160]	154a	3892	Sunman	found	1.41			1.9	9.7	1.4		4.2
Roy Nedderman	154a	4452	Sunman	found	1.55			2.0	12.8	0.8		4.0
Frank Gray	154a	4606	Spencer	found	1.75			2.1	9.8	1.5		4.6
International Crop Grower 2-12-2	155a			guaranteed				2.0	12.0			2.0
Farmers Co-operative Elevator Co.	155a	3276	Seymour	found	1.08	0.42	0.40	1.9	11.9	1.5		3.9
L. D. Robbins	155a	3461	Auburn	found	1.22			2.0	11.9	1.8		2.0
Richard Dawson[161]	155a	3679	Glenwood	found	1.75			2.1	11.7	1.8		2.7
Heise Bros. & Co.	155a	3795	Mitchell	found	1.33			2.1	11.7	1.4		2.2
Roy Nedderman	155a	3898	Sunman	found	1.40			2.1	13.5	1.4		2.3
Leoras G. Bowers	155a	4309	Parker	found	1.64			2.0	12.4	1.4		2.0
J. A. Bertch & Son	155a	4335	Liberty	found	1.65			2.1	12.4	1.4		2.1
Roberts Feed & Produce Co.	155a	4346	Brookville	found	1.70			2.0	12.8	1.5		2.1
William Miller	155a	4470	R. 1, Cory	found	1.78			2.2	12.7	1.8		2.3
Reynolds Brooks Hardware Co.[162]	155a	4566	Loogootee	found	1.26			1.6	12.3	1.0		2.3
International Grain Grower 1-10-3	156a			guaranteed				1.0	10.0			3.0
Reynolds Brooks Hardware Co.	156a	3629	Loogootee	found	0.58			1.0	10.3	0.8		3.2
Richard Dawson[161]	156a	3690	Glenwood	found	0.79			1.0	10.6	1.2		2.7
W. M. Snider	156a	3807	Marengo	found	0.85			1.2	11.0	0.9		3.6
Roberts Feed & Produce Co.	156a	4366	Brookville	found	0.80			1.1	11.7	1.9		2.6
Reynolds Brooks Hardware Co.	156a	4563	Loogootee	found	0.81			1.1	10.2	1.0		3.4
Elza D. Easton	156a	4571	Bedford	found	0.91			1.3	11.7	0.8		2.8
International Eight-Thirty-Two	157a			guaranteed					8.0			32.0
Farmers Co-operative Elevator Co.	157a	3277	Seymour	found					9.6			33.2
International Alkaline 14-6	158a			guaranteed					14.0			6.0
Leoras G. Bowers	158a	4317	Parker	found					15.4	2.3		6.4
Roanoke Elevator Co.	158a	4390	Roanoke	found					14.6	2.0		6.4
Farmers Elevator Co.	158a	4551	Mount Vernon	found					14.9	1.5		6.0
Jarecki Chemical Company, (Armour Owned), Cincinnati, Ohio.												
Jarecki's 20% Superphosphate	9208			guaranteed					20.0	0.5		
Logansport Elevator Co.	9208	4150	Logansport	found					21.4	1.9		
Kraus & Apfelbaum	9208	4271	Argos	found					20.2	1.7		
Jarecki's 0-14-14 Fertilizer	9479			guaranteed					14.0	0.5		14.0
William Raff[163]	9479	3981	Conrad	found					15.9	0.7		14.9
Jarecki's 0-16-8 Fertilizer	9480			guaranteed					16.0	0.5		8.0
Worthington Grain Co.	9480	3661	Worthington	found					17.5	0.3		8.5
Jarecki's 2-12-2 Fertilizer	306a			guaranteed				2.0	12.0	0.5		2.0
Farmers Elevator Co.	306a	4387	South Whitley	found	1.92			2.2	12.1	1.9		2.4
Jarecki's 2-12-6 Fertilizer	307a			guaranteed				2.0	12.0	0.5		6.0
Logansport Elevator Co.	307a	4154	Logansport	found	2.00			2.2	12.3	0.9		6.4
W. C. Smock & Co.	307a	4159	Burrows	found	2.02			2.2	12.5	0.9		6.4
Jarecki's 2-16-8 Fertilizer	313a			guaranteed				2.0	16.0	0.5		8.0
Logansport Elevator Co.	313a	4160	Logansport	found	1.90			2.1	17.0	0.9		8.0

Where 60.0 per cent or more of the total nitrogen guaranteed was found to be water soluble, the active and inactive insoluble organic nitrogen was not determined.

Percentages appearing in bold type in the "Inactive water insoluble organic" column denote inferior nitrogen.

[153] Refund $1.00.

[154] Not tagged. Labels furnished.

[155] Purchased from Russell Northam.

[156] Not tagged.

[157] Not tagged. Labels furnished.

[158] Not tagged. Labels furnished. Purchased from Wm. Miller.

[159] Purchased from Kellerman & Sons.

[160] Sample received in the spring.

[161] Purchased from Russell Northam.

[162] Refund $7.60.

[163] Purchased from J. J. Lawler.

TABLE XI.—Report of Inspection of Fertilizer Collected in 1929—Continued

Labels and names of persons from whom samples were secured	Official No.	Inspection No. H. H.	Samples taken at		Nitrogen (N)				Phosphoric acid (P_2O_5)			Potash (K_2O), soluble in water, per cent
					Water soluble as nitrates, ammonia salts and organic, per cent	Active water insoluble organic, per cent	Inactive water insoluble organic, per cent	Total per cent	Soluble and reverted (available), per cent	Insoluble, per cent	Total per cent	
Johnson, Inc., J. Oliver, Chicago, Ill.												
Boulevard Brand Sheep Manure	8436			guaranteed				2.0			1.5	1.5
Crowell Grain Co.	8436	3325	Columbia City	found	0.31	0.40	1.39	2.1			1.8	3.4
Jones Phosphate Company, Robin, Nashville, Tenn.												
Ground Phosphate Rock	5451			guaranteed							28.0	
Gordon Hadley	5451	3442	Windfall	found							28.5	
Joslin-Schmidt Corporation, (Groves Fertilizer Works), Cincinnati, Ohio.												
Square Brand 0-10-10	9448			guaranteed					10.0	1.0		10.0
Crabbs Reynolds Taylor Co.	9448	3435	Crawfordsville	found					9.7	1.3		10.6
Keehn's Hardware Store	9448	3513	North Judson	found					10.9	0.4		10.2
Square Brand 0-14-4	9449			guaranteed					14.0	1.0		4.0
Farmers Grain & Lumber Co.	9449	3345	South Wanatah	found					13.6	0.3		4.2
Union Equity Exchange	9449	4187	Monroeville	found					14.6	1.0		4.1
Square Brand 0-8-24	9450			guaranteed					8.0	1.0		24.0
Englert & Son	9450	3865	Reynolds	found					7.6	0.7		24.0
Herman Jentz[164]	9450	4046	Francesville	found					8.8	0.8		23.6
Square Brand 0-12-12	9451			guaranteed					12.0	1.0		12.0
Herbert B. Fry Feed Mills	9451	3335	Argos	found					13.0	0.6		11.8
Keehn's Hardware Store	9451	3510	North Judson	found					12.6	0.5		12.5
Charles Vogel[165]	9451	3856	Reynolds	found					12.8	0.6		12.1
Cook & Adams[166]	9451	4003	LaCrosse	found					12.0	1.4		18.9
Cook & Adams	9451	4004	LaCrosse	found					13.0	0.8		11.6
J. C. Phillips	9451	4050	Star City	found					12.7	1.0		12.1
20% Superphosphate	9453			guaranteed					20.0	1.0		
Crabbs Reynolds Taylor Co.	9453	3417	Crawfordsville	found					22.1	1.3		
Monroeville Equity Exchange	9453	3467	Monroeville	found					19.7	1.3		
J. B. Newman	9453	3519	Star City	found					20.5	1.3		
Berne Equity Exchange Co.	9453	3654	Berne	found					21.1	0.6		
Muriate of Potash	9460			guaranteed								50.0
Brown Supply Co.	9460	3999	Valparaiso	found								49.4
44% Superphosphate	9530			guaranteed					44.0	3.0		

Berne Equity Exchange Co.	9530	3643	Berne	found	......	......	......	......	43.8	......	......	......
Square Brand 0-20-20	9680	......		guaranteed	......	......	......	......	20.0	1.0	......	20.0
Herbert B. Fry Feed Mill	9680	3352	Argos	found	......	......	......	......	**19.3**	1.2	......	20.1
Crabbs Reynolds Taylor Co.[167]	9680	3426	Crawfordsville	found	......	......	......	......	20.4	1.3	......	**18.4**
J. B. Newman[168]	9680	3526	Star City	found	......	......	......	......	**18.9**	**1.1**	......	**18.8**
Ed Sharkey[169]	9680	3853	Reynolds	found	......	......	......	......	20.5	0.4	......	**19.3**
Englert & Son	9680	3866	Monon	found	......	......	......	......	20.8	0.4	......	20.2
Zearne Slottler[170]	9680	3992	Ripley Siding	found	......	......	......	......	21.5	1.2	......	**18.8**
J. C. Phillips	9680	4052	Star City	found	......	......	......	......	20.0	0.5	......	21.2
Square Brand 3-9-18	180a	......		guaranteed	......	......	......	3.0	9.0	0.5	......	18.0
J. B. Newman[171]	180a	3515	Star City	found	1.54	0.35	0.21	**2.1**	10.3	1.2	......	17.8
Farmers Co-operative Elevator Co.[172]	180a	3529	Knox	found	1.61	......	......	**2.0**	9.9	0.4	......	19.0
Square Brand 0-14-6	184a	......		guaranteed	......	......	......	......	14.0	0.5	......	6.0
Huntington Equity Exchange Co	184a	3455	Huntington	found	......	......	......	......	14.1	1.6	......	**5.6**
Farmers Co-operative Elevator Co.	184a	4109	Rochester	found	......	......	......	......	14.3	0.4	......	6.4
Square Brand 0-8-32	185a	......		guaranteed	......	......	......	......	8.0	0.5	......	32.0
Herbert B. Fry Feed Mill[173]	185a	3366	Argos	found	......	......	......	......	**9.7**	......	......	**29.3**
J. B. Newman[174]	185a	3524	Star City	found	......	......	......	......	8.8	0.4	......	**29.6**
Square Brand 2-12-6	415a	......		guaranteed	......	......	......	2.0	12.0	0.5	......	6.0
Herbert B. Fry Feed Mill	415a	3336	Argos	found	1.58	......	......	2.0	13.0	0.5	......	6.6
Crabbs Reynolds Taylor Co.	415a	3422	Crawfordsville	found	2.68	......	......	2.1	**11.5**	1.7	......	6.5
Monroeville Equity Exchange	415a	3466	Monroeville	found	1.83	......	......	2.0	12.3	1.0	......	6.1
J. B. Newman	415a	3527	Star City	found	1.61	......	......	2.1	12.1	1.1	......	5.8
J. Spriesterbach	415a	3799	Charlestown	found	1.61	......	......	2.0	12.0	1.6	......	5.8
J. C. Phillips	415a	4044	Star City	found	1.57	......	......	2.0	12.5	1.7	......	6.8
Powell Grain Co.	415a	4356	Losantville	found	1.79	......	......	2.1	12.0	1.8	......	5.8
Graves Implement Store	415a	4636	Tell City	found	2.24	......	......	2.5	12.1	1.7	......	**5.7**
Square Brand 2-12-2	416a	......		guaranteed	......	......	......	2.0	12.0	0.5	......	2.0
Crabbs Reynolds Taylor Co.	416a	3427	Crawfordsville	found	1.75	......	......	2.1	**11.4**	2.1	......	2.3
Union Equity Exchange	416a	4185	Monroeville	found	1.78	......	......	2.2	12.0	1.7	......	2.2
Farmers Grain Co.	416a	4354	Germantown	found	1.76	......	......	2.2	13.7	0.2	......	2.5
Square Brand 2-14-4	417a	......		guaranteed	......	......	......	2.0	14.0	0.5	......	4.0
Herbert B. Fry Feed Mill	417a	3367	Argos	found	1.24	......	......	2.0	16.6	......	......	3.9
Square Brand 2-10-8	418a	......		guaranteed	......	......	......	2.0	10.0	0.5	......	8.0
Herbert B. Fry Feed Mill[175]	418a	3353	Argos	found	1.99	......	......	2.1	12.5	......	......	6.7
H. T. Baumer	418a	3855	Reynolds	found	1.16	0.24	0.20	**1.6**	10.7	1.2	......	10.4
Square Brand 3-8-6	419a	......		guaranteed	......	......	......	3.0	8.0	0.5	......	6.0
Monroeville Equity Exchange[176]	419a	3468	Monroeville	found	1.89	......	......	**2.7**	10.7	1.7	......	5.0
J. B. Newman	419a	3525	Star City	found	2.21	......	......	**2.7**	10.5	0.4	......	8.3
Special Tobacco Fertilizer 3-8-6	420a	......		guaranteed	......	......	......	3.0	8.0	0.5	......	6.0
J. Spriesterbach	420a	3792	Charlestown	found	2.44	......	......	3.0	7.6	1.3	......	6.6
Square Brand 4-24-12	422a	......		guaranteed	......	......	......	4.0	24.0	0.5	......	12.0
Crabbs Reynolds Taylor Co.	422a	3424	Crawfordsville	found	3.33	......	......	4.0	**23.6**	1.1	......	**11.4**

Where 60.0 per cent or more of the total nitrogen guaranteed was found to be water soluble, the active and inactive insoluble organic nitrogen was not determined.

Percentages appearing in bold type in the "Inactive water insoluble organic" column denote inferior nitrogen.

[164]Purchased from Cooperative Elevator Co.

[165]Purchased from H. T. Baumer.

[166]Refund $38.50. Sold as 0-12-20.

[167]Refund $6.40.

[168]Refund $12.50.

[169]Purchased from H. T. Baumer.

[170]Sample to manufacturer. Refund $31.20. Purchased from Gilbert Barker.

[171]Refund $6.32.

[172]Refund $1.84. Available nitrogen not determined.

[173]Refund $2.70.

[174]Refund $2.40.

[175]Refund $3.90.

[176]Refund $2.00.

TABLE XI.—Report of Inspection of Fertilizer Collected in 1929—Continued

Labels and names of persons from whom samples were secured	Official No.	Inspection No. H. H.	Samples taken at		Nitrogen (N) Water soluble as nitrates, ammonia salts and organic, per cent	Nitrogen (N) Active water insoluble organic, per cent	Nitrogen (N) Inactive water insoluble organic, per cent	Nitrogen (N) Total per cent	Phosphoric acid (P₂O₅) Soluble and reverted (available), per cent	Phosphoric acid (P₂O₅) Insoluble, per cent	Phosphoric acid (P₂O₅) Total per cent	Potash (K₂O), soluble in water, per cent
Square Brand 4–24–4	423a	.....	.....	guaranteed	.....	.....	.....	4.0	24.0	0.5	.....	4.0
Powell Grain Co.[177]	423a	4347	Losantville	found	3.61	.....	.....	4.1	21.7	1.1	.....	4.7
Square Brand 2–8–16	579a	.....	.....	guaranteed	.....	.....	.....	2.0	8.0	0.5	.....	16.0
J. B. Newman	579a	3528	Star City	found	1.12	0.35	0.23	1.7	9.4	0.5	.....	16.6
Kendallville Fertilizer Company, Kendallville, Ind.												
Bone Meal and Tankage Screenings	670a	.....	.....	guaranteed	.....	.....	.....	3.2	.....	.....	20.0	.....
Kendallville Fertilizer Co.[178]	670a	4010	Kendallville	found	1.10	2.66	0.54	4.3	.....	.....	20.4	.....
Kendallville Fertilizer Co.	670a	4391	Kendallville	found	1.15	3.17	0.68	5.0	.....	.....	19.5	.....
Louisville Fertilizer Company, (Owned and Operated by Armour Fertilizer Works), Cincinnati, Ohio.												
Louisville Burley Tobacco Grower 3–8 6	301a	.....	.....	guaranteed	.....	.....	.....	3.0	8.0	0.5	.....	6.0
J. A. Gienger	301a	3774	Jeffersonville	found	2.26	.....	.....	3.1	7.9	0.2	.....	5.8
Louisville Fertilizer Company, (Armour Owned), Louisville, Ky.												
Louisville 0–14–14 Fertilizer	9388	.....	.....	guaranteed	.....	.....	.....	.....	14.0	0.5	.....	14.0
Truman Ware[179]	9388	3961	Rensselaer	found	.....	.....	.....	.....	15.5	.....	.....	14.9
The Major Brothers Packing Company, Mishawaka, Ind.												
Major's Fertilizer	4217	.....	.....	guaranteed	.....	.....	.....	3.5	.....	.....	16.0	.....
Major Bros. Packing Co.	4217	4014	Mishawaka	found	0.84	3.10	0.86	4.8	.....	.....	20.3	.....
Miami Fertilizer Company, Dayton, Ohio.												
Big M 0 10–10	9474	.....	.....	guaranteed	.....	.....	.....	.....	10.0	1.0	.....	10.0
V. W. Norris & Son	9474	3681	Milroy	found	.....	.....	.....	.....	9.9	0.8	.....	10.0
Beach and Simmers	9474	3707	Albany	found	.....	.....	.....	.....	10.3	0.8	.....	10.1
Big M 0–14 4	9475	.....	.....	guaranteed	.....	.....	.....	.....	14.0	1.0	.....	4.0
V. W. Norris & Son	9475	4376	Rushville	found	.....	.....	.....	.....	14.0	2.1	.....	4.0
Big M 0–20–0	9476	.....	.....	guaranteed	.....	.....	.....	.....	20.0	1.0	.....	.....
Beach & Simmers	9476	3708	Albany	found	.....	.....	.....	.....	20.0	2.0	.....	.....
Big M 0–16–0	9477	.....	.....	guaranteed	.....	.....	.....	.....	16.0	1.0	.....	.....
V. W. Norris & Son	9477	4377	Rushville	found	.....	.....	.....	.....	17.1	1.5	.....	.....

Big M 2–12–2	436a			guaranteed				2.0	12.0	1.0		2.0
Beach & Simmers	436a	3706	Albany	found	1.75			2.0	12.3	0.7		1.8
Mooreland Grain Co.	436a	4343	Mooreland	found	1.75			2.1	14.2	2.3		2.0
V. W. Norris & Son	436a	4360	Rushville	found	1.54			2.0	12.0	2.7		2.0
Big M 1–11–3	437a			guaranteed				1.0	11.0	1.0		3.0
V. W. Norris & Son[180]	437a	3684	Milroy	found	0.93			1.1	10.9	0.7		3.4
V. W. Norris & Son	437a	3687	Milroy	found	0.95			1.1	12.2	1.0		3.2
V. W. Norris & Son	437a	4363	Rushville	found	1.02			1.3	11.4	1.4		2.8
Big M 2–12–6	440a			guaranteed				2.0	12.0	1.0		6.0
Beach & Simmers	440a	3712	Albany	found	1.64			2.0	12.5	0.6		6.1
Mooreland Grain Co.	440a	4344	Mooreland	found	1.90			2.1	12.6	1.1		6.4
National Chemical Company, Louisville, Ky.												
Big Pay 20% Superphosphate	9651			guaranteed					20.0			
Valentine Krick	9651	4080	Fowler, R. 3	found					20.7	0.8		
Nitrate Fertilizer Company, The, Columbus, Ohio.												
Muriate of Potash	8431			guaranteed								50.0
Farmers Co-operative Co.	8431	3505	Knox	found								50.0
Norris Fertilizer Company, The, Rushville, Ind.												
Norris High Quality Steamed Bone Meal	49a			guaranteed				1.6			27.0	
The Norris Fertilizer Co.	49a	4359	Rushville	found	0.44	1.35	0.21	2.0			28.8	
Norris Corn and Wheat Special (1–12–2)	514a			guaranteed				1.0	12.0			2.0
The Norris Fertilizer Co.	514a	3692	Rushville	found	0.77			1.1	12.3	1.7		1.7
Chas. E. Nicholson	514a	3745	Hagerstown	found	0.68			1.1	12.0	1.4		1.8
Fayette Grain Co.	514a	4358	Connersville	found	0.61			1.1	12.8	1.0		2.1
The Norris Fertilizer Co.	514a	4379	Rushville	found	0.94			1.3	12.3	1.3		1.9
Norris Grain Grower 1–11–5	516a			guaranteed	0.89			1.0	11.0			5.0
Fayette Grain Co.	516a	4364	Connersville	found	0.77			1.1	11.9	1.2		4.9
The Norris Fertilizer Co.	516a	4373	Rushville	found	0.75			1.1	11.3	1.2		5.6
Norris High Quality 2–12–6	522a			guaranteed				2.0	12.0			6.0
Carr Canning Co.	522a	3686	Rushville	found	1.68			2.0	12.1	1.0		5.6
Chas. E. Nicholson	522a	3749	Hagerstown	found	1.65			2.0	11.7	1.5		5.9
Morris Flour Mills	522a	4448	Morris	found	1.30			1.6	15.1	2.8		6.3
Norris High Quality 2–12–2	523a			guaranteed				2.0	12.0			2.0
C. E. Ramsey	523a	3685	Rushville	found	1.85			2.2	12.4	1.8		2.2
Chas. E. Nicholson	523a	3750	Hagerstown	found	1.81			2.2	12.8	1.1		2.2
Woodhead Feed Mills	523a	4352	Cambridge City	found	1.65			2.0	12.3	1.5		2.2
The Norris Fertilizer Co.	523a	4362	Rushville	found	1.85			2.2	12.0	1.8		2.3
Norris Corn and Wheat Grower 1–12–4	526a			guaranteed				1.0	12.0			4.0
William Kirby	526a	4361	Rushville	found	1.22			1.5	11.7	1.1		4.3

Where 60.0 per cent or more of the total nitrogen guaranteed was found to be water soluble, the active and inactive insoluble organic nitrogen was not determined.

Percentages appearing in bold type in the "Inactive water insoluble organic" column denote inferior nitrogen.

[177] Refund $2.80.

[178] Sample received in the spring.

[179] Purchased from J. J. Lawler.

[180] Sample received in the spring.

TABLE XI.—Report of Inspection of Fertilizer Collected in 1929—Continued

Labels and names of persons from whom samples were secured	Official No.	Inspection No. H. H.	Samples taken at		Nitrogen (N)				Phosphoric acid (P_2O_5)			Potash (K_2O), soluble in water, per cent
					Water soluble as nitrates, ammonia salts and organic, per cent	Active water insoluble organic, per cent	Inactive water insoluble organic, per cent	Total per cent	Soluble and reverted (available), per cent	Insoluble, per cent	Total per cent	
North American Fertilizer Company, Louisville, Ky.												
North American Potash Formula 0-10-10	9380			guaranteed					10.0			10.0
C. L. Bartley	9380	3699	Rockville	found					10.4	1.1		9.8
Beck Grain & Feed Co.	9380	3884	Shelbyville	found					10.0	1.8		9.8
North American High Grade 16% Superphosphate	9381			guaranteed					16.0			
Ralph Pruitt	9381	4324	Edinburg	found					16.0	1.6		
North American Cradys Fertilizer Formula 1-11-3	100a			guaranteed				1.0	11.0			3.0
Lambeck Bros.	100a	3923	Tell City	found	0.77			1.1	12.3	0.7		2.9
North American Crop and Tobacco Fertilizer 1-8-4	101a			guaranteed				1.0	8.0			4.0
Lambeck Bros.	101a	3917	Tell City	found	0.77			1.1	8.1	1.0		5.8
North American Champion 2-12-2	108a			guaranteed				2.0	12.0			2.0
Jasper Roller Mills	108a	3591	Jasper	found	1.47			2.0	12.6	0.8		2.3
C. L. Bartley	108a	3698	Rockville	found	1.71			2.2	11.7	1.6		2.4
North American Tomato and Potato Fertilizer 2-12-6	109a			guaranteed				2.0	12.0			6.0
Jonas Burns	109a	3655	Saline City	found	1.55			2.0	12.1	1.0		5.8
C. L. Bartley	109a	3697	Rockville	found	1.37			2.0	12.1	1.7		6.2
E. M. Coons and N. P. Shelby[181]	109a	3954	Lebanon	found	1.61			2.1	12.2	1.3		6.3
Ralph Pruitt	109a	4323	Edinburg	found	1.43			2.2	12.3	1.3		6.4
North American 2-16-2 Fertilizer	110a			guaranteed				2.0	16.0			2.0
E. M. Coons[182]	110a	3944	R. D., Lebanon	found	1.68			2.2	16.6	1.6		3.3
North American 2-16-8 Formula	111a			guaranteed				2.0	16.0			8.0
John Painter[183]	111a	3991	New Springport	found	2.17			2.7	15.8	0.7		8.7
North American Special Tobacco and Potato Fertilizer (3-8-6)	112a			guaranteed				3.0	8.0			6.0
Jasper Roller Mill	112a	3586	Jasper	found	2.40			3.1	9.2	1.0		5.8
orth American Fertilizer 0-12-6	229a			guaranteed					12.0			6.0
Beck Grain & Feed Co.	229a	3889	Shelbyville	found					12.1	1.3		5.9
N. P. Shelby[184]	229a	3943	R. 8, Lebanon	found					12.2	1.4		6.1
Ralph Pruitt	229a	4327	Edinburg	found					12.1	1.3		6.3
Old Gardener Fertilizer Company, The, Pittsburgh, Pa.												
Old Gardener	643a			guaranteed				2.0	10.0	0.5		4.0
The Miller Hardware	643a	3271	Akron	found	2.32			2.6	10.7	0.4		4.1

Price Chemical Company,												
Louisville, Ky.												
Ten-Ten Percent Potash	8823			guaranteed					10.0			10.0
Isaac Shannon	8823	3857	Reynolds	found					10.8			9.7
Burnettsville Elevator Co.	8823	4259	Burnettsville	found					10.5	0.4		9.6
William Bherns	8823	4417	Churubusco	found					10.3	0.9		10.0
Muriate of Potash	9290			guaranteed								50.0
Jsaac Shannon	9290	3847	Reynolds	found								50.5
40% Superphosphate	46a			guaranteed					40.0			
Isaac Shannon[185]	46a	3850	Reynolds	found					39.9	1.5		
Indiana Special	162a			guaranteed				2.0	12.0			2.0
City Mill Feed Co.	162a	3312	South Whitley	found	1.59			2.2	11.9	0.3		2.2
A-1 Grain Grower	164a			guaranteed				2.0	12.0			6.0
City Mill Feed Co.	164a	3313	South Whitley	found	2.01			2.6	12.5	0.4		5.7
Brown & Turley	164a	3794	Corydon	found	2.10			2.5	12.3	0.7		6.5
C. A. Tucker	164a	3813	Taswell	found	2.11			2.6	11.9	1.0		5.7
Isaac Shannon	164a	3854	Reynolds	found	1.68			2.2	12.8	0.4		6.6
City Mill Feed Co.	164a	4396	South Whitley	found	1.87			2.5	12.0	0.9		6.0
William Bherns	164a	4414	Churubusco	found	1.78			2.3	12.8	0.6		6.1
Marshall Lime & Cement Co.	164a	4488	Greencastle	found	1.68			2.2	13.2	0.6		6.5
Big Forty	168a			guaranteed				4.0	24.0			12.0
City Mill Feed Co.	168a	3314	South Whitley	found	3.93			4.1	23.9	0.7		11.2
Economy Grain 1-11-3	594a			guaranteed				1.0	11.0			3.0
W. P. Truitt	594a	4504	Enterprise	found	0.98			1.3	13.0	0.8		3.0
Rauh and Sons Fertilizer Company, E.,												
Indianapolis, Ind.												
Red Star Brand 16% Superphosphate	8726			guaranteed					16.0			
J. D. McIntire	8726	3742	Leipsic	found					16.2	1.6		
Red Star Brand 20% Superphosphate	8727			guaranteed					20.0			
John C. Hughes	8727	4431	R. 2, Morgantown	found					20.0	1.8		
Middlebury Grain Co.	8727	4432	Middlebury	found					20.1	1.8		
Red Star Brand 10-10	8732			guaranteed					10.0			10.0
James Robertson[186]	8732	3619	Otterbein	found					10.5	1.6		9.9
James Robertson	8732	4060	Otterbein	found					10.0	0.7		10.0
Standard Brand 20% Superphosphate	8746			guaranteed					20.0			
Purdue Soil and Crop Dept.	8746	3385	Wilson Farm	found					20.1			
Rauh's Red Star Brand 0-22 22	9099			guaranteed					22.0	1.0		22.0
Kraus & Apfelbaum	9099	3558	Nappanee	found					22.8	1.3		22.0
Cecil Turner[187]	9099	3626	Otterbein	found					23.0	1.5		20.4
58% Kemfert Potash	9138			guaranteed								58.0
Purdue Soils & Crops Dept.	9138	3388	Wilson Farm	found								59.3
Rauh's Red Star 0-28-12	9950			guaranteed					28.0			12.0
Kraus & Apfelbaum	9950	3557	Nappanee	found					28.0	1.2		12.5
James Robertson[188]	9950	3624	Otterbein	found					28.0	1.4		11.8
James Robertson	9950	4063	Otterbein	found					28.5	0.7		12.0
W. S. Miller	9950	4219	Sedalia	found					29.8	0.9		12.2

Where 60.0 per cent or more of the total nitrogen guaranteed was found to be water soluble, the active and inactive insoluble organic nitrogen was not determined.

Percentages appearing in bold type in the "Inactive water insoluble organic" column denote inferior nitrogen.

[181] Purchased from Ollie Howard. Composite sample.

[182] Purchased from Ollie Howard.

[183] Purchased from Val Gold.

[184] Purchased from Ollie Howard.

[185] Sample to manufacturer.

[186] Sample received in the spring.

[187] Refund $2.40. Purchased from James Robertson.

[188] Sample received in the spring.

TABLE XI.—Report of Inspection of Fertilizer Collected in 1929—Continued

Labels and names of persons from whom samples were secured	Official No.	Inspection No. H. H.	Samples taken at		Nitrogen (N): Water soluble as nitrates, ammonia salts and organic, per cent	Nitrogen (N): Active water insoluble organic, per cent	Nitrogen (N): Inactive water insoluble organic, per cent	Nitrogen (N): Total per cent	Phosphoric acid (P₂O₅): Soluble and reverted (available), per cent	Phosphoric acid (P₂O₅): Insoluble, per cent	Phosphoric acid (P₂O₅): Total per cent	Potash (K₂O), soluble in water, per cent
Rauh's Red Star 0-8-32	9951			guaranteed					8.0			32.0
Kraus & Apfelbaum	9951	3556	Nappanee	found					9.1	0.6		31.4
Rauh's Red Star 0-12-18	9952			guaranteed					12.0			18.0
E. K. Sowash	9952	3371	Crown Point	found					13.2	0.1		19.1
Rauh's Red Star 0-14-6	9953			guaranteed					14.0			6.0
Kraus & Apfelbaum	9953	3555	Nappanee	found					14.1	1.3		6.2
Hoosier Hardware Co.	9953	3585	Paoli	found					13.7	1.7		6.1
Victoria Mill & Elevator Co.	9953	3606	Jasper	found					14.0	2.1		6.1
James Robertson	9953	3623	Otterbein	found					15.8	2.4		5.9
J. Bercovitch	9953	3828	R. 4, Lafayette	found					14.2	1.6		5.7
James Robertson	9953	4062	Otterbein	found					14.1	0.9		6.0
Oren Thomas	9953	4239	Lowell	found					14.7	1.1		5.8
Rauh's Red Star 0-16-4	9954			guaranteed					16.0			4.0
Pickins Bros.	9954	3796	Orleans	found					16.5	1.7		3.8
Rauh's Red Star 2-10-8	88a			guaranteed				2.0	10.0			8.0
J. A. McCarty Seed Co.	88a	3919	Evansville	found	1.40			1.8	9.6	1.4		8.1
Lagrange Grain Co.	88a	4445	Lagrange	found	1.76			2.1	10.0	1.3		8.0
Rauh's Red Star 2-12-6 Fertilizer	89a			guaranteed				2.0	12.0			6.0
Hirsch Bros. Grain Co.	89a	3397	Clymers	found	1.65			2.1	11.6	1.6		5.6
Andrews Elevator Co.	89a	3457	Andrews	found	1.58			2.0	11.8	1.6		6.2
S. L. Hunt	89a	3677	Rushville	found	1.33			2.2	12.6	2.0		6.3
James Robertson	89a	4061	Otterbein	found	1.74			2.1	12.0	1.1		6.2
Charles Cory	89a	4104	R. 8, Lafayette	found	1.64			2.0	12.0	0.8		6.6
E. K. Sowash[189]	89a	4227	Crown Point	found	1.61			2.1	12.9	1.7		5.5
Oren Thomas	89a	4230	R. 2, Lowell	found	1.75			2.1	12.0	1.2		5.9
Hollie C. Lewis	89a	4291	Buck Creek	found	1.75			2.1	12.0	1.1		6.0
Ordie Beard	89a	4479	Dana	found	1.71			2.1	12.5	1.2		5.7
Rauh's Red Star 2-14-4 Fertilizer	90a			guaranteed				2.0	14.0			4.0
E. K. Sowash	90a	3342	Crown Point	found	1.52			2.0	13.7	1.5		4.0
Hirsch Bros. Grain Co.	90a	3398	Clymers	found	1.54			2.0	14.0	0.9		4.2
Victoria Mill & Elevator Co.	90a	3592	Jasper	found	1.61			2.1	14.0	2.1		4.1
E. K. Sowash	90a	4229	Crown Point	found	1.74			2.2	14.3	1.6		4.0
Lagrange Grain Co.	90a	4388	Lagrange	found	1.72			2.2	13.7	1.9		4.7
Rauh's Red Star 4-10-6 Fertilizer	92a			guaranteed				4.0	10.0			6.0
	92a	3401	Clymers	found	3.41			3.9	11.0	1.5		6.0

Rauh's Red Star 10-6-4 Fertilizer	93a			guaranteed				10.0	6.0			4.0
E. K. Sowash[190]	93a	3340	Crown Point	found	8 91			9.4	6.7	0.6		4.0
E. K. Sowash[191]	93a	4226	Crown Point	found	8.01			8 4	7 2	1.2		5.7
Rauh's Red Star 3-21-6 Fertilizer	94a			guaranteed				3.0	21 0	1.5		6.0
Hirsch Bros. Grain Co.	94a	3387	Clymers	found	2 63			3 3	22.1	1 5		6.2
Omar Beydler[192]	94a	4070	Rossville	found	2 60			3.0	21 4	1.3		6.0
Rauh's Red Star 4-24-12	95a			guaranteed				4.0	24 0			12.0
Hoosier Hardware Co.[193]	95a	3604	Paoli	found	3.60			4.5	26.3	1.0		11.0
W. S. Miller	95a	4220	Sedalia	found	3.72			4.2	25.3	0.9		12.4
Rauh's Standard 2-10-8 Fertilizer	97a			guaranteed				2.0	10 0			8.0
Ora Cline[194]	97a	3682	Rushville	found	1.72			2.0	9.8	1.3		8.4
Rauh's Standard 2-12-6 Fertilizer	98a			guaranteed				2 0	12 0			6.0
Andrews Elevator Co.	98a	3458	Andrews	found	1 75			2 1	12.4	1.1		6.3
Victoria Mill & Elevator Co.	98a	3584	Jasper	found	1.64			2.0	12.7	1.0		6.3
S. L. Hunt	98a	3691	Rushville	found	1.85			2.2	11.7	1.2		6.0
D. M. Moore	98a	3819	Georgetown	found	1.85			2.2	12.4	1.0		6.1
Jess Beydler	98a	4067	Rossville	found	1.86			2.2	12.2	1.1		5.7
Edwin Haak	98a	4208	Kokomo	found	1 92			2 2	12 8	1 6		6.1
Oren Thomas	98a	4222	Lowell	found	1.93			2.2	13.2	1.0		5.7
E. K. Sowash	98a	4225	Crown Point	found	1.90			2.2	12.9	0.8		5.6
Hollie C. Lewis[195]	98a	4292	Buck Creek	found	1 71			2 1	13 0	0 6		5 5
Hoosier Hardware Co.	98a	4567	Paoli	found	1.85			2.2	13.2	0.2		6.2
Rauh's Standard 2-14-4 Fertilizer	99a			guaranteed				2.0	14.0			4.0
Geneva Equity Exchange	99a	3646	Geneva	found	1.58			2.0	14.9			4.0
D. M. Moore	99a	3800	Georgetown	found	1.78			2.2	14.9	0.7		4.1
Oren Thomas	99a	3995	Bellshaw	found	1 64			2 2	14 7	0 7		4 2
Ordie Beard	99a	4476	Dana	found	1.68			2.1	14.9	1.0		3.8
Rauh's Standard 2-12-2	549a			guaranteed				2 0	12 0			2 0
Andrews Elevator Co.	549a	3454	Andrews	found	1.75			2.1	12.0	1.6		2.0
S. L. Hunt	549a	3693	Rushville	found	1.75			2.1	13.3	1.0		2.2
Edwin Haak	549a	4213	Kokomo	found	1 74			2.1	12 5	0 9		2 3
Rauh's Red Star 2-12-2 Fertilizer	550a			guaranteed				2.0	12.0			2.0
Hirsch Bros. Grain Co.	550a	3403	Clymers	found	1.79			2.1	12.2	1.5		2.5
Andrews Elevator Co.	550a	3453	Andrews	found	1.54			2.0	12.3	1.4		2.3
Rauh's Standard 1-8-2	618a			guaranteed				1 0	8.0			2.0
Frank Satter	618a	3957	Morgantown	found	0.89			1.1	7.4	0 2		1.9
Read Phosphate Company, Nashville, Tenn.												
Nitrate of Soda	3045			guaranteed				14 7				
A. B. Spurgin	3045	3263	Columbus	found				15.8				
Read Phosphate Company, New Albany, Ind.												
Indiana Special	461a			guaranteed				1 0	14 0	1 0		2 0
Farmers Elevator Co.	461a	4285	Garrett	found	0.78			1.2	13.2	2.4		2.8

Where 60.0 per cent or more of the total nitrogen guaranteed was found to be water soluble, the active and inactive insoluble organic nitrogen was not determined.

Percentages appearing in bold type in the "Inactive water insoluble organic" column denote inferior nitrogen.

[189] Sample to manufacturer.

[190] Refund $2.01. Sample received in the spring.

[191] Refund $2.70.

[192] Purchased from Jess Beydler.

[193] Refund $6.00.

[194] Purchased from S. L. Hunt.

[195] Sample to manufacturer.

TABLE XI.—Report of Inspection of Fertilizer Collected in 1929—Continued

Labels and names of persons from whom samples were secured	Official No.	Inspection No. H. H.	Samples taken at		Nitrogen (N)				Phosphoric acid (P_2O_5)			Potash (K_2O), soluble in water, per cent
					Water soluble as nitrates, ammonia salts and organic, per cent	Active water insoluble organic, per cent	Inactive water insoluble organic, per cent	Total per cent	Soluble and reverted (available), per cent	Insoluble, per cent	Total per cent	
General Crop Grower 2–12–2	464a	....	....	guaranteed	....	....	....	2.0	12.0	1.0	....	2.0
Farmers Elevator Co.	464a	4281	Garrett	found	1.41	....	....	2.0	12.4	2.3	....	2.5
Two–Twelve–Six	466a	....	....	guaranteed	....	....	....	2.0	12.0	1.0	....	6.0
Thomas Waddell	466a	3628	Otterbein	found	1.68	....	....	2.0	12.9	0.4	....	6.0
Parks O. Groninger	466a	4162	Rockfield	found	1.51	....	....	2.0	12.8	1.3	....	6.3
Farmers Elevator Co.	466a	4282	Garrett	found	1.66	....	....	2.0	12.6	1.9	....	6.8
Read Phosphate Company, New Albany Sales Department, New Albany, Ind.												
Twenty-Twenty All Available	8450	....	....	guaranteed	....	....	....	....	20.0	1.0	....	20.0
Avilla Feed Mill[196]	8450	4400	Avilla	found	....	....	....	....	20.5	1.2	....	4.3
Royster Guano Company, The F. S., Toledo, Ohio.												
Royster's 10–10 Phosphate of Potash	7662	....	....	guaranteed	....	....	....	....	10.0	0.5	....	10.0
Portland Equity Exchange	7662	3649	Portland	found	....	....	....	....	12.3	....	....	10.5
Royster's 18% Superphosphate	8537	....	....	guaranteed	....	....	....	....	18.0	0.5	....	....
Ross Beckley	8537	4057	Royal Center	found	....	....	....	....	18.1	0.9	....	....
Royster's 1–8–7	553a	....	....	guaranteed	....	....	....	1.0	8.0	0.5	....	7.0
Ross Beckley	553a	4055	Royal Center	found	0.88	....	....	1.3	9.0	1.0	....	7.9
Royster's 1–11–4	554a	....	....	guaranteed	....	....	....	1.0	11.0	0.5	....	4.0
Portland Equity Exchange	554a	3651	Portland	found	0.81	....	....	1.3	10.6	0.8	....	3.6
Royster's 2–8–16	557a	....	....	guaranteed	....	....	....	2.0	8.0	0.5	....	16.0
Portland Equity Exchange	557a	3650	Portland	found	1.36	....	....	2.0	7.7	0.9	....	16.4
Royster's 2–12–2	558a	....	....	guaranteed	....	....	....	2.0	12.0	0.5	....	2.0
Walter Seelig	558a	4195	Hartford City	found	1.58	....	....	2.2	12.9	0.7	....	2.3
Royster's 2–12–6	559a	....	....	guaranteed	....	....	....	2.0	12.0	0.5	....	6.0
Portland Equity Exchange[197]	559a	3645	Portland	found	1.71	....	....	2.2	12.9	0.1	....	2.7
Ross Beckley	559a	4054	Royal Center	found	1.30	....	....	2.1	12.6	0.2	....	6.6
Fred C. Uerkwitz	559a	4289	Buck Creek	found	1.55	....	....	2.1	12.2	0.6	....	6.0
Royster's 4–8–6	562a	....	....	guaranteed	....	....	....	4.0	8.0	0.5	....	6.0
Harry Terpstra	562a	3359	Highland	found	2.98	....	....	4.1	8.7	0.5	....	6.4
Royster's Bone Meal	568a	....	....	guaranteed	....	....	....	2.4	....	....	22.5	....
Portland Equity Exchange	568a	3652	Portland	found	0.35	1.66	0.69	2.7	....	....	26.7	....
Royster's 0–10–0	571a	....	....	guaranteed	....	....	....	....	10.0	0.5	....	10.0
	571a	4049	Royal Center	found	....	....	....	....	10.8	0.9	....	10.1
			Buck Creek	found	....	....	....	....	10.3	0.3	....	10.0

Ruhm Phosphate and Chemical Company, Mount Pleasant, Tenn.											
Ground Phosphate Rock	9202			guaranteed							
George Berry[198]	9202	3285	Royal Center	found						29.7	
"Ground Phosphate Rock"	652a			guaranteed						34.9	
J. J. Lawler[199]	652a	3971	Newton Ranch	found						33.0	
										33.6	
Smith Agricultural Chemical Company, Indianapolis Factory, Indianapolis, Ind.											
16% Superphosphate	5525			guaranteed					16.0			
Sellars Grain Co.	5525	3429	Forest	found					15.6	2.4		
Marshall Feed & Grain Co.	5525	3486	Marshall	found					16.0	3.3		
Flora Artificial Stone Co.	5525	4158	Flora	found					18.1	1.4		
Roy Stults	5525	4474	Clinton	found					17.2	1.9		
Muriate of Potash	8417			guaranteed								50.0
Co-operative Elevator	8417	3502	Winamac	found								51.5
Elmer Lucas[200]	8417	3521	Bass Lake	found								**48.2**
H. O. Greene[201]	8417	3543	Goshen	found								**48.9**
Christ Schrock[202]	8417	3563	Goshen	found								**48.9**
Rochester Co-operative Elevator Co.[203]	8417	3567	Rochester	found								**48.4**
Smith's 20% Superphosphate	8418			guaranteed					20.0			
Lapaz Grain Co.	8418	3337	Lapaz	found					21.7	1.8		
H. O. Greene	8418	3545	Goshen	found					20.1	1.2		
Silver Lake Elevator Co.	8418	4117	Silver Lake	found					21.1	1.0		
Lebanon Grain Co.	8418	4178	Lebanon	found					20.1	0.9		
Smith's Standard Twelve-Six	8787			guaranteed					12.0			6.0
Bashore Feed Store & Hatchery	8787	3562	Warsaw	found					12.7	0.1		6.1
Roland Ade[204]	8787	4223	Kentland	found					11.9	1.8		5.9
Smith's Standard Twelve-Twelve	8788			guaranteed					12.0			12.0
Joe Minch[205]	8788	3859	Monon	found					12.4	0.9		**11.0**
Flinn & Schluttenhofer	8788	4082	Earl Park	found					12.8	0.9		13.3
Smith's Bone Meal	8971			guaranteed				1.8			28.0	
H. O. Greene	8971	3550	Goshen	found	0.52	1.08	0.40	1.9			29.2	
Smith's Standard Eight-Twenty-four	9095			guaranteed					8.0			24.0
Al. Konovsky[206]	9095	3328	Demotte	found					8.5	0.6		**22.8**
Lapaz Grain Co.	9095	3356	Lapaz	found					7.9	0.9		24.8
Sacco 0-20-20	9977			guaranteed					20.0			20.0
Flinn & Schluttenhofer	9977	4081	Earl Park	found					20.1	0.3		20.0
A. D. Washburn[207]	9977	4238	Kentland	found					**19.4**	0.6		**19.6**
Sacco 2-12-2	212a			guaranteed				2.0	12.0			2.0
Lapaz Grain Co.	212a	3351	Lapaz	found	1.68			2.1	**11.7**	1.0		2.2
Farmers Co-operative Grain & Supply Co.	212a	3421	Crawfordsville	found	1.61			2.0	12.3	1.0		2.6
Bashore Feed Store & Hatchery	212a	3569	Warsaw	found	1.75			2.2	12.0	1.2		2.3
Farmers Co-operative Elevator Co.	212a	3710	Shideler	found	1.64			2.0	12.5	1.2		2.2
S. M. Somers	212a	3775	Knightstown	found	1.54			2.0	12.3	0.6		2.2

Where 60.0 per cent or more of the total nitrogen guaranteed was found to be water soluble, the active and inactive insoluble organic nitrogen was not determined. Percentages appearing in bold type in the "Inactive water insoluble organic" column denote inferior nitrogen.

[196] Removed from sale. Resampled. Goods returned to manufacturer.
[197] Refund $16.50.
[198] Not tagged. Labels furnished.
[199] Purchased from E. C. Hopkins.
[200] Refund $11.74.
[201] Not tagged. Labels furnished. Refund $5.95. Purchased from Christ Shrock.
[202] Refund $26.40.
[203] Refund $35.80.
[204] Purchased from A. D. Washburn.
[205] Refund $34.00.
[206] Refund $18.00.
[207] Refund $2.24.

TABLE XI.—Report of Inspection of Fertilizer Collected in 1929—Continued

Labels and names of persons from whom samples were secured	Official No.	Inspection No. H. H.	Samples taken at		Nitrogen (N)				Phosphoric acid (P_2O_5)			
					Water soluble as nitrates, ammonia salts and organic, per cent	Active water insoluble organic, per cent	Inactive water insoluble organic, per cent	Total per cent	Soluble and reverted (available), per cent	Insoluble, per cent	Total per cent	Potash (K_2O), soluble in water, per cent
Frank J. Smith	212a	4041	R. 2, Swayzee	found	1.68	......	......	2.1	12.1	1.1	......	2.5
Silver Lake Elevator Co.	212a	4127	Silver Lake	found	1.71	......	......	2.1	12.1	1.8	......	2.4
Lebanon Grain Co.	212a	4179	Lebanon	found	1.75	......	......	2.1	12.0	1.1	......	2.2
Farmers Co-operative Elevator Co.	212a	4194	Upland	found	1.81	......	......	2.2	12.5	1.1	......	2.3
S. R. Smith	212a	4200	Gas City	found	1.82	......	......	2.2	12.4	1.0	......	2.3
H. Dickey	212a	4315	Parker	found	1.79	......	......	2.2	11.8	1.5	......	2.1
Mexico Elevator Co.	212a	4374	Mexico	found	1.96	......	......	2.3	12.2	1.9	......	2.0
Sacco 2–14–4	213a	......	......	guaranteed	......	......	......	2.0	14.0	......	......	4.0
H. Dickey	213a	3716	Parker	found	1.68	......	......	2.1	13.8	1.3	......	4.4
Flinn & Schluttenhofer	213a	4084	Earl Park	found	1.79	......	......	2.1	14.1	1.9	......	4.5
Sacco 2–12–6	215a	......	......	guaranteed	......	......	......	2.0	12.0	......	......	6.0
Lapaz Grain Co.	215a	3355	Lapaz	found	1.61	......	......	2.1	12.8	0.3	......	6.1
Marshall Cement & Grain Co.	215a	3373	Greencastle	found	1.85	......	......	2.2	12.1	0.7	......	6.2
Sellars Grain Co.	215a	3430	Forest	found	1.75	......	......	2.1	11.8	0.9	......	5.6
H. O. Greene[208]	215a	3544	Goshen	found	1.90	......	......	2.2	12.6	0.3	......	6.7
Bashore Feed Store & Hatchery	215a	3560	Warsaw	found	1.75	......	......	2.2	12.2	0.6	......	6.2
Farmers Co-operative Elevator	215a	3612	Crawfordsville	found	1.68	......	......	2.1	12.8	......	......	6.2
Farmers Co-operative Elevator Co.	215a	3720	Shideler	found	1.71	......	......	2.1	11.7	0.7	......	6.1
S. M. Somers	215a	3778	Knightstown	found	1.68	......	......	2.0	12.8	0.7	......	5.7
Frank J. Smith	215a	4040	R. 2, Swayzee	found	1.74	......	......	2.1	12.0	0.9	......	6.2
Flinn & Schluttenhofer	215a	4077	Earl Park	found	1.84	......	......	2.2	12.4	1.3	......	6.0
Bashore Feed Store	215a	4118	N. Manchester	found	1.76	......	......	2.1	12.2	0.9	......	6.3
S. R. Smith	215a	4201	Gas City	found	1.95	......	......	2.2	12.0	0.8	......	6.4
H. Dickey	215a	4316	Parker	found	1.85	......	......	2.2	12.1	1.7	......	6.3
H. O. Greene	215a	4435	Goshen	found	1.82	......	......	2.2	11.9	1.3	......	5.8
Sacco 2–8–10	216a	......	......	guaranteed	......	......	......	2.0	8.0	......	......	10.0
Sellars Grain Co.	216a	3435	Forest	found	1.85	......	......	2.2	8.0	1.1	......	9.7
Ed. Shellenberger[209]	216a	3838	R. 2, Earl Park	found	1.51	......	......	2.0	8.9	1.0	......	10.0
Sacco 2–8–16	217a	......	......	guaranteed	......	......	......	2.0	8.0	......	......	16.0
Lapaz Grain Co.	217a	3338	Lapaz	found	1.82	......	......	2.1	8.6	0.6	......	16.0
Sacco 4–24–4	219a	......	......	guaranteed	......	......	......	4.0	24.0	......	......	4.0
Farmers Co-operative Elevator Co.	219a	3711	Shideler	found	3.32	......	......	3.7	23.8	1.1	......	3.9
H. Dickey[210]	219a	3715	Parker	found	3.44	......	......	3.6	23.9	1.0	......	3.6
Mexico Elevator Co.	219a	4408	Mexico	found	3.65	......	......	4.0	25.1	1.1	......	4.4
H. O. Greene	219a	4437	Goshen	found	3.78	......	......	4.2	24.7	1.4	......	3.8

Sacco 4–24–12	220a			guaranteed				4.0	24.0		12.0
Silver Lake Elevator Co.	220a	4123		found	3.64			4.0	24.0	1.0	12.0
Maxwell & Marshall Hardware Co.	220a	4428	Martinsville	found	3.72			4.2	24.2	0.4	12.4
Sacco 4–8–6	221a			guaranteed				4.0	8.0		6.0
Sellars Grain Co.	221a	3440	Forest	found	3.69			4.0	8.9	0.5	6.1
Sacco 1–8–4	222a			guaranteed				1.0	8.0		4.0
William Dowden	222a	3958	Morgantown	found	0.75			1.1	10.2	0.9	4.2
Sacco 0–14–6	223a			guaranteed					14.0		6.0
E. R. Allegre	223a	3743	Orleans	found					14.9	2.0	6.8
Flinn & Schluttenhofer	223a	4075	Earl Park	found					14.0	1.2	6.1
Roy Stults	223a	4475	Clinton	found					14.1	1.1	6.5
Sacco 10 10	224a			guaranteed					10.0		10.0
Sellars Grain Co.	224a	3423	Forest	found					9.2	1.4	10.4
H. Dickey	224a	3723	Parker	found					10.6	1.0	9.4
S. M. Somers	224a	3785	Knightstown	found					9.9	1.5	10.0
Marshall Dyer[211]	224a	4224	Kentland	found					10.0	1.5	10.0
Frank Burnside[211]	224a	4235	Kentland	found					10.8	1.0	10.0
Sacco 0–12–12	225a			guaranteed					12.0		12.0
Lapaz Grain Co.	225a	3339	Lapaz	found					11.6	0.8	12.5
Bashore Feed Store & Hatchery	225a	3561	Warsaw	found					12.9	0.7	11.7
George S. Schluttenhofer[212]	225a	3846	R. 2, Earl Park	found					12.5	1.0	12.1
A. D. Washburn	225a	4234	Kentland	found					12.2	1.1	12.5
Swift and Company Fertilizer Works, Calumet City, Ill.											
Swift's Red Steer 20% Superphosphate	8499			guaranteed					20.0		
Warsaw Feed Store	8499	3564	Warsaw	found					21.0	0.8	
Swift's Red Steer 10–10 Fertilizer	8614			guaranteed					10.0	0.5	10.0
Charles Porter[213]	8614	3833	Ade	found					10.2	1.0	10.8
Swift's Red Steer 12–12 Fertilizer	8793			guaranteed					12.0	0.5	12.0
Harold Cooper	8793	3858	Reynolds	found					12.1	0.7	13.1
Farmers Grain & Lumber Co.	8793	4267	South Wanatah	found					12.6	0.6	12.1
Boonville Implement Co.	8793	4614	Boonville	found					12.1	0.8	11.3
Swift's Red Steer 20–20	9561			guaranteed					20.0		20.0
Aetna Life Insurance Co.	9561	3370	Rensselaer	found					20.4	0.3	19.8
Lafayette Co-operative Elevator Co.[214]	9561	3383	Lafayette	found					20.5		18.5
Farmers Co-operative Co.[215]	9561	3837	Ade, P. O., Brook	found					19.1	0.8	18.9
Farmers Elevator Co.[216]	9561	4252	Monticello	found					19.2	1.0	18.5
Montezuma Mill & Elevator Co.	9561	4477	Montezuma	found					19.9	0.6	19.3
Swift's Red Steer 4–16 4	9567			guaranteed				3.2	16.0		4.0
Brown Valley Grain Co.	9567	3497	Brown Valley	found	3.33			3.6	15.9	2.4	4.3
Vigoro	88a			guaranteed				4.0	12.0		4.0
Brown Valley Grain Co.	88a	3498	Brown Valley	found	3.92			4.4	12.4	1.9	4.8
Swift's Red Steer 4–24–12	335a			guaranteed				4.0	24.0		12.0
Lafayette Co-operative Elevator Co.[217]	335a	3384	Lafayette	found	3.60			3.7	24.4	0.2	11.4

Where 60.0 per cent or more of the total nitrogen guaranteed was found to be water soluble, the active and inactive insoluble organic nitrogen was not determined.
Percentages appearing in bold type in the "Inactive water insoluble organic" column denote inferior nitrogen.

[208] Sample received in the spring.

[209] Purchased from Flinn & Schluttenhofer.

[210] Refund $3.28.

[211] Purchased from A. D. Washburn.

[212] Purchased from Flinn & Schluttenhofer.

[213] Purchased from Farmers Cooperative Co. of Ade.

[214] Refund $3.00. Sample to manufacturer.

[215] Refund $4.36.

[216] Refund $12.30.

[217] Refund $2.07. Sample to manufacturer.

TABLE XI.—Report of Inspection of Fertilizer Collected in 1929—Continued

Labels and names of persons from whom samples were secured	Official No.	Inspection No. H. H.	Samples taken at		Nitrogen (N)				Phosphoric acid (P_2O_5)			Potash (K_2O), soluble in water, per cent
					Water soluble as nitrates, ammonia salts and organic, per cent	Active water insoluble organic, per cent	Inactive water insoluble organic, per cent	Total per cent	Soluble and reverted (available), per cent	Insoluble, per cent	Total per cent	
Swift's Red Steer 4-24-4	336a			guaranteed				4.0	24.0			4.0
Roanoke Elevator Co.[218]	336a	3469	Roanoke	found	3.85			4.0	22.7	0.9		4.2
Pierce Elevator Co.[219]	336a	3747	Union City	found	3.36			3.6	22.5	0.5		4.2
Swift's Red Steer 4-16-4	337a			guaranteed				4.0	16.0			4.0
Holmes Hardware Co.	337a	3576	Mitchell	found	4.06			4.3	17.5	1.2		4.2
Clayton Milling Co.	337a	3672	Clayton	found	4.02			4.1	17.7	0.8		4.1
Montezuma Mill & Elevator Co.	337a	4480	Montezuma	found	4.03			4.3	15.5	1.3		4.1
D. M. Bottorff	337a	4494	Columbus	found	3.99			4.3	16.0	1.5		4.3
Boonville Implement Co.	337a	4617	Boonville	found	4.09			4.3	16.4	1.5		4.2
Swift's Red Steer 4-8-8	338a			guaranteed				4.0	8.0			8.0
Boonville Hardware Co.	338a	3927	Boonville	found	3.97			4.3	8.9	0.3		8.5
Swift's Red Steer 4-8-6	339a			guaranteed				4.0	8.0			6.0
Crowell Grain Co.	339a	3269	Columbia City	found	3.55			3.9	10.6	0.6		5.5
Swift's Red Steer 3-12-12	340a			guaranteed				3.0	12.0			12.0
George Steckley	340a	3535	Kendallville	found	2.89			3.1	12.3	0.5		14.3
Swift's Red Steer 3-12-4	341a			guaranteed				3.0	12.0			4.0
Boonville Implement Co.[220]	341a	3925	Boonville	found	2.83			3.2	12.8	0.6		4.4
Boonville Implement Co.	341a	4619	Boonville	found	2.69			3.0	15.5	0.5		4.1
Swift's Red Steer 3-9-18	342a			guaranteed				3.0	9.0			18.0
Aetna Life Insurance Co.[221]	342a	3504	Winamac	found	3.05			3.2	10.4	0.5		15.4
George Steckley	342a	3532	Kendallville	found	3.22			3.4	8.8	1.1		20.0
Swift's Red Steer 2-12-6	344a			guaranteed				2.0	12.0			6.0
Aetna Life Insurance Co.	344a	3310	North Vernon	found	1.89			2.2	12.8	0.4		6.0
Aetna Life Insurance Co.	344a	3500	Winamac	found	1.79			2.1	12.2	0.9		6.0
Warsaw Feed Store	344a	3551	Warsaw	found	1.61			2.1	12.6	1.0		5.7
Holmes Hardware Co.	344a	3572	Mitchell	found	1.61			2.0	11.4	0.7		7.4
Clayton Milling Co.	344a	3675	Clayton	found	1.72			2.0	13.0	0.9		6.0
Farmers Co-operative Elevator	344a	3841	Ade, P. O. Brook	found	1.64			2.0	12.4	0.9		6.2
Newell & Jones	344a	4260	Fulton	found	1.69			2.0	12.1	1.1		6.4
Corunna Feed Mills[222]	344a	4420	Corunna	found	1.85			2.2	12.1	0.9		5.8
Hubbard Kibbet Farm[223]	344a	4489	Clayton	found	1.92			2.2	12.1	0.9		6.0
O. L. Barr Grain Co.	344a	4517	Bicknell	found	1.89			2.2	12.1	1.0		6.1
Huebner Hardware Co.	344a	4561	Loogootee	found	1.89			2.2	11.9	0.8		6.4
Walter E. Crouch	344a	4605	Gosport	found	1.92			2.3	11.7	0.6		6.4
2-12-2	345a			guaranteed				2.0	12.0			2.0
	345a	3568	Warsaw	found	1.68			2.0	12.0	1.2		2.0
				found	1.71			2.1	12.5	1.1		2.3

Clayton Milling Co.	345a	3674	Clayton	found	1.72			2.0	13.0	0.7		2.1
Pierce Elevator Co.	345a	3744	Union City	found	1.65			2.1	12.6	1.1		2.2
Tower & Merryman	345a	3816	Marengo	found	1.75			2 0	12.4	1.1		2.0
Newell & Jones	345a	4258	Fulton	found	1 75			2.0	**10.5**	2 0		2.1
L. O. Knecht	345a	4385	Bippus	found	1 79			2.1	12.0	0.8		2.0
Corunna Feed Mill	345a	4419	Corunna	found	1.79			2.1	12.0	0.7		2.1
D. M. Bottorff	345a	4495	Columbus	found	1 78			2.1	12.4	0 7		2 0
O. L. Barr Grain Co.	345a	4518	Bicknell	found	2 07			2.2	12.4	1.2		2.0
Huebner Hardware Co.[224]	345a	4560	Loogootee	found	1.92			2.2	12.3	1.5		2 0
Henry Woodall	345a	4600	Greencastle	found	1.89			2.1	12.0	1.3		2.0
Walter E. Crowell	345a	4607	Gosport	found	1.99			2.2	11.8	2.0		2.1
Swift's Red Steer 2-8-16	346a			guaranteed				2.0	8.0			16.0
George Steckley[225]	346a	3534	Kendallville	found	1.92			2.2	7.3	0.8		18.0
Lawrence Vanderwall[226]	346a	3839	Ade	found	1.75			2.0	9.3	0.4		15 8
Swift's Red Steer 0-14-6	347a			guaranteed					14 0			6 0
Aetna Life Insurance Co.	347a	3265	North Vernon	found					**13.6**	1.1		6.1
Aetna Life Insurance Co.	347a	3330	Rensselaer	found					13 8	1.2		6.2
Aetna Life Insurance Co.	347a	3523	Winamac	found					17.4	0.5		5.8
Swift's Red Steer 1-29 Steamed Bone Meal Fertilizer	348a			guaranteed				1 0			29 0	
H. O. Greene	348a	4434	Goshen	found	0 88	1.07	0.15	2.1			30.8	
Swift's Red Steer 20% Superphosphate	373a			guaranteed					20 0			
Albert Wagner[227]	373a	4297	Valparaiso	found					20.0	1.6		
Swift's Special Golf Fertilizer 10-6-4	482a			guaranteed				10.0	6.0			4 0
Crowell Grain Co.	482a	3270	Columbus City	found	9.80			10 5	7 3	0.3		4 3
Swift's Red Steer 2-16-8	695a			guaranteed				2 0	16.0			8.0
Aetna Life Insurance Co.	695a	4594	Crothersville	found	1.99			2.2	16.4	1.0		8.4
Synthetic Nitrogen Products Corporation, New York, N. Y.												
Nitrophoska	9990			guaranteed				15 0	30.0			15.0
D. & K. Fertilizer Co.	9990	3763	Indianapolis	found				15.0	30.2	0.4		16.5
Randolph County Farm Bureau	9990	3764	Winchester	found				15.5	30.0	0.6		15.1
Hancock County Farm Bureau Co-operative Ass'n, Inc.	9990	3787	Greenfield	found				15.5	31.0			**14.7**
Tripp Hardware Company, Fred H., North Vernon, Ind.												
Tripp Mixture	620a			guaranteed				1 0	10.0			3 0
Fred H. Tripp Hardware Co.	620a	3294	North Vernon	found	0.49	0.35	0.16	1.0	11.4	1.8		2.2
United States Guano Company, Baltimore, Md.												
20% Superphosphate	9754			guaranteed					20 0	0.5		
F. F. Fribley	9754	4009	Etna Green	found					19 8			
50% Muriate of Potash	9755			guaranteed								50 0
Hamlet Co-operative Farm Shipping Ass'n	9755	3343	Hamlet	found								50.5
F. F. Fribley	9755	4008	Etna Green	found								**49.6**

Where 60.0 per cent or more of the total nitrogen guaranteed was found to be water soluble, the active and inactive insoluble organic nitrogen was not determined. Percentages appearing in bold type in the "Inactive water insoluble organic" column denote inferior nitrogen.

[218] Refund $4.00. Sample to manufacturer.

[219] Refund $5.84. Sample to manufacturer.

[220] Sample received in the spring.

[221] Sample to manufacturer. Refund $13.50.

[222] Not tagged. Labels furnished.

[223] Purchased from Clayton Milling Co.

[224] Not tagged. Labels furnished.

[225] Not tagged. Labels furnished.

[226] Purchased from Farmers Cooperative Elevator.

[227] Purchased from Brown Supply Co.

TABLE XI.—Report of Inspection of Fertilizer Collected in 1929—Continued

Labels and names of persons from whom samples were secured	Official No.	Inspection No. H. H.	Samples taken at		Nitrogen (N)				Phosphoric acid (P₂O₅)			Potash (K₂O), soluble in water, per cent
					Water soluble as nitrates, ammonia salts and organic, per cent	Active water insoluble organic, per cent	Inactive water insoluble organic, per cent	Total per cent	Soluble and reverted (available), per cent	Insoluble, per cent	Total per cent	
Virginia-Carolina Chemical Company, Cincinnati Division, Cincinnati, Ohio.												
V-C 24% Superphosphate	8326			guaranteed					24.0	1.5		
C. E. Bash & Co.[228]	8326	3451	Huntington	found					24.5	2.1		
C. E. Bash & Co.	8326	4411	Huntington	found					26.6	1.2		
Virginia-Carolina Chemical Corporation, Cincinnati Division, Cincinnati, Ohio.												
V-C Potash Phospho Tobacco 0-14-4	9589			guaranteed					14.0	1.5		4.0
Lewis Neukam	9589	4449	Sunman	found					14.7	2.8		4.0
V-C Superphosphate 16%	9616			guaranteed					16.0	1.5		
C. E. Bash & Co.	9616	4381	Huntington	found					17.5	4.0		
V-C Superphosphate 20%	9617			guaranteed					20.0	1.5		
Farmers Elevator Co.	9617	4410	South Whitley	found					21.9	1.2		
V C Phospho Tobacco 16%	9619			guaranteed					16.0	1.5		
Uhl-Snider Milling Co.	9619	4375	Connersville	found					16.6	2.6		
V-C Muck Special 8-24	9622			guaranteed					8.0	1.5		24.0
S. F. Trembly Hardware Co.	9622	3324	Columbia City	found					7.5	0.3		25.2
V-C Acid & Potash 20-20	9624			guaranteed					20.0	1.5		20.0
John Harris[229]	9624	3361	Columbia City	found					19.4	0.5		20.6
Al. Konovsky	9624	3364	Demotte	found					20.5	0.9		20.3
C. E. Bash & Co.	9624	3452	Huntington	found					19.5	0.6		22.1
Frank Strock	9624	4301	Hamilton	found					20.3	0.8		21.1
V-C Plough Brand 10-10	9715			guaranteed					10.0	1.5		10.0
Farmers Co-operative Co.	9715	3834	Ade, P. O. Brook	found					9.8	0.9		10.0
C. V. Graft	9715	4304	Winchester	found					10.9	5.1		10.7
V-C Prolific Crop Grower	9716			guaranteed					14.0	1.5		4.0
Henry A. Stultz	9716	3737	Orleans	found					14.4	1.4		4.9
V-C Potash Phospho Tobacco 10-10	9934			guaranteed					10.0	1.5		10.0
Hough Coal Co.	9934	3878	Delphi	found					11.2	1.4		10.6
V-C Ammoniated Phospho Tobacco 2-12-2	186a			guaranteed				2.0	12.0	1.5		2.0
Hough Coal Co.	186a	3876	Delphi	found	1.47			2.1	11.7	3.0		2.8
C. V. Graft[230]	186a	4303	Winchester	found	1.41			2.1	8.8	6.5		2.4
Jess Huddleston	186a	4349	Straughn	found	1.47			2.2	10.8	5.4		2.0
V-C Ammoniated Phospho Tobacco 2-12-6	187a			guaranteed				2.0	12.0	1.5		6.0
C. E. Bash & Co.	187a	3448	Huntington	found	1.75			2.1	12.1	2.3		6.5
Farmers Elevator Co.	187a	3836	Ade, P. O. Brook	found	1.65			2.2	13.5	1.4		6.3

Frank Hoshaw[231]	187a	3877	R. 1, Bringhurst	found	1.64			2.0	13.2	1.4		6.8
Corbett L. Parker	187a	3940	Monroe City	found	1.68			2.2	12.3	2.5		6.2
V-C Potash Formula 0-14-6	189a			guaranteed					14.0	1.5		6.0
George J. Wettschurack	189a	4083	Montmorenci	found					15.0	1.0		6.4
Jess Huddleston	189a	4328	Straughn	found					14.8	2.1		6.3
Michael Ripperger	189a	4340	Brookville	found					17.4	1.3		6.0
V-C Tip Top 2-8-16	191a			guaranteed				2.0	8.0	1.5		16.0
John Harris[232]	191a	3317	Columbia City	found	1.78			2.0	7.7	1.1		16.2
V-C Owl Brand 2-12-2	192a			guaranteed				2.0	12.0	1.5		2.0
S. F. Trembly Hardware Co.	192a	3316	Columbia City	found	1.72			2.2	12.4	2.2		2.1
C. E. Bash & Co.	192a	3450	Huntington	found	1.65			2.1	12.3	2.0		2.1
George J. Wettshurack	192a	4079	Montmorenci	found	1.71			2.3	10.8	3.5		2.1
New Haven Thurman Equity Exchange	192a	4284	New Haven	found	1.44			2.1	12.4	4.2		2.2
G. Wolff & Sons	192a	4296	Hamilton	found	1.60			2.3	9.5	4.9		2.0
C. V. Graft	192a	4305	Winchester	found	1.78			2.1	12.0	4.6		2.4
S. F. Trembly Hardware Co.	192a	4413	Columbia City	found	1.39			2.2	13.7	1.2		2.1
V-C Tomato and Truck 2-12-6	193a			guaranteed				2.0	12.0	1.5		6.0
Hartman & Dotterer	193a	3636	Bluffton	found	1.85			2.1	11.8	1.3		6.0
H. A. Stultz	193a	3734	Orleans	found	1.75			2.0	11.9	1.8		6.9
Frank Strock	193a	4021	Hudson	found	1.81			2.2	12.4	1.3		6.1
George J. Wettshurack	193a	4085	Montmorenci	found	1.74			2.1	12.5	1.3		6.1
New Haven Thurman Equity Exchange	193a	4192	New Haven	found	1.79			2.2	12.0	2.8		5.5
Frank Strock	193a	4294	Hudson	found	1.75			2.2	12.1	1.9		6.1
Farmers Elevator Co.	193a	4403	South Whitley	found	1.71			2.2	11.6	2.8		5.5
S. F. Trembly Hardware Co.	193a	4423	Columbia City	found	1.68			2.2	11.1	2.4		6.2
V-C Big Potato and Truck 3 12-4	196a			guaranteed				3.0	12.0	1.5		4.0
Hartman and Dotterer	196a	3705	Bluffton	found	2.83			3.0	12.2	1.5		3.5
V-C Quality Crop Grower 2-14-4	198a			guaranteed				2.0	14.0	1.5		4.0
G. Wolff & Sons	198a	4295	Hamilton	found	1.78			2.0	14.6	1.2		4.4
V-C Super 24 Fertilizer 4-16-4	200a			guaranteed				4.0	16.0	1.5		4.0
Michael Ripperger	200a	4334	Brookville	found	3.75			4.1	16.5	1.7		4.2
V-C Good Luck 4-24-4	201a			guaranteed				4.0	24.0	1.5		4.0
G. Wolff & Sons	201a	4275	Hamilton	found	3.48			3.8	24.8	0.8		4.2
New Haven Thurman Equity Exchange[233]	201a	4302	New Haven	found	3.08			3.5	23.6	1.0		4.0
C. E. Bash & Co.	201a	4384	Huntington	found	3.65			4.0	25.0	0.8		4.0
V-C Super Fertilizer 4-24-12	530a			guaranteed				4.0	24.0	1.5		12.0
J. A. Mummert	530a	4217	Sedalia	found	3.67			4.0	24.4	0.4		12.4
C. E. Bash & Co.[234]	530a	4383	Huntington	found	3.21			3.6	23.6	1.0		11.8
Virginia-Carolina Chemical Corporation, Richmond, Va.												
Bloomaid	85a			guaranteed				5.0	10.0	1.5		4.0
S. F. Trembly Hardware Co.	85a	3268	Columbia City	found	3.71			5.1	11.0	0.7		4.0

Where 60.0 per cent or more of the total nitrogen guaranteed was found to be water soluble, the active and inactive insoluble organic nitrogen was not determined.
Percentages appearing in bold type in the "Inactive water insoluble organic" column denote inferior nitrogen.

[228] Sample received in the spring.
[229] Purchased from S. F. Trembly Hardware Co.
[230] Refund $14.60.
[231] Purchased from Mat Haurahan.
[232] Purchased from S. F. Trembly Hardware Co.
[223] Refund $21.28.
[234] Refund $7.20.

TABLE XI.—Report of Inspection of Fertilizer Collected in 1929—Continued

Labels and names of persons from whom samples were secured	Official No.	Inspection No. H. H.	Samples taken at		Nitrogen (N)				Phosphoric acid (P_2O_5)			Potash (K_2O), soluble in water, per cent
					Water soluble as nitrates, ammonia salts and organic, per cent	Active water insoluble organic, per cent	Inactive water insoluble organic, per cent	Total per cent	Soluble and reverted (available), per cent	Insoluble, per cent	Total per cent	
Welch Chemical Company, Columbus, Ohio.												
No. 10 Independent Higrade Potash Special	8857			guaranteed					10.0			10.0
Bloomfield Milling Co.	8857	4469	Bloomfield	found					10.6	1.4		9.4
No. 9 Higrade Phosphate and Potash	9187			guaranteed					14.0			4.0
J. A. Bertch & Son[235]	9187	3904	Liberty	found					13.0	1.5		3.7
No. 1 Independent Favorite	75a			guaranteed				1.0	11.0			3.0
Farmers Co-operative Co.	75a	3784	Centerville	found	0.72			1.0	11.1	0.1		2.6
Andrew H. Lytle	75a	4389	Fremont	found	0.81			1.3	11.3	1.6		3.1
No. 2 Higrade Bumper Crop	76a			guaranteed				2.0	12.0			6.0
Charles Weller	76a	3459	Garrett (Farm)	found	1.85			2.1	11.9	1.5		9.4
Bloomfield Mill & Elevator	76a	3660	Bloomfield	found	1.19			2.1	13.2	0.7		6.4
Farmers Co-operative Co.	76a	3781	Centerville	found	1.82			2.1	11.[illegible]	0.9		5.8
J. A. Bertch & Son	76a	3909	Liberty	found	1.82			2.0	12.8	0.8		6.0
Andrew H. Lytle	76a	4441	Fremont	found	1.89			2.3	13.0	0.6		6.0
Bloomfield Milling Co.	76a	4462	Bloomfield	found	1.54			2.0	11.7	1.4		6.0
No. 6 Higrade General Crop	78a			guaranteed				2.0	12.0			2.0
Farmers Co-operative Co.	78a	3783	Centerville	found	1.68			2.1	12.1	1.2		2.1
J. A. Bertch & Son	78a	3911	Liberty	found	1.58			2.0	12.9	1.4		2.1
Ralph McCormick	78a	4430	R. 3, Parker	found	1.75			2.3	12.0	1.7		2.3
Independent 16% Superphosphate	587a			guaranteed					16.0			
Andrew H. Lytle	587a	4443	Fremont	found					17.0	0.9		
Bloomfield Milling Co.	587a	4463	Bloomfield	found					16.0	1.8		
No. 4 Independent Grain Special	589a			guaranteed				1.0	8.0			4.0
Bloomfield Mill & Elevator Co.	589a	3670	Bloomfield	found	0.85			1.1	9.2	0.5		4.0
No. 12 Higrade Truck Special	590a			guaranteed				3.0	8.0			6.0
J. A. Bertch & Son	590a	3901	Liberty	found	2.73			3.0	9.2	0.5		6.3

Where 60.0 per cent or more of the total nitrogen guaranteed was found to be water soluble, the active and inactive insoluble organic nitrogen was not determined.
Percentages appearing in bold type in the "Inactive water insoluble organic" column denote inferior nitrogen.

[235] Total refund would be less than $1.00.

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CIRCULAR No. 172 JUNE, 1930

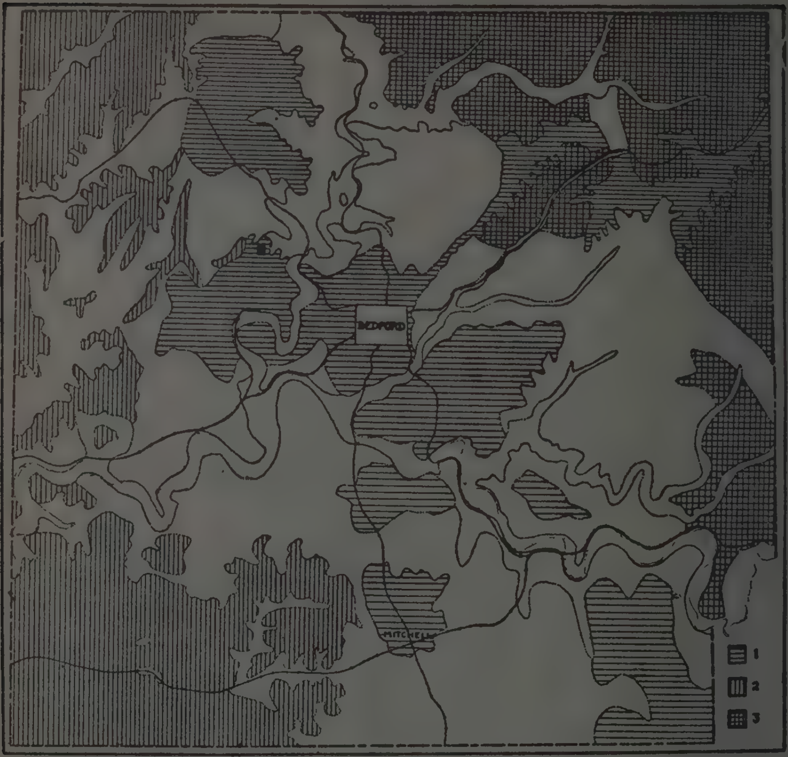
REPORT OF
MOSES FELL ANNEX FARM

Bedford, Indiana

JUNE, 1930

PURDUE UNIVERSITY
Agricultural Experiment Station
Lafayette, Indiana

Map Showing Soil Types Similar to Experiment Field



Region	Principal Soil Characteristics
No. 1.	Yellowish limestone land like Bedford experimental field.
No. 2.	Yellowish "freestone" land.
No. 3.	Like No. 1 on ridge tops and like No. 2 on lower slopes.

The results of the Moses Fell Annex Farm can be applied to the greater part of Lawrence County and surrounding territory.

The soil survey made in this county in 1922 enabled the Department of Agronomy to classify the soils of this section and to indicate the types which can benefit most from the experimental work on this farm.

The results will apply to all similar land in the county, which is indicated by shading No. 1 on the map. They will also apply fully as well to the areas indicated by shading No. 2, and more or less fully to the areas indicated by shading No. 3 where the hilltops are like No. 1 and the lower slopes like No. 2.

Portions of the unshaded area would doubtless respond to similar treatments, but most of it does not need either lime or fertilizer to the same extent as the shaded areas.

REPORT OF MOSES FELL ANNEX FARM
JUNE, 1930

H. J. REED, Farm Director HOBART G. HALL, Superintendent

The development of improved farm practices, the choice of highest producing varieties of grain and the most efficient use of fertilizers for crop production are factors that contribute to profitable farming. Satisfactory and reliable information on these subjects can be obtained only by years of continuous study and experiment in the different sections of the state.

A sincere interest in the advancement of the agriculture of Southern Indiana and a realization of the facts already mentioned prompted the Honorable Moses Fell Dunn to give to the Purdue University Agricultural Experiment Station the Moses Fell Annex farm and certain funds in order that permanent experimental fields might be available to study and solve agricultural problems which confront the farmers owning or operating land of a similar nature. He believed that Southern Indiana was well adapted to the production of high quality fruit which could bring profitable incomes to orchardists. He was also interested in the value of alfalfa as a hay and pasture crop for the development of dairying and live stock production.

MOSES FELL DUNN

The soil on this farm represents a large area in Southern Indiana and the results of the experiments can be applied to thousands of farms.

The farm is being operated for the benefit of the farmers in that section without cost to the taxpayers of the state.

The soil experiments have been under way since 1915 and indicate in a very definite manner that this land, if it is not too broken, can be built up to produce profitable crops.

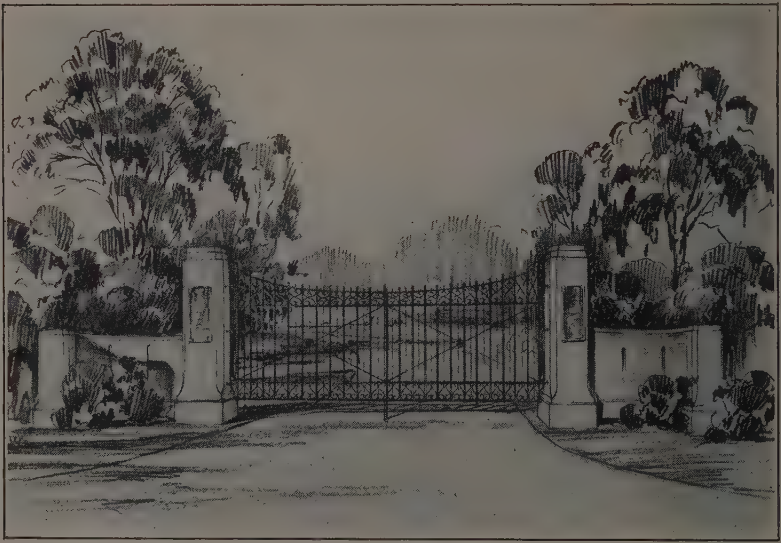
Untreated soil has averaged approximately 21 bushels of corn, 4 bushels of wheat and a half ton of hay. Land receiving lime, manure, and 450 pounds of 16 per cent superphosphate has averaged approximately 53 bushels of corn, 15 bushels of wheat and a ton and a half of hay. An expenditure of $5.04 per acre per rotation for superphosphate has given a return of $36.85 per acre per rotation. The pasture experiments show that the quantity of grass can be greatly increased by proper fertilization. The clover strain test shows very clearly that some strains of red clover seed are not adapted to our use.

Under the direction of the Department of Horticulture, a stationary spray outfit has been installed in about 50 acres of the orchard. Careful records will be kept of the costs of operating this plant. Operating costs of the portable outfit are also being recorded in order that adequate comparisons may be made for fruit growers.

The live stock work has been carried forward as in previous years. A cooperative project with the United States Department of Agriculture has been approved for the study of cattle breeding problems, special attention being given to the establishment of an outstanding herd of dual-purpose Shorthorn cattle.

Satisfactory progress has been made in the development of the purebred flock of Barred Plymouth Rock chickens.

In order to give permanent recognition to Moses Fell Dunn and Antoinette Fell for their worth while and generous service to the agriculture and country life of Southern Indiana, a memorial gateway has been constructed at the entrance of the farm.



The Memorial Gateway.

SOILS AND CROP EXPERIMENTS

When the Moses Fell Annex Farm was taken over in 1914, it did not provide feed and pasture enough for a team of mules which was purchased for farm work. The soil is typical of the upland areas of this section of Indiana—being a yellowish-brown silt loam soil. Under the direction of Professor A. T. Wiancko, chief of the Department of Agronomy, a uniform section of ten acres of poor pasture land was plowed up and planted to corn. The crop produced 23 bushels per acre. This land has been used continuously in fertility tests since, and other land has been added to enlarge the experimental program. The results of soils and crops experiments are reported below by Professor A. T. Wiancko and Professor G. P. Walker.

Effect of manure and phosphate on corn yields, Bedford Experiment Field, 1927. Each shock is the produce of one-twentieth acre. The crop rotation is corn, wheat and clover. Each corn crop received about 6 tons of manure and 450 pounds of 0-16-0 per acre. This treatment has also increased the yields of the other crops by an average of 7.6 bushels of wheat and 1,535 pounds of hay per acre.

Lime alone 18.6 bus. corn per acre	Lime and manure 58.7 bus. corn per acre	Lime, manure and phosphate 74.6 bus. corn per acre

GENERAL SOIL FERTILITY TEST

The soil fertility experiments carried on under the direction of the Agronomy Department are showing more and more striking results.

It will be noted, in comparing earlier reports and in examining the crops on the experiment field, that the spread between the good and poor treatments is becoming greater year by year, and that the better treatments are becoming more and more profitable. Without soil treatment, the average value of the crops per rotation of corn, soybeans, wheat and clover is now $35.63. With lime, manure and phosphate, the value is $94.76, at an average cost of $8.24 for lime and phosphate.

The largest returns have been secured on the limed land, which has received an average of 6.8 tons of manure for corn and 450 pounds of fertilizer divided between the corn and wheat in the rotation of corn, soybeans, wheat and clover. (Plot 20.) The crop increases from this treatment have averaged $59.82 per acre per rotation as compared with the untreated land (plot 14), or a total of $194.41 in thirteeen years. The cost of treatment outside of the manure, which was produced on the farm, has been $10.50 for three tons of ground limestone in 1917 and $4.44 every second year for fertilizer, or a total of $39.36 in the thirteen years.

Phosphorus is by far the most important plant food need of this soil. Applications of superphosphate have been highly profitable, either alone or in addition to manure. Without manure (plot 2) 225 pounds of 16 per cent superphosphate for corn and wheat in the four-year rotation have produced average crop increases of 16.9 bushels of corn, 6.9 bushels of soybeans, 6.8 bushels of wheat and 1,159 pounds of hay per acre, valued at $36.85 for the rotation at a cost of $5.04 for the fertilizer. On land receiving an average of 6.8 tons of manure for corn, a similar use of superphosphate has further increased the crop yields by 10.1 bushels of corn, 5.9 bushels of soybeans, 5.8 bushels of wheat and 1,202 pounds of hay, worth $30.13 at a cost of $5.04 for the phosphate, showing that manure is not sufficient on this land. (Compare plots 16 and 18.)

Manure applied at an average rate of 5.5 tons per acre for the corn has produced average crop increases of 16.7 bushels of corn, 2.5 bushels of soybeans, 2.5 bushels of wheat and 454 pounds of mixed hay per acre, valued at $20.10, which amounts to an average return of $3.64 per ton of manure applied. (Compare plots 14 and 15.)

Ground limestone applied at the rate of three tons per acre in 1917 has so far produced average crop increases of 3.7 bushels of corn, 1.8 bushels of soybeans, 1.7 bushels of wheat, and 521 pounds of mixed hay per acre, valued at $33.34, up to the present time. (Compare plots 13 and 14.)

Lime and manure together have produced average increases of 20.4 bushels of corn, 4.6 bushels of soybeans, 3.9 bushels of wheat, and 775 pounds of mixed hay per acre, amounting to $29.81 for the rotation. (Compare plots 14 and 16.)

Applications of 300 pounds of 0-12-4 on corn and 300 pounds of 4-12-4 fertilizer on the wheat have produced average increases of 19.1 bushels of corn, 6.0 bushels of soybeans, 9.2 bushels of wheat, and 1,108 pounds of mixed hay per acre, amounting to $40.41 at a total cost of $8.88 for the fertilizer. (Compare plots 12 and 14.) The bulk of the increase, however, has been due to the phosphorus in the fertilizer, as is shown in the comparison of plots 2 and 8 with plots 3, 4, 6 and 7.

The field was laid out and tile drained in the spring of 1917. The original rotation was corn, wheat, clover and timothy, but this was changed in 1923 to corn, soybeans, wheat and clover, which is a more suitable rotation for this kind of land. All crops are removed except on plots 6, 7, 8, 10 and 11, where only the ear corn, wheat, grain, soybean grain, and clover hay are removed, leaving all the roughage except the clover hay on the land in lieu of manure.

The treatments shown in the second column of the table are as follows: L=ground limestone; P=phosphorus; K=potash; N=nitrogen; Res.=crop residue; O=no treatment; M=manure.

All limed plots received 3 tons of ground limestone per acre in the spring of 1917. The fertilizer applications consist of 72 pounds of phosphoric acid, 24 pounds of potash and 12 pounds of nitrogen per acre per rotation. To the end of 1928 the phosphorus and potash were equally divided between the corn and wheat, but the nitrogen is all applied for wheat, half in the fall and half in the spring. Beginning with 1929 the wheat receives two-thirds of the phosphorus and potash and nitrogen as formerly, while the corn receives one-third of the phosphorus and potash in the row and also 4 pounds of nitrogen per acre on the plots receiving complete fertilizer.

The manure applications consisted of 6 tons per acre plowed under for corn in the first round of the rotation. Since then the rate of manuring has been equal to the amount of produce removed during the previous round of the rotation, except the wheat grain.

The following table shows the results of different soil treatments begun in 1917:

PROGRESS REPORT—BEDFORD FERTILITY EXPERIMENT 1917-1929

AVERAGE YIELDS AND FINANCIAL STATEMENT PER ACRE PER ROTATION[1]

Results of Fertility Experiment

Plot No.	Treatment	Average Yields Per Acre				Total value four crops	Value of increase due to fertilizer	Cost of fertilizer	Net gain due to fertilizer
		Corn bushels 1917-1929	Soybeans bushels 1923-1929	Wheat bushels 1918-1929	Hay pounds 1917-1929				
1	L	23.8	9.7	4.8	1369	$45.49			
2	L P	41.2	16.7	11.7	2543	82.83	$36.85	$5.04	$31.81
3	L P K	45.0	16.2	12.0	2478	84.55	38.06	6.48	31.58
4	L P K N	44.3	16.1	14.5	2520	87.39	40.41	8.88	31.53
5	L	25.7	10.2	5.4	1424	47.48			
6	L PKN Res	47.1	17.9	15.3	2692	85.91	39.81	8.88	30.93
7	L PK Res	47.4	18.2	13.5	2754	84.57	37.97	6.48	31.49
8	L P Res	45.5	18.6	12.4	2607	81.88	34.79	5.04	29.75
9	L	26.8	10.1	5.8	1399	49.45			
10	L Res	27.8	11.0	5.7	1494	46.68			
11	—Res	24.3	10.6	4.7	1320	41.90	8.41[2]		
12	—PKN	39.8	13.0	12.8	2228	76.10	39.68	8.88	30.80
13	L	23.8	9.8	5.1	1348	45.76	33.34[3]	10.50[3]	22.84[3]
14	O	20.5	7.8	3.4	828	35.63			
15	—M	37.1	10.2	6.0	1283	55.86	20.10[4]	5.5 tons	3.64[5]
16	LM	41.8	12.2	7.5	1605	65.44	19.30[6]	5.8 tons	3.33[5]
17	L	25.3	9.3	5.4	1353	46.27			
18	LMP	51.8	17.7	13.3	2778	94.76	30.13	5.04	25.09
19	LM PK	52.3	17.3	13.8	2663	94.61	30.93	6.48	24.45
20	LM PKN	50.7	17.5	15.0	2665	95.45	32.71	8.88	23.83
21	L	23.8	8.4	4.8	1226	42.50			
	Ave. L checks	24.9	9.6	5.2	1353	46.36			

1. The crop rotation was changed in 1923 from corn, wheat, clover and timothy to corn, soybeans, wheat, clover.
2. Value of grain and hay increase due to residues alone.
3. Value of increase, cost and net for liming to date.
4. Value of increase due to manure used alone.
5. Value of increase per ton of manure.
6. Value of increase due to manure over lime.

NOTE.—In computing the financial results, corn has been valued at 60c, wheat at $1.25 and soybeans at $1.25 per bushel; stover and wheat straw at $2.50, soybean straw at $3.00 and hay at $10.00 per ton. Nitrogen has been charged at 20c, phosphoric acid at 7c and potash at 6c per pound. Ground limestone has been charged at $3.50 per ton.

Comparison of Different Phosphates

The object of this experiment is to determine the relative values of superphosphate, rock phosphate, bone meal, and basic slag as phosphatic fertilizers. Superphosphate and rock phosphate are also compared in several different proportions with and without lime, manure, nitrogen and potash fertilizers. The table following shows the results to date of treatments begun in 1916.

The largest returns have been secured from the combination of lime, manure, and heavy applications of superphosphate (plot

26). This treatment has produced average increases of 27.6 bushels of corn, 9.7 bushels of wheat, and 1,632 pounds of mixed hay per acre, valued at $39.74 per rotation or a total of about $185.46 per acre since 1916, when the treatments were begun, at a total cost of $37.52 for lime and phosphate. Fourteen dollars of this cost was for 4 tons of ground limestone, applied when the experiment was begun. (Compare plot 26 with 33.)

On limed and manured land superphosphate has been the most profitable source of phosphorus, the net returns per acre per rotation from the different phosphates averaging as follows: superphosphate, $13.53; basic slag, $13.13; steamed bone meal, $9.20; rock phosphate, $7.10. (Compare plots 2, 3, 5, and 6.) In this comparison superphosphate, basic slag, and steamed bone meal have been applied at the rate of 48 pounds of phosphoric acid per acre and rock phosphate at the rate of 192 pounds of phosphoric acid per acre with manure for each corn crop.

On limed land superphosphate has been more profitable than rock phosphate, whether used in large or small amounts and with or without manure. Without manure the superphosphate has averaged net returns of $9.97, and with manure $13.53, while rock phosphate has netted $3.40 without manure and $7.10 with manure per acre per rotation. (Compare plots 5 and 11 with 6 and 12.)

Without either lime or manure, rock phosphate has been more profitable than superphosphate, netting $17.35 against $12.09 for superphosphate (plots 14 and 15). On manured land without lime, rock phosphate is slightly ahead of the superphosphate, netting $18.49 against $18.45 for the superphosphate (plots 8 and 9).

On limed and manured land, rock phosphate applied at the rate of one ton per acre in 1916 and again in 1925, has produced crop increases to date valued at $56.60, while superphosphate applied at the rate of half a ton in 1916 and again in 1925 has produced increases valued at $79.66 up to the present time.

This field was laid out and tile drained in the summer of 1915. The crop rotation is corn, wheat, and clover with all produce removed except second growth clover.

The treatments shown in the second column of the table are as follows: L=ground limestone; M=manure; St. B.=steamed bone meal; BS=basic slag; AP=superphosphate; RP=rock phosphate; N=12 pounds nitrogen; K=50 pounds potash.

Ground limestone was applied at the rate of 4 tons per acre in 1915.

Manure was applied at the rate of 6 tons per acre for corn in the first round of the rotation and since then in amounts equal to the produce removed except wheat grain. The phosphates are applied at the rates shown in the third column in the accompanying table.

AVERAGE YIELDS AND FINANCIAL STATEMENT PER ACRE PER ROTATION

Plot No.	TREATMENT	Lbs. phos. acid per acre	AVERAGE YIELD PER ACRE			Total value of three crops in rotation	Value of increase due to fertilizer per rotation	Cost of fertilizer	Net gain due to fertilizer per rotation
			Corn bushels 1916-1929	Wheat bushels 1917-1929	Hay pounds 1918-1929				
0	......	......	23.9	4.4	1276	$29.10	......	......	......
1	LM	......	38.3	7.7	1695	44.24	......	......	......
2	LM St. B	48	45.7	11.3	2477	57.52	$12.56	$3.36	$9.20
3	LM Bs	48	48.7	12.5	2498	62.16	16.49	3.36	13.13
4	LM	......	39.7	8.0	1730	46.39	......	......	......
5	LM AP	48	50.4	12.8	2599	64.42	16.89	3.36	13.53
6	LM RP	192	49.2	11.3	2417	60.57	11.90	4.80	7.10
7	LM	......	41.5	8.8	1941	49.81	......	......	......
8	—M AP	48	48.3	11.4	2513	60.48	21.81	3.36	18.45
9	—M RP	192	48.9	11.1	2800	61.82	23.29	4.80	18.49
10	LM	......	41.4	8.7	1894	49.37	......	......	......
11	L— AP	48	33.2	9.0	2118	45.31	13.33	3.36	9.97
12	L— RP	192	30.1	7.2	1906	39.83	8.20	4.80	3.40
13	L[5]	......	24.9	5.2	1394	31.27	......	......	......
14	—AP	48	33.9	7.2	1790	41.60	15.45	3.36	12.09
15	—RP	192	37.3	8.4	2262	47.94	22.15	4.80	17.35
16	LM	......	39.4	8.4	1795	47.23	......	......	......
17	L— NK AP	48	43.4	10.8	2279	55.65	24.48	8.76	15.72
18	L— NK RP	192	36.2	8.9	2180	47.78	15.63	10.30	5.33
19	LM	......	41.2	9.1	1946	50.18	......	......	......
20	—NK AP	48	43.0	9.9	2009	52.60	25.27	8.76	16.51
21	—NK RP	192	42.8	9.9	2607	55.71	29.42	10.30	19.12
22	LM	......	39.9	7.8	1845	47.05	......	......	......
23	LM AP	24	49.6	12.3	2526	63.15	13.46	1.68	11.78
24	LM RP	96	46.8	11.0	2371	58.60	6.27	2.40	3.87
25	LM	......	44.0	10.6	2134	54.97	......	......	......
26	LM AP	72	53.4	15.2	3067	72.22	17.95	5.04	12.91
27	LM RP	288	50.4	12.7	2790	65.49	11.90	7.20	4.70
28	LM	......	42.9	9.9	2034	52.91	......	......	......
29	LM AP	160[6]	51.7	14.3	2877	68.91	79.66[7]	22.40[7]	57.26[7]
30	LM RP	600[6]	49.7	11.8	2666	62.91	56.60[7]	30.00[7]	26.60[7]
31	LM	......	41.6	9.3	1777	49.72	10.99[1]	......	......
32	—M	......	33.8	6.4	1153	37.36	10.81[2]	4.1 tons	2.64[3]
33	—	......	20.9	4.2	953	25.19	......	......	......
34	LM	......	38.1	8.8	1539	45.62	21.80[4]	......	......
	Ave. LM checks	......	40.7	8.8	1845	48.79	......	......	......

(Plots 17, 18, 20 and 21 received 12 pounds of nitrogen and 50 pounds of potash per acre per rotation, all on the corn.)

1. Value of increase due to lime over manure.
2. Value of increase due to manure.
3. Value of increase per ton of manure.
4. Value of increase due to lime and manure.
5. Manured on Series B in 1916 and Series C in 1917.
6. Applied in 1916 and again in 1925.
7. Total value of increase, cost, and net returns to date at present prices.

NOTE.—In computing the financial results, corn has been valued at 60c and wheat at $1.25 per bushel; stover and wheat straw at $2.50, and hay at $10.00 per ton. Nitrogen has been charged at 20c, phosphoric acid at 7c and potash at 6c per pound. Rock phosphate (30%) has been charged at $15.00, and ground limestone at $3.50 per ton.

Variety Tests of Farm Crops

The selection of hardy, high-yielding varieties of the crops grown in any section is very important. To determine those best adapted for this part of the state, the most promising varieties of several crops have been compared each year for a number of years. Each variety has been harvested separately and the yields determined by weight. The land on which the variety tests are carried has been kept in a good state of fertility by uniform applications of fertilizer on wheat, and manure on each corn crop.

RESULTS OF CROP VARIETY TESTS, 1922-1929

Varieties	Bushels per acre	
	Average 1926-29	Average 1922-25
Winter Wheat		
Purkof	23.2	21.9
Selection 21-2-11	18.6	....
Michigan Amber	17.4	19.5
Fulhio	15.9	....
Fultz	15.9	19 1
Poole	15.1	17.5
Rudy	....	17.4
Red Rock	....	17.2
Red Chaff	....	18.2
Winter Rye		
Mammoth Winter	26.8	21.2
Wisconsin Pedigree	22.8	18.9
Rosen	21.7	19.0
Winter Barley		
Purdue 21	22.8	20.7
Tennessee Winter	30.6	19.0

Varieties	Bushels per acre	
	Average 1926-29	Average 1922-25
Oats		
Minota	39.5	37.2
Swedish Select	33.8	33.9
Iowa 103	38.2	33.4
Fairfield	....	32.7
Big Four	....	29.2
Burt	....	29.0
Victory	....	27.8
Iowar	40.6	....
Fulghum	36.6	....
Cornellian	33.6	....
Spring Barley	12.2	10.4
Spring Wheat	6.1	8.3
Spring Rye	10.4	13.7
	Hay pounds per acre	
	Average 1927-29	Average 1922-26
Soybeans		
Dunfield	5751	5035
Manchu	4552	4966
Lexington	....	4635
Midwest	7148	4012
Wilson	6028	....
Virginia	5677	....
Mansoy	4482	....
Cowpeas	....	3278

Pasture Experiments

The improvement of pasture land has a very definite place in the agricultural program for Southern Indiana. Large areas of this section are better adapted to pasture purposes than to its present use. There is a considerable area of pasture land that is not producing in a satisfactory way. The development of better pastures will make possible the expansion of the live stock industry from both the beef cattle and the dairy cattle point of view.

Several years ago a series of pasture experiments was laid out in one of the uniform spots of the old pasture, and the results given in the accompanying table indicate the value of this work. Further work will be conducted to study the most economical methods of pasture improvement.

Various grass mixtures were used in connection with the different fertilizer treatments, so some very definite information is available for those who are interested in this important work. In connection with this, lespedeza has been seeded on poor unproductive spots, and is gradually extending over the pasture land. Lespedeza seems well adapted to our poor lands, on which more expensive methods of improvement are not practiced.

RESULTS OF PASTURE EXPERIMENT, 1924-1929

Plot No.	TREATMENT PER ACRE*	Green forage pounds per acre 1924	Green forage increase over untreated	1925	Cured pounds per acre average 1926-29	Cured forage increase over untreated
1	Manure	5,445	1,512	Due to dry weather growth was small in 1925 and nothing was harvested	1,293	730
2	500 lb. 2-12-6	16,940	13,007		1,926	1,363
3	500 lb. 0-12-6	13,613	9,680		1,508	945
4	500 lb. 0-12-0	13,310	9,377		1,275	712
5	Untreated	3,933	....		563	....
6	Limestone 2 tons	6,363	2,430		1,149	586
7	Lime, 500 lb. 0-12-0	13,613	9,680		1,147	584
8	Lime, 500 lb. 0-12-6	18,150	14,217		1,477	914
9	Lime, 500 lb. 2-12-6	16,940	13,007		2,027	1,464
10	Lime, manure	13,613	9,860		1,381	818

* Treatments applied at seeding time in April, 1923, and fertilizer repeated in fall of 1929. Plots 2 and 9 receive top dressings of 100 pounds of nitrate of soda per acre each spring.

Farmers who visit the experimental field plots will see some new and interesting tests. Striking differences in the way different

A plot in the clover seed strain test which was practically killed out by the winter weather. Notice the excellent growth of surrounding clover. This emphasizes the importance of using hardy strains of red clover.

strains of red clover came through the winter show one reason for the increasing clover failures. The effect of broadcasting and row fertilization of corn and the effect of plowing under one year old sweet clover on the corn can also be seen.

These things together with the regular fertility results, variety tests of wheat, oats and soybeans, lespedeza and nitrogen top dressing of wheat will be seen on the field.

HORTICULTURAL EXPERIMENTS

The orchard is the largest single enterprise on the farm, consisting of 82 acres of apples, 1 acre of pears, 3 acres of plums and prunes and 4 acres of peaches. The original orchard was planted by Mr. Dunn and represents one of his major interests on the farm.

The Department of Horticulture under Professor Laurenz Greene, chief, cooperates in the management of the horticultural work and supervises their experimental projects on the farm, Professor C. L. Burkholder giving this part of the work his personal attention. He reports their work as follows:

Stationary vs. Portable Spraying

In the spring of 1930 an up to date stationary spray plant was installed on 50 acres of the north section of the apple orchard. This area is very rough, cannot be cultivated and has always been very difficult to spray with portable rigs. In addition to this farm problem, many fruit growers in the vicinity of Bedford, as well as in all sections of Indiana, are very much interested in the merits of stationary spraying in comparison to the use of portable rigs. With this question in mind the 30 acres of apple orchard on the south section of the orchard are being handled by a new large capacity portable sprayer. Careful records have been kept for three years on the cost and amount of material applied to these blocks with portable rigs. It is too early to draw any conclusions as to the merits of the two widely different systems of spraying, but a few statements from 1930 figures are interesting:

1. It cost $1,617.52 to buy and install the stationary plant complete except motor.

2. All labor, except electrical work, was done by regular farm force. It took 423 hours of man labor, 66 hours of horse labor and 6 hours of truck labor. Wiring plant cost was $33.40. Total labor and wiring bill was $174.70.

The new stationary outfit was installed this spring to spray 50 acres of the orchard.

3. Total cost on acre basis was $32.35 without motor. Acre cost could be reduced by piping entire apple orchard to present plant.

4. With old model portable rigs the application of from 1,200 to 1,400 gallons of material was an average day's work. In the case of the new high powered portable rig now being used, from 2,000 to 2,400 gallons is the average day's application. This is a gain of from 1,000 to 1,200 gallons per day with no added cost for man or tractor labor.

5. With the stationary plant the entire fifty acres is covered from one side in 6 to 7 hours using from 3,300 to 4,000 gallons of material. It requires one man at the tank, two men with guns without hose carriers and one man with gun and an extra man to carry his hose in the roughest section of the orchard. This makes a total of five men.

6. In 1929 on the petal fall application it took 102 man hours, 29 horse hours and 19½ tractor hours to apply 4,900 gallons of material to the area now covered by the stationary plant. In 1930 it took 50½ man hours to apply 7,800 gallons to the same block. It would seem that more material is being used under the stationary system than was formerly used with the portable rigs.

Plum and Pear Orchard

This will be the third growing season for the plum and prune orchard composed of about twenty promising varieties. Not a tree has died in the block. Some interesting facts regarding varieties suited to the Bedford area are sure to come from this test.

Blight has practically destroyed all commercial pear plantings in Indiana. In recent years new methods of handling pear trees have been found to be at least partially successful in controlling blight. It seemed that there might be a good chance of these methods working under Indiana conditions and a test planting was made in 1930. This test is under the management of Mr. McCown of the Purdue Horticultural Department. Resistant root stocks were used and on these the Old Home variety was grafted. This will give a root system, body and scaffold limbs which in other sections have shown resistance to blight. Several of the best commercial varieties of pears will be grafted 18 inches or two feet out on the scaffold branches of these trees in 1932.

Peach Orchard

Peach fruit buds were killed on all varieties everywhere in Indiana this year. This condition offered an opportunity to cut back all peach trees very severely and renew the fruiting area of the tops. A nice growth of new wood is putting out on these trees and they are worth seeing. Winter injury to the bodies of these trees was severe and a few trees are badly cracked up and down the body. On the whole, the orchard is recovering nicely considering the fact that none of the land on this farm is ideal for peach growing.

Soil Management in Apple Orchard

For a long period of years the north half of the apple orchard has been in sod while the south half has been cultivated and cover cropped. On account of severe washing and failure of cover crops

The Elberta peach orchard after pruning. The severe winter killed the fruit buds and the orchard was given a severe pruning to prepare it for next year.

Heavy applications of mulch were placed under many of the trees last summer when part of the orchard was sown to grass.

in recent years the south area was seeded in the spring of 1929, using a combination of Japanese Clover, Alsike, timothy, red top and blue grass. In the spring of 1930 sulphate of ammonia at the rate of 150 pounds to the acre was broadcast between the rows instead of scattered under the outer branches of the trees. A very fine growth of grass and clover has resulted and this will be cut and allowed to lay where it falls as a mulch.

Apple Storage

Apple storage studies were continued by C. E. Baker of the Department of Horticulture and I. D. Mayer of the Department of Agricultural Engineering. The results of this work from 1926 to 1929 are given in detail in the Report of the Moses Fell Annex Farm of 1929.

This work was continued during 1929-1930 and is mainly a test of the keeping quality of apples in an uninsulated room cooled by ventilation compared with the same number of crates and varieties held in an insulated room cooled with a bunker of ice similar to that used in a railroad refrigerator car. Grimes and Jonathan are the varieties used in this test. The following temperature relations prevailed during the past season.

	Weekly Average of Daily Mean Temperature During Period Ice was used		
1929	Iced Room	Vent. Room	Diff. in favor of Ice
Sept. 14-16	49.5°	63.7°	14.2°
Sept. 16-23	43.8°	55.0°	11.2°
Sept. 23-30	44.7°	61.3°	16.6°
Sept. 30 to Oct. 7	45.4°	52.4°	7.0°
Oct. 7-14	46.1°	54.4°	8.3°
Oct. 14-21	45.5°	50.9°	5.4°

Cost of ice on bushel basis for September was .095 cents; and for October the cost was .045 cents.

Early in the season the apples in the iced room have a distinct advantage and ripen much more slowly than in the ventilated room. Both varieties shrivel more rapidly in the ventilated room in spite of keeping the soil under the floor in the ventilated room thoroughly wet down at frequent intervals.

However, under the market conditions prevailing in most sections of Indiana in October and November of 1929, all the Grimes and Jonathan could have been sold early and there would have been very little difference in the actual value of the fruit from the two rooms based on early sales. On December 16, 1929, 35 crates of each variety from both rooms were graded out and sold. Mr. Baker reports, "There was 4 per cent more sound fruit in the iced room and the difference in quality and appearance in favor of the fruit from the iced room was still very evident."

A large commercial grower at Mitchell is using the same methods on an uninsulated storage. He feels that it pays good returns especially in heavy crop years when No. 2 grades move slowly in the early part of the selling season.

Ice Cold Cider

In 1929 Mr. Hienton of the Department of Agricultural Engineering installed an electric refrigerator plant on the sales floor of the packing house. This was used to store gallon bottles of cider. This ice cold cider proved to be very popular with the local buyers. It was possible to hold cider two weeks very nicely and it probably could have been held even longer. All of the "cider" grade of fruit from a 5,000 bushel crop was profitably made up into cider. Still the demand was not entirely met.

Spray Schedule

Each year a variation from the standard spray schedule is used on large areas of the apple orchard. Valuable experimental findings in the control of insects and diseases are continually being made by the Entomology Department at Purdue and in other states. Often these tests are on very small plots of one or two varieties. By trying these new sprays out in a large way their practical use in commercial orchards is further tested. The new oil-nicotine spray for second brood codling moths will be used on the entire orchard this year and chemical analyses will be made to determine the amount of arsenic on the fruit at picking time.

POULTRY EXPERIMENTS

The development of the Barred Plymouth Rock flock has been satisfactory. Accurate records are kept on all birds in the large house as a part of the Record of Performance work. One of the pullets laid 281 eggs during the year and a number of others have a record of more than two hundred eggs.

Mr. Hughes showing "Lady Antoinette" who made a record of 281 eggs last year.

The young chicks for this year have been produced from special breeding pen headed by males from high producing hens Regular blood tests have been made on the breeding flock to kee it as free as possible from disease.

All of our chicks have been hatched on the farm in the electri incubator. The trays, etc., are all washed and disinfected betwee hatches to insure healthy stock. The brooder houses are move each year to clean soil and are located this year in the orchard jus west of the large poultry house.

The equipment in the house represents in a fair way the idea of the Poultry Department under the direction of Professor C. W Carrick, chief. Mr. S. A. Walford of that department visits th farm as often as circumstances permit and advises regarding th management of the flock.

Brooder houses on clean ground in the orchard. Sanitation is an important item in producing healthy young stock.

LIVE STOCK EXPERIMENTS

It has been the policy on this farm to develop the crop producing power of the land by using methods recommended by the Department of Agronomy and to utilize these crops to feed good live stock. In our live stock work we have had the advice and cooperation of Professor F. G. King, chief, and Claude Harper, assistant chief, of the Department of Animal Husbandry.

A herd of Shorthorn cattle has been produced from a very modest beginning several years ago. Southern Indiana has large areas of hill and pasture land which could be available for cattle production. The effort here has been to produce a herd of good beef cows that swing good udders and produce well at the pail. Progress is always slow in such work and with the view of proceeding on a larger, more valuable program as rapidly as possible, the Agricultural Experiment Station has approved and established a cooperative project with the Bureau of Animal Industry of the United States Department of Agriculture, which, if successful, will ultimately develop one of the finest herds in America from the standpoint of dual purpose cattle.

Sheep

The following report of the flock of sheep by Professor Claude Harper gives some interesting facts about the sheep on the Moses Fell Annex Farm.

Early in 1922 a small flock of sheep was placed on the Moses Fell Annex Farm. They were placed there primarily to help rid the pastures of weeds, briers and sprouts. This flock of grade Shropshires was purchased from the Pinney-Purdue Farm near Wanatah. At the end of a year it was observed that many of the ewes were losing wool which caught in the brush, briers and thickets where the sheep were grazing. Furthermore, these ewes were not eager grazers of briers and shrubs.

Shearing Merinos on the Moses Fell Annex Farm. The use of a 1/4 h. p. electric motor on the shearing machine provided a steady, uniform power for operating the clippers.

In 1923 it was decided to select a type of sheep carrying some fine wool blood so the wool would not pull on the brush and briers, and at the same time attempt to obtain a type of sheep that would better graze the weeds, briers and shrubs in the pastures.

This situation resolved itself into the selection of either Ohio Delaines or ewes of a western type. Each contained fine wool blood. The Delaines were Merino and the western ewes contained a predominance of Rambouillet breeding.

During the World War there had been much talk about increased wool production in America. Between 1915 and 1921 wool growers had received good prices for their product. Fine wools had commanded a premium. Ohio Delaine sheep were sold extensively in Indiana by speculative dealers. Many claims were being made by dealers relative to the merits of Delaine Merino sheep as producers of market lambs and wool.

Purdue University had had no experience with Merino sheep, and the questions being asked at that time could not be discussed with a definite knowledge. When the question of the type of fine wool sheep to be selected was discussed it was urged that a study of the adaptability of Delaine Merinos be made at the Moses Fell Annex Farm for areas of Indiana similar to the type of land found in Lawrence County. Hence, a car load of something over one hundred Delaine Merino ewes was purchased in the winter of 1923 at a cost of $8.00 per head.

Previous experiences with losses of sheep and lambs by white snake root poisoning, stealing and predatory animals made it advisable to buy sheep as cheaply as possible. For the most part, the ewes purchased were of good quality with some rather old ewes in the group. There were a few two and three year olds, but the majority were full mouthed. A few of these original ewes are still on the Moses Fell Annex Farm.

The first year these ewes dropped lambs sired by both fine wool and mutton type rams. The following year they were bred to both Shropshire and Delaine rams. During the past six years only Delaine rams have been used as breeding sires. Within a year after the ewes came to the farm, the flock was reduced to 65 to 75 high grade Delaine Merino ewes, their lambs and a few purebred ewes.

Within a short time after these Merino sheep came to the farm a severe outbreak of foot-rot was discovered. Nearly all the ewes had one or more hoofs infected, and three-fourths of the lambs had foot-rot infection. It was quite evident that this disease came with the sheep. A half dozen or more ewes were lame when unloaded from the car, and the outbreak came on so rapidly, it will long be remembered that with this original group of Merino ewes came foot-rot. It took a year and a half to completely rid the flock of this disease. By trimming the feet regularly every three months, the opportunity for foot-rot to develop is greatly reduced.

In 1926 a half-dozen purebred ewes were added to the flock. Several of these ewes and their offspring have been killed by dogs. Some of these ewes have always produced weak lambs at birth, most of which died. Others have been poor sucklers. Hence, the purebreds have not multiplied at any great extent.

During the time the Delaine Merinos have been on the Moses Fell Annex Farm the lamb crop raised to a market weight has varied from 40 to 65 per cent. There has never been a 100 per cent lamb crop born. Many lambs have been lost at lambing time. Even though the flock was well fed and managed during the gestation period some lambs were born weak. Seldom have twins been raised, and a large percentage of the ewes have been rather poor milkers. Great difficulty has been experienced with new born lambs to get them to suckle their mothers. It has been necessary to keep these high grade Merino lambs until they are ten to fourteen months of age to get them to an average weight of 75 pounds per head. All these conditions concerning lambs apply to the high grade and purebred Delaine Merinos.

Where cross-breds have been produced, the story has been somewhat different. Shropshire-Merino cross-bred lambs have been stronger at birth, more anxious to suckle their mothers when only a few hours old, and reach a 75 pound weight in six to eight months after birth while grazing on fair pasture.

During the past five years this flock has produced $2,887.00 in cash sales of wool, lambs and sheep. This is an average of $577.40 per year. The gross sales of wool during that time have totaled $1,970.24 or 68 per cent of the total gross returns during the past five years. The sales of sheep and lambs have totaled $916.76 during the past five years, or 32 per cent of the total gross returns from the flock.

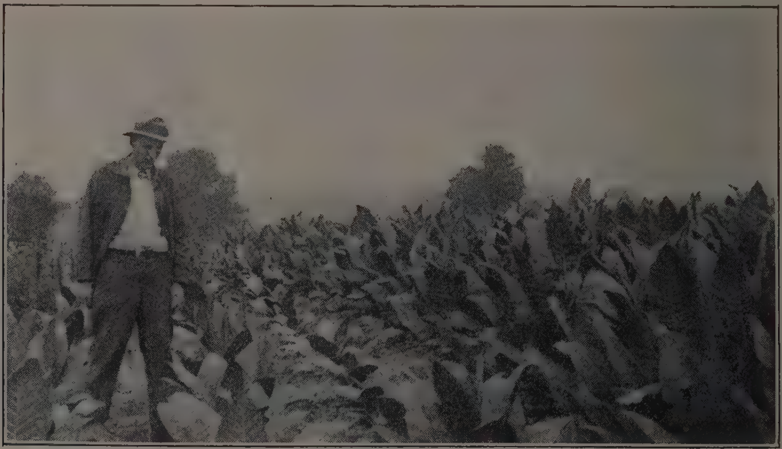
These ewes have produced a good clip of wool every year. The ewes have averaged approximately ten pounds of grease wool per head per year. During the past five years the wool from the ewe flock has graded 70 to 80 per cent Delaine, which is the finest grade of market wool produced in the world.

TOBACCO EXPERIMENTS

The preliminary experiments to study the response of tobacco to fertilizers have been continued. Two acres of old sod were turned under for this work. Young plants, variety Kelly, were produced in the usual way and transplanted to the plot.

The weather conditions were not ideal to give maximum results from the fertilizer, but the differences in yield are sufficient to emphasize the value of fertilizer.

The tobacco was dusted to protect it from insect damage.

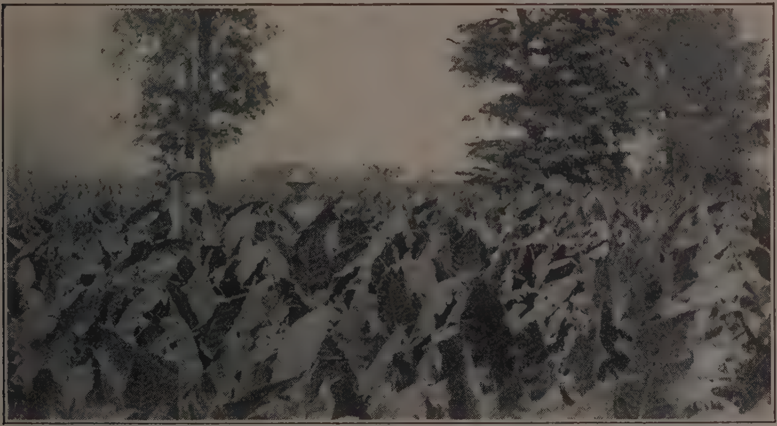


Comparison of plot having no fertilizer (left) with plot receiving 500 pounds per acre (right). Picture was taken August 7, 1929.

It was topped a little higher this year than last in an effort to improve the quality.

Plot No.	Fertilizer Per Acre	Yield per acre	Graded as Follows:					
			Leaf	Trash	Lugs	Red	Tips	Flyings
1	1,000 lbs.	1,578	358	378	320	152	316	54
2	500 lbs.	1,143	178	363	188	124	275	15
3	250 lbs.	1,012	86	198	154	172	292	110
4	500 lbs.	1,112	240	212	228	180	252	......
5	none	920	100	80	120	160	260	200

The fertilizer used was a 6-15-9. It is interesting to note that the fertilized plots had a much lower percentage of tips and flyings than the untreated plot. Lack of moisture during the summer no doubt reduced the yields of all plots. The results of two years' work would suggest that an application of 500 pounds per acre of high grade fertilizer gives profitable returns. The work is being continued this year.



A view of the plot receiving 1,000 pounds per acre. This tobacco graded out well with only 23.4 per cent as tips and flyings.

RELATION OF ELECTRICITY TO AGRICULTURE

The study of the use of electricity as a source of power has been conducted on the farm. The cost of grinding feed, pumping water for spraying and for live stock, operation of stationary spray outfit, shearing sheep, hatching chicks, operating fruit grader, washing machine and iron, cooking, refrigeration and lighting is determined through the use of special meters. Electric lights in the poultry house have increased the egg production during the winter months. Excellent hatches have been obtained from the electric incubator.

ACKNOWLEDGMENT

The farm is being operated for the benefit of the farmers of this section. The soil type represents a very large section of the southern part of the state and the results of the experimental work may be applied throughout that section.

Purdue University wishes to acknowledge the helpful cooperation of the various farm bureaus, the County Agricultural Agent, the banks, the Home Economics Clubs, Kiwanis Clubs, Rotary Clubs and other organizations and individuals of Lawrence and neighboring counties. This cooperation extends the value and usefulness of the farm.

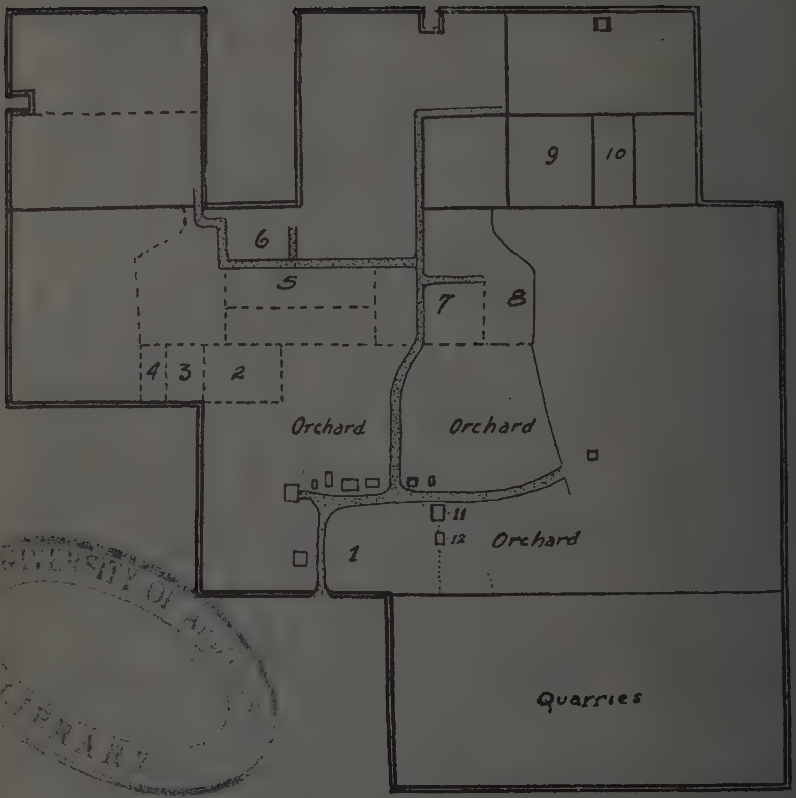
The insectary which was constructed in 1927 as a laboratory for the codling moth studies. This work is essential to the development of efficient methods for the control of the codling moth which is a serious menace to the fruit growers of southern Indiana. The Department of Entomology has a number of other plots near Mitchell.

Showing condition of the orchard before the reclamation work was commenced. Many parts of the orchard were much worse than this. The trees were crowded and starved and more than half of the apple trees were dead.

A view of the orchard after it had been pruned, sprayed and cultivated. Much of the orchard is now down in grass and the trees are fertilized each year.

The packing and storage shed make it possible to handle, grade and store the fruit produced on the farm. The crop can be disposed of as the community needs it. This permits a more economical method of handling the crop and renders the community a service.

A field of alfalfa as it appeared about time for the last cutting. Alfalfa has proved to be a very satisfactory crop on the farm.



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Points of Interest

1. Picnic and meeting grounds.
2. Orchard Experiments.
3. Elberta Peach Orchard.
4. Peach Variety Orchard.
5. Soils Experiments, General Fertility Series.
6. Soils Experiments, Phosphate Series.
7. Crop Variety Tests.
8. Alfalfa Field.
9. Pasture being improved.
10. Pasture Experiments.
11. Apple Packing and Storage Building.
12. Sheep Barn.

Visit these places and feel at liberty to ask questions. Representatives of the various departments will be present to answer and discuss your problems with you.

Circular No. 173 June, 1930

Purdue University
Agricultural Experiment Station
Lafayette, Indiana

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INSTALLATION OF MOTOR-DRIVEN FEED GRINDERS

TRUMAN E. HIENTON

The increase in the number of Indiana farms which are being served from farm electric lines has resulted in a corresponding increase in the number of motor-driven feed grinders on them. This increase in use of electric power for operating feed grinders may be partially attributed to the ease and readiness of starting electric motors, economy of operation, and high speed necessary for satisfactory operation of hammer-type grinders.

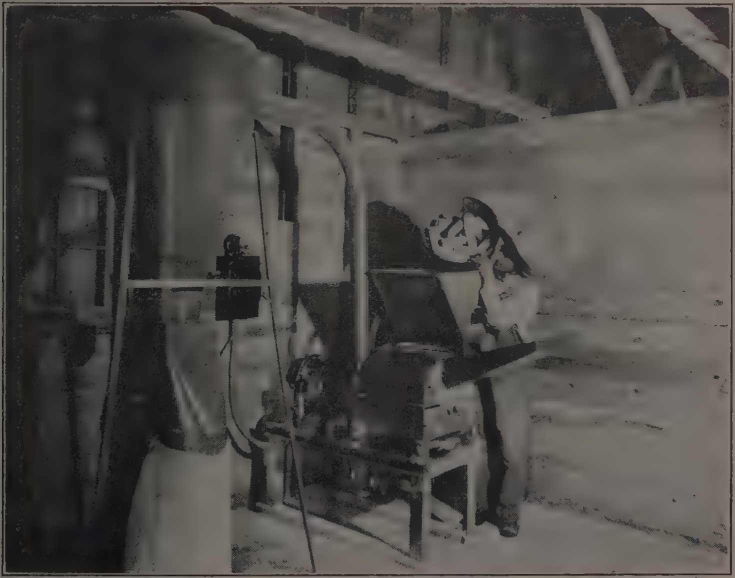

Figure 1. A direct-connected motor drives the feed grinder and the attached blower on the farm of Shelbert Wright, Clinton, Indiana.

The location of a motor-driven feed grinder on the farm is affected by several factors. The construction and location of grain bins and corncribs, location of bins for ground grain, and construction and equipment of the building in which the grinder is to be used, all affect its location.

A considerable amount of labor is saved in the type of installation shown in Figure 3, where the grinder is located under the grain bins and corn or other grain is fed into the mill by gravity. This installation is probably the most efficient from the standpoint of saving labor. It does necessitate the use of an elevator to raise the grain into the overhead bin.

Other labor-saving methods of installation are shown in Figures 2 and 4. An inexpensive box shown in Figure 2 increases the capacity of the hopper on the grinder and eliminates the necessity for constant attention to filling it. In Figure 4 a large box has been located just above the hopper of the grinder and is so arranged that a constant supply of grain passes from it into the hopper.

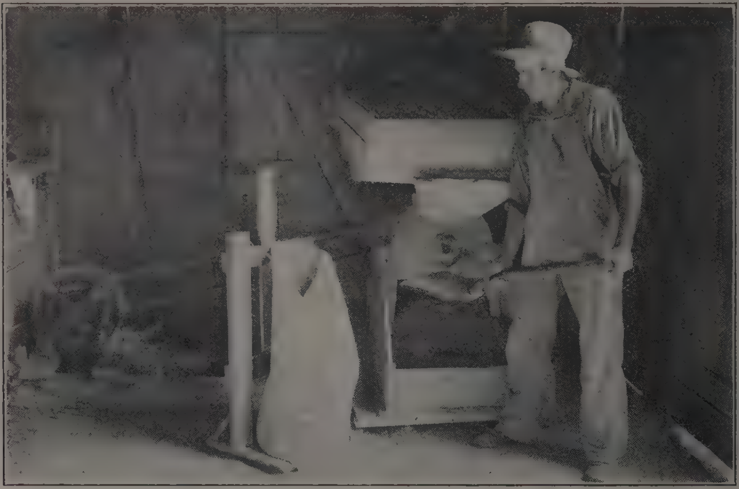

Figure 2. A small storage bin built under the grinder allows ground grain to collect between sackings on the farm of Maurice Beisel, Cambria, Indiana.

Where it is not possible to locate the grinder under or adjacent to grain bins or corncribs, its location will undoubtedly be determined by the location of the ground feed bins. Locating the grinder directly above the feed bin or beside it may eliminate one-half of the labor required in grinding which is spent in handling the ground feed.

One very practical method of eliminating labor of handling ground grain, although limited in application, is that shown in Figure 4, where the ground grain drops from the mill, mounted on the mow floor, directly into the feed box on the floor below. This type of installation, however, is usually confined to bank barns.

Where building construction does not permit of the gravity method of disposing of ground grain, a blower or elevator may be used to move the grain away from the grinder. The blower shown in Figure 1 elevates the grain from the grinder into the dust collector and bagger. Overhead feed bins are often used for storage of grain where a blower is available.

The elevator visible in the right foreground of Figure 3 lifts the grain from the grinder to a height sufficient to drop it into a wagon box or into the top of a feed storage bin. Where none of this equipment is available and type of barn construction does not permit, the grain is scooped away from the grinder as shown in Figure 2. The construction of a small storage bin around the grinder permits the ground grain to accumulate for some time and eliminates the necessity for constant scooping. It is entirely possible and practical by raising the grinder higher off the floor to put casters on this bin and use it as a portable feed box.

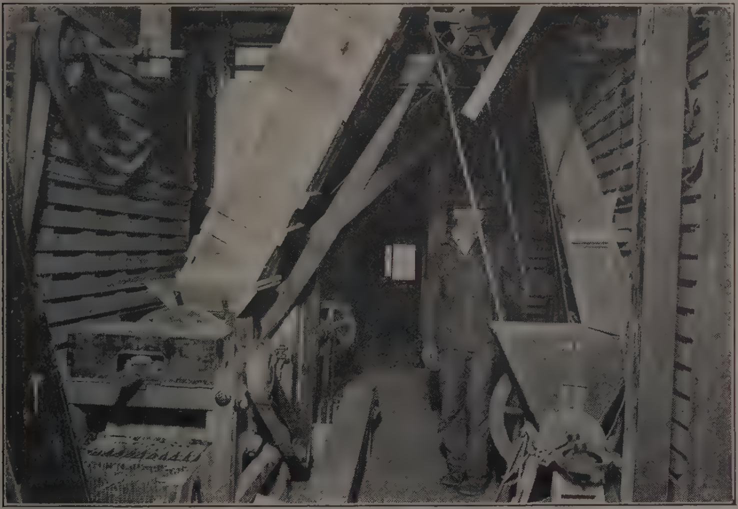

Figure 3. All grain ground on the farm of Ed. Layden, West Point, Indiana, passes from overhead bins directly to the grinder, then to the feed bin without necessity of handling.

Location and selection of motor.

No type of power permits of the flexibility possible in location of the power unit as does that derived from electric current. A motor may be installed on the floor, wall, or ceiling and be expected to operate satisfactorily if properly installed and of the proper type.

Where a motor is to be used for driving the grinder alone, it may be directly connected as shown in Figure 1. In such cases the use of the motor is limited entirely to that of operating the grinder. This prevents its use for other occasional farm power operations for which it might be suited.

Belt drive is used for the majority of motor-driven feed grinders on the farm. By the use of pulleys of proper size, direct drive is satisfactory for the high-speed hammer mills, as well as slower speed burr grinders. A convenient method of mounting motor and grinder is shown in Figure 2 where both are fastened to two 4" x 4" timbers with lag screws. The tension of the belt is changed by sliding the motor on the base or rails upon which it is mounted. An outfit of this type may be moved about the farmstead rather easily by sliding it on these skids.

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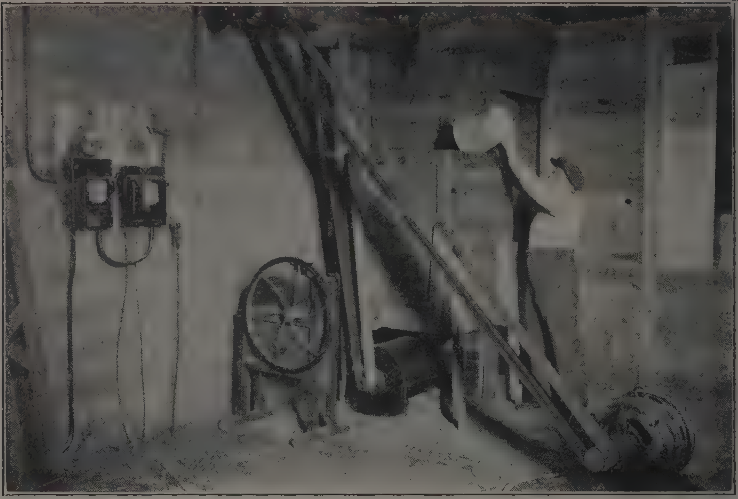

Figure 4. Ground grain drops directly from the grinder into the feed bin on the ground floor of the bank barn located on the farm of O. C. Hendrix, Burlington, Indiana.

On many farms where the installation is to be made in a permanent building, the motor may be located so as to drive other machinery besides the grinder. In some cases the drive to the grinder is direct from the motor and in others through a system of shafts and pulleys. In Figure 4, the motor is installed to drive a shaft which in turn drives the grinder or corn sheller. A motor not visible in Figure 3 may drive a cup elevator, floor drag, grinder, sheller, or ground grain elevator through one or more countershafts.

The size of motor necessary for operating feed grinders on the farm varies from 2 to 10 horsepower. The common sizes are 2, 3, 5, and 7.5 with an occasional 10-horsepower motor. The 5- and 7.5-horsepower sizes appear to be best suited for farms where large amounts of grinding are done. Those shown in Figures 1, 2, and 4 are of 5-horsepower and the one used in the installation shown in Figure 3 is of 7.5-horsepower capacity. Motors of this size are almost invariably operated at 220 volts and are usually for single phase, 60 cycle current. The speed of the motor should be 1,800 R. P. M. except in certain cases where direct connected, and in some of these a 3,600 R. P. M. motor may be used.

Circular No. 174 July, 1930

Purdue University
Agricultural Experiment Station
Lafayette, Indiana

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OPERATING ENSILAGE CUTTERS AND HUSKER-SHREDDERS WITH ELECTRIC MOTORS

TRUMAN E. HIENTON

Many new farm electric lines are furnishing electric power to Indiana farms, making possible the operation of ensilage cutters and husker-shredders with electric motors. Experiments which have been conducted by the Agricultural Experiment Station on Indiana farms show the practicability of operating either of these machines successfully with an electric motor.

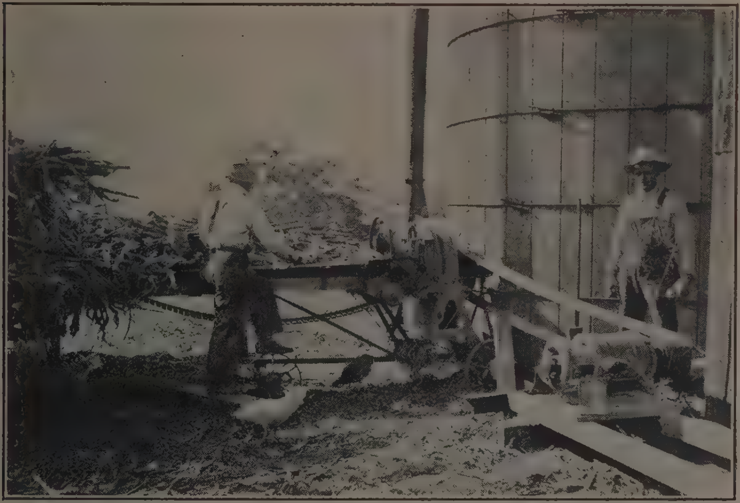

Figure 1. Filling the silo with a 5-horsepower electric motor operating the cutter on a farm in Fountain County, Indiana.

In September 1927, 13-inch ensilage cutters of three different makes were used to determine the practicability of driving them with a 5-horsepower electric motor on a farm in Clinton County. The results of these tests are listed in Table I. In all of the tests the cutter was fed so as to use as nearly as possible the rated horsepower of the motor. In several of them, as will be noted, the average horsepower was somewhat less than the rated horsepower and in two cases slightly above.

During 1928 and 1929, seven Indiana farmers filled their silos using 5-horsepower electric motors to operate their 13-inch ensilage cutters. Records secured on these farms indicate that 0.8 to 1.25 kilowatt-hour is required per ton of silage cut and elevated.

TABLE I—TESTS OF 13-INCH ENSILAGE CUTTERS DRIVEN BY A 5-HORSEPOWER ELECTRIC MOTOR

Cutter	Speed R. P. M.	Length Cut in.	Tons Cut	Capacity Tons per hr.	Ave. Hp. output motor	Kw.-Hr. per ton	Comments
No. 1	470	½	5.46	4.85	5.19	1.01	3 sharp knives
No. 1	430	½	12.83	5.83	5.09	.826	3 sharp knives
No. 2	430	½	12.97	5.46	4.81	.833	3 sharp knives
No. 3	470	⅜	11.57	5.14	4.94	.908	3 sharp knives
No. 3	470	½ to ⅝	3.85	4.15	4.11	.935	2 sharp knives
No. 3	470	½ to ⅝	6.81	3.53	4.49	1.20	3 dull knives
No. 3	470	½ to ⅝	5.18	4.4	4.85	1.04	3 sharp knives

Observations made during the tests in 1927 and on some of these farms in 1928 and 1929, indicate certain important factors to be observed when a 5-horsepower electric motor is used to drive the ensilage cutter.

1. Sharp knives should be used, changing them twice daily, that is at the start of the day's work and at noon. The knives should be kept properly adjusted with regard to the shear plate, the stationary plate against which they cut. They should be set so as to run as closely as possible to the shear plate without striking it.

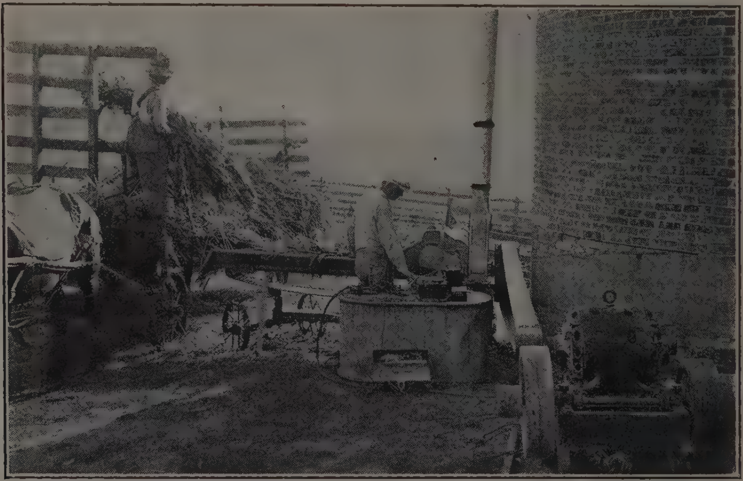

Figure 2. Determining the capacity of a 13-inch ensilage cutter when driven by a 5-horsepower motor in Clinton County.

2. The shear plate should be replaced when the edge becomes worn or rounded off. These are usually reversible, that is, they may be turned over and continued in use.

3. The motor should be of 5-horsepower capacity, 1800 R. P. M., 220 volts, single phase (unless three-phase service is available) and 60 cycle (unless other must be used). A 7.5-horsepower motor may be advisable where 16-inch or larger cutters are used, but should be avoided because of usual additional capacity charge. It should be equipped with a magnetic switch provided with a thermal overload relay. Wires carrying service to the motor should be at least No. 6 or larger if necessary because of excessive voltage drop and should be installed by a competent electrician or power company representative. Drive will ordinarily be by belt, which should be from 4 to 6 inches wide of 4-ply stitched canvas or rubber or single-ply leather. Motor pulley should be of fibre or paper, usually 4½ inches in diameter with face for 6-inch belt. Motors mounted on a truck are frequently easier to get into proper position but not entirely necessary.

The above have been supplemented by recommendations of Professor F. W. Duffee, University of Wisconsin, and are presented here.

4. The speed of the cutter should be as slow as will elevate the corn into the silo at full load. Many cutters of older design will not elevate at speeds as slow as the newer cutters, and must be operated at speeds considerably above those given in Table II.

TABLE II—Ensilage Cutter Speeds for 5 H. P. Electric Motors

Table of cutter speeds for most efficient operation for different sized elevating fans and for silos of different heights

Diameter of Cutter Fan	Height of Silo								
	25′	30′	35′	40′	45′	50′	55′	60′	75′
	Revolutions per minute of cutter fan								
36″	415	440	480	510	540	575	600	625	695
38″	390	415	450	480	510	545	570	595	660
40″	370	395	430	460	485	515	540	565	625
42″	355	380	410	435	465	490	515	535	595
44″	340	360	390	415	440	470	490	510	570
46″	325	345	375	400	425	450	470	490	545
48″	310	330	360	380	405	430	450	470	520

Note: These speeds are based upon carefully conducted tests with a reasonable allowance to insure uninterrupted elevation. Good cutters will positively operate at these speeds.

5. Size of Cutter.

The 12- or 13-inch cutter is best suited for use with the 5-horsepower motor. Larger cutters may be used where height of elevation is not great but only with very careful feeding. The clearance at the tip of the fan wings should not exceed ⅛ inch and at the sides not over ½ inch.

Husker-Shredder

The annual flight of the corn borer with the resultant increase in area which it infests may result in a similar spread in the practice of shredding corn stover in Indiana. It has been found that the husker-shredder is very effective in destroying borers in corn stover where such machines are properly adjusted.

Lack of information concerning the use of electric power to operate husker-shredders was responsible for the initiation of tests by the Agricultural Experiment Station in November, 1928. The first tests conducted on a Huntington County farm were made to determine what size

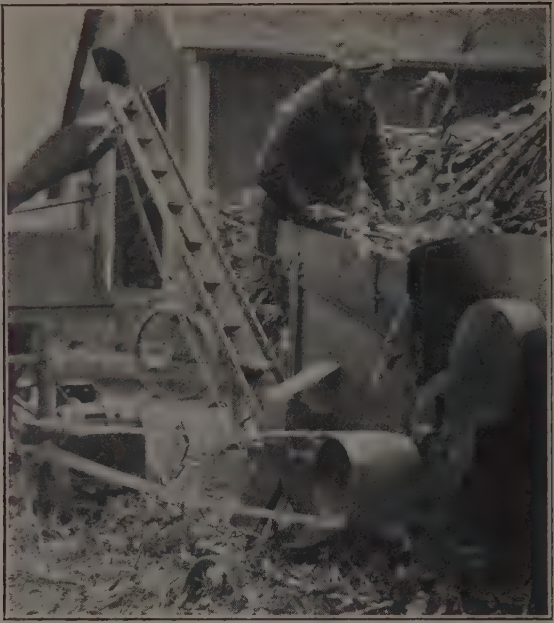

Figure 3. Husking and shredding with a 2-roll machine operated by a 5-horsepower motor in Huntington County.

of husker-shredder could be operated by a 5-horsepower electric motor. The results indicated that a two-roll machine was the largest size which could be operated by a motor of that capacity.

During February 1929, the tests were continued using a 5-horsepower as well as a 7.5-horsepower motor to operate the two-roll husker-shredder. The results listed in Table III indicate that very little additional capacity could be secured by using the 7.5-horsepower than the 5-horsepower motor with this particular machine.

TABLE III

Motor H. P.	Stover Shredded T.	Corn Husked Bu.	Capacity per Hr.		Kw.-Hr. Per Ton Stover	Ave. Power output motor.
			Bushels Husked	Stover Shredded T.		
5	3.77	51.1	13.2	.972	5.13	5.34
7.5	7.78	102.9	14.5	1.096	4.97	5.70

The results of these tests indicate:

1. The practicability of operating a two-roll husker-shredder with a 5-horsepower motor.

2. The possibility of operating a four-roll husker-shredder to a limited capacity with a 7.5-horsepower motor.

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Circular No. 175 July, 1930

INDIANA PLANTS INJURIOUS TO LIVESTOCK

THE SUCCULENT 2-LEAF COCKLEBUR SPROUTS ARE FATALLY POISONOUS TO HOGS, SHEEP AND YOUNG CATTLE PARTICULARLY ON MOIST LAND DURING SPRING
DESTROYED

Fig. 1—A Purdue exhibit featuring cocklebur sprout poisoning.

Purdue University
Agricultural Experiment Station
Lafayette, Indiana

Illness and death of livestock due to poisonous plants are factors that cannot be ignored in Indiana. Field investigations on 420 farms in the state have established that white snakeroot, cocklebur sprouts, water hemlock and wild cherry are the most important toxic species in Indiana, although the aggregate loss caused by sweet clover hay, black locust bark, the staggerweeds and buckeye sprouts and nuts is heavy. In addition a number of miscellaneous plants such as Jimson weed, nightshade, scouring rush, and peach foliage occasionally cause trouble.

Where circumstances indicate forage poisoning on the farm a competent veterinarian should be consulted immediately. The Purdue University Agricultural Experiment Station is always glad to co-operate in locating the cause of the trouble by identifying specimens of plants under suspicion and by giving other assistance that may be necessary. Practical suggestions on methods of locating poisonous plants on the farm are given.

A brief description of the plant and the symptoms it produces is given for the following species of poisonous plants, arranged in the order of their importance in the state: white snakeroot, water hemlock, wild cherry, cocklebur, black locust, staggerweeds (Dutchman's breeches and dwarf larkspur), buckeye, Jimson weed, deadly nightshade and pokeroot.

The less important poisonous plants discussed are scouring rush, mandrake, ergotized rye and grasses, rhubarb (leaves), castor bean, water lily, Kentucky coffee tree, sneezeweed, black-eyed Susan, wild indigo, cockle, buttercup, prickly ash, cat-tail, whorled milkweed, water parsnip, winter cress, groundsel, button bush, star of Bethlehem, red sorrel, bull nettle, bittersweet, matrimony vine, oak, and peach (leaves).

Cultivated plants that are dangerous under certain conditions are sweet clover, alsike clover, sorghum, Sudan grass, Johnson grass, and potato.

Mechanical injuries are caused by balls or solid masses of plant hairs, awns or stalk fragments, and by barbed beards or hairs and burs or spines.

INDIANA PLANTS INJURIOUS TO LIVESTOCK

By Albert A. Hansen[1]

Botany Department, Purdue University
Agricultural Experiment Station

Mysterious loss of livestock on pasture has been so common an experience in Indiana that farmers have learned to accept these losses philosophically. During the past few years, however, investigation has revealed that a number of plants common in Indiana woods and pastures are dangerously poisonous to farm animals and suspicion is directed to forage poisoning as the probable cause of many of these hitherto unexplainable losses.

With this theory in mind a unique project was started by Purdue University Agricultural Experiment Station in which the botanist with his knowledge of plants joined forces with the veterinarian with his knowledge of animals. This project involved the inspection of farms in all parts of the state on which local veterinarians reported livestock losses under circumstances indicating plant poisoning. During the past seven years 420 such farms have been inspected by the writer, usually in company with the attending veterinarian, and on 242 of these farms on which a total of 614 sheep, 381 cattle, 191 hogs, 69 horses and mules and 81 goats died from what was diagnosed as plant poisoning, the toxic species believed to have been responsible for the trouble were located, the symptoms displayed before death, evidence of grazing on the poisonous plants and the general circumstances under which poisoning occurred being the basis of these conclusions.

The field work, combined with experimental evidence, is the principal guide used in selecting the data upon which this circular is based. Only poisonous plants that have been found to be causing trouble on Indiana farms are included and they are arranged in the order of their importance as indicated by the work in the field.

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[1] Valuable cooperation during the course of this work was given by the Veterinary Department of the Purdue University Agricultural Experiment Station and by the Indiana Veterinary Medical Association. Mr. O. C. Lee assisted in the preparation of this circular.

The majority of the species herein considered have been demonstrated to be poisonous by experiments but considerable variation in poisonous properties and effects exists. This variation may be due to the soil. In the case of white snakeroot, a test has been developed that indicates the amount of poison contained in the individual plant. The application of this test shows marked variation in the amount of the poisonous principle contained in plants growing in different localities. Two extremes are shown by specimens from the vicinity of Lafayette, Indiana, which were found to be highly toxic, while plants near Washington, D. C., are practically harmless. The factor can hardly be climatic since farther south in North Carolina and Florida white snakeroot is fatally toxic.

Seasonal variation in the drug content of plants also exists as commercial growers of drug plants have learned. Then, there is individual immunity or resistance among animals, a factor frequently noted, which may be inherited or may be acquired in the same manner that a human morphine addict may take sufficient of the drug to kill an ordinary person with little apparent harm. The appetites of different animals also vary, some members of a herd seeming to ignore poisonous species that are eagerly devoured by others. Furthermore, a species dangerous to one kind of farm animal may be harmless to others as in the case of dwarf larkspur, which does not affect sheep but is fatal to cattle. For these various reasons the presence of poisonous species on a farm is not always followed by livestock losses but plants of this character should always be looked upon as potentially dangerous and treated accordingly. There are literally hundreds of farms in Indiana with woodlots badly infested with white snakeroot upon which no losses have been experienced for a generation, but a sudden drought or some other factor may become responsible for considerable trouble.

PREVENTION OF POISONING

1. Eradicate the poisonous plants where practicable or else do not allow the animals to graze on infested areas.
2. Practise good feeding methods. It has repeatedly been noted that animals well fed on a balanced ration are not nearly as apt to touch dangerous plants as hungry or poorly fed livestock.

3. Do not turn livestock into pasture, particularly woods pastures, until the grazing vegetation has a good start in the spring and do not leave them in pastures too late in the fall when there is little left to eat but fallen leaves, acorns and other dangerous feeds. Many of our most poisonous plants such as water hemlock sprouts, Dutchman's breeches and dwarf larkspur cause trouble mainly in early spring before the grass appears.
4. Consult a competent veterinarian as soon as danger of forage poisoning is suspected.

HOW TO SURVEY A FARM FOR STOCK POISONING PLANTS

Many cases of mineral poisoning are confused with plant poisoning. When livestock poisoning occurs on the farm, particularly when such a diagnosis is made by a veterinarian, a check should first be made on sources of mineral poisoning.

Commonest causes of mineral poisoning are overdoses of salt (about three pounds may prove fatal); paint (licking newly painted surfaces or drinking the water that has accumulated in old paint cans or other receptacles used in paint making); fertilizers (particularly nitrate of soda which may be eaten directly from bags or licked from the outside of bags by salt-hungry animals, or the drinking of water in which old fertilizer bags have been washed); arsenic (especially grazing on grass under trees that have been sprayed with arsenicals or drinking water from receptacles that contained such arsenicals as commercial weed killers); city garbage (which may contain sulfur matches, soap powders or large quantities of coffee grounds) and phosphorus (owing to animals having access to rat and mouse poisons).

If there is no evidence of mineral poisoning, then the search should commence for toxic plants, which should be guided largely by the history of the cases. With the exception of moist alsike or rape which cause skin poisoning, Sudan grass and Johnson grass which cause prussic acid poisoning, and cocklebur sprouts on overflow land, dangerous plants are rarely found in the open pasture. Search first along the fence row for evidence of grazing on wild cherry (particularly the young sprouts on stumps), black locust or ergotized grasses. Then examine the banks of streams or wet places for cocklebur sprouts, water hemlock, sneezeweed, crowfoot or button ball bush. If this proves fruitless, the woods pasture should next receive attention, keeping a sharp lookout for white snakeroot, Dutchman's breeches, larkspur and buckeye. Next in line of search are the waste places where Jimson weed, nightshade and pokeroot showing evidences of grazing may be located.

As a last resort, look to the ornamentals surrounding the house, particularly matrimony vine and castor bean. If this yields nothing of value it is possible that the silage may be at fault although there is little experimental evidence that moldy silage is poisonous. Animals allowed the run of fields containing frozen sorghum or corn stalks, may be affected by a type of poisoning believed to be caused by the formation of prussic acid. During the course of the survey all of the plants discussed in this bulletin should be kept in mind.

SEND SPECIMENS FOR IDENTIFICATION

In case of doubt send specimens of plants suspected of causing trouble to the Purdue University Agricultural Experiment Station, West Lafayette, Indiana. We shall be glad to identify the plants and give such information as we may have regarding their dangerous properties. It will help a great deal if complete specimens, including flowers or fruits and the roots, are sent since this makes identification easier and more accurate. No charge is made for this service.

SPECIES OF STOCK POISONING PLANTS

The species of toxic plants that have been found to be causing greatest damage in Indiana are here arranged in the order of their importance. With few exceptions their dangerous properties have been determined experimentally while their practical importance has been judged as a result of the field work.

WHITE SNAKEROOT. White snakeroot (*Eupatorium urticaefolium*, Reichard) (Fig. 2), found in wooded areas throughout the state, is probably the most important poisonous plant in Indiana, being held responsible for heavy losses of cattle, sheep, goats, horses and mules practically every season. Furthermore, milk sickness in humans may be contracted through

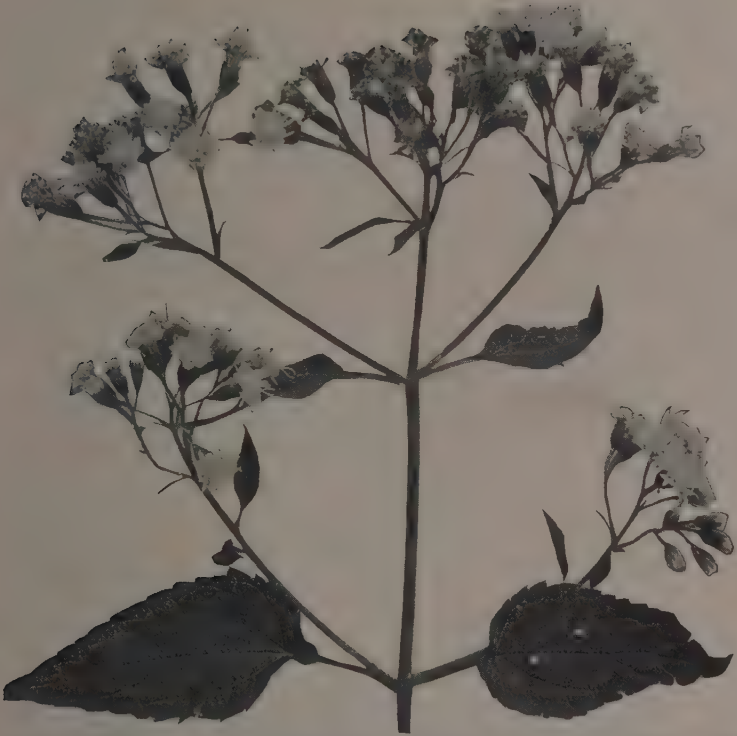

Fig. 2—Flowering top of white snakeroot. Note the clusters of small white flowers and the opposite spear-head shaped leaves each with three prominent veins.

the agency of the milk of cows that have grazed freely on the weed. It has been determined experimentally that the toxic substance, called trematol, enters the milk and may fatally poison suckling calves. Milk sickness is an ancient disease that destroyed many of our pioneers and even today, when woodland grazing of livestock is far less common, we receive reports of loss of human life in Indiana every year from milk sickness. A number of these cases have been investigated by the writer in the field and were found to be genuine cases of milk sickness due primarily to white snakeroot.

The dangerous plant may be recognized (Fig. 3) by the opposite spear-head shaped leaves each with three prominent veins and with under surfaces shiny in contrast to the dull upper surface, by the clusters of tiny bright white flowers that appear during early September, and by the fibrous, matted, perennial roots. The plant grows to an average height of about three feet and it is sometimes cultivated as an ornamental on account of the attractive blossoms.

The most important symptoms of snakeroot poisoning in livestock are periods of severe trembling which are usually preceded by general listlessness, although the characteristic trembling state may be absent in horses and mules. Death from weakness and exhaustion may be lingering or may occur in a few days. Ordinarily the fatal dose for mature cattle and horses is about ten pounds and for mature sheep and goats about three pounds. There is great variation in this respect, however. Hogs are seldom poisoned by white snakeroot unless they graze on the roots.

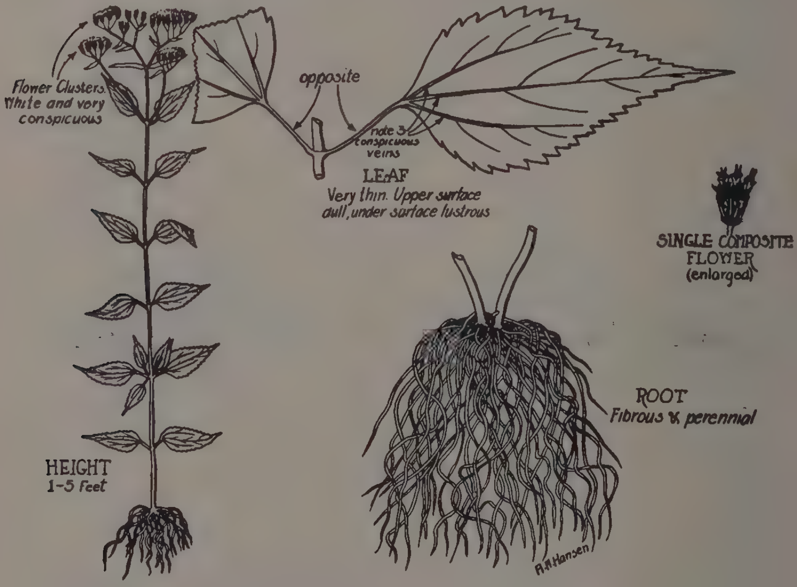
Flower Clusters White and very conspicuous
opposite
note 3 conspicuous veins
LEAF
Very thin. Upper surface dull, under surface lustrous
SINGLE COMPOSITE FLOWER (enlarged)
ROOT
Fibrous & perennial
HEIGHT
1-5 Feet
R.M. Hansen

Fig. 3—Diagram illustrating the outstanding characteristics of white snakeroot.

The outstanding symptoms of white snakeroot poisoning in man are severe constipation accompanied by frequent vomiting of a greenish fluid, a strong odor of acetone (somewhat resembling sewer gas) on the breath, the occurrence of delirium, and the semblance of fever without a rise in temperature.

The best method of eradicating snakeroot is hand pulling during September when the flowers are conspicuous and preferably following rain when the ground is moist. The pulled plants should be piled and burned or carried out of the woods in a wagon. Where pulling is impracticable, the infested area may be fenced and listed under the Forest Tax Reduction Act with the State Forester, Indianapolis. Although listed land cannot be grazed, the expense of taxes is almost eliminated and the land should eventually yield a lumber income.

WATER HEMLOCK OR POISON PARSNIP. The poisonous principle (*cicutoxin*) in water hemlock (*Cicuta maculata* L.), one of the most dangerous plants in America, is concentrated in the roots and young shoots. Poisoning usually occurs during the spring when sheep, cattle and horses graze on the sprouts (Fig. 4), or during drought when hogs root after the fleshy tubers, although there is evidence that the plant becomes less dangerous as the weather becomes warmer. The roots are also fatal to man, especially children, and a number of human fatalities from this source have been recorded in Indiana. There is also evidence that the dried tops are dangerous when included in wild hay.

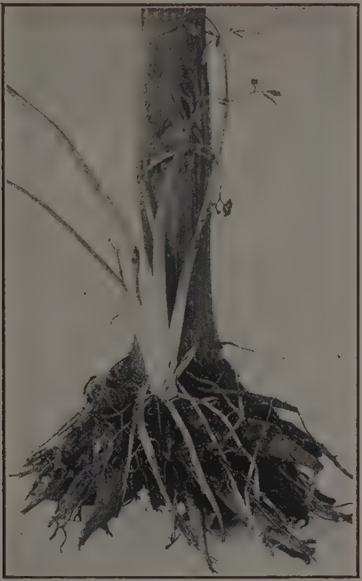

Fig. 4—Both the tubers and the sprouts of water hemlock are highly dangerous to grazing animals.

The usual symptoms of poisoning in animals are marked nervousness followed by muscular twitchings that soon develop into severe convulsions, during which the neck may twist oddly and the victim may run in circles until exhaustion terminates in death in from one to twenty hours. In man the first symptom is nausea followed by dizziness, abdominal pains and severe convulsions. The pupils dilate, the pulse weakens, vomiting (often of a greenish froth) occurs and death ensues from weakness and pain.

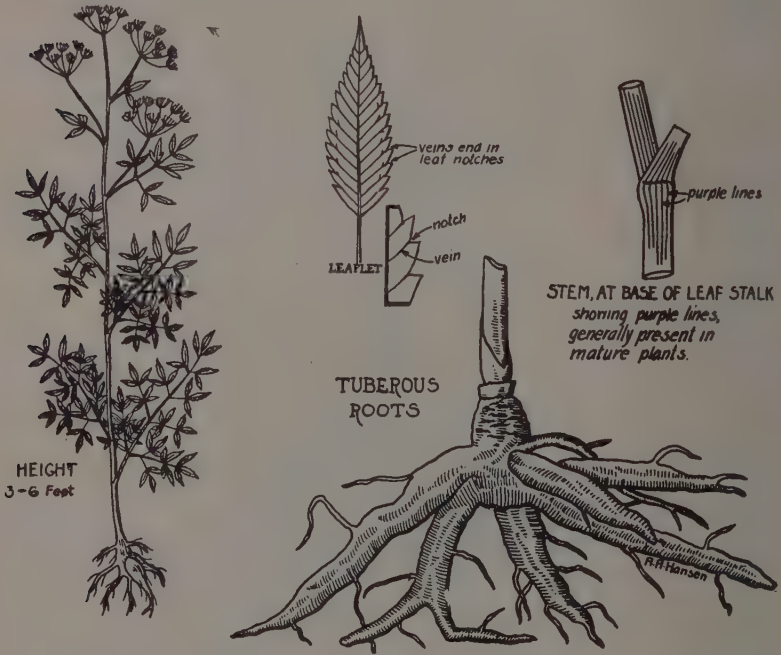
veins end in leaf notches
notch
vein
LEAFLET
purple lines
STEM, AT BASE OF LEAF STALK showing purple lines, generally present in mature plants.
TUBEROUS ROOTS
HEIGHT 3-6 Feet
A.H. Hansen

Fig. 5—Diagram illustrating the outstanding characteristics of water hemlock.

Water hemlock is practically limited to moist places, particularly along ditches, streams, lakes and wet roadsides and in marshes. The plant is frequently confused with the harmless, yellow-flowered wild parsnip from which it can be distinguished by the white, lacelike blossoms, the purplish stems and especially by the cluster of tuberous roots (Fig. 5) that resemble small sweet potatoes. When a tuber is cut it exudes a glistening yellow juice containing the poisonous principle. Both the odor and the sweetish taste of the roots are pleasant.

Water hemlock may be destroyed by grubbing but the tubers should not be allowed to lie around since they may cause fatalities even after drying.

WILD CHERRY. A common cause of livestock losses that is seldom suspected by farmers is due to grazing on the young sprouts and the foliage, particularly when wilted, of common wild cherry (Prunus spp., particularly *P. serotina* Ehrh.), a species frequently found in woods and fencerows throughout the state. Both the wild and the cultivated cherry are dangerous, although the wild species are most poisonous. Over a hundred cases of cherry poisoning have been investigated during the five years prior to 1929 in Indiana.

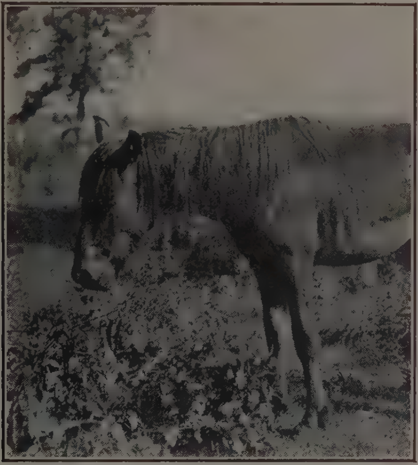

Fig. 6—An advanced case of cherry poisoning in Hancock county. The animal died six hours after the picture was taken. Note the depressed appearance.

The trouble is due to the formation of prussic or hydrocyanic acid, one of the most powerful and rapid acting of plant poisons. In the pure state this is a clear, colorless liquid with the odor of crushed peach kernels. It does not usually occur in the free state in plants but rather in combination with organic compounds, principally sugars, under the chemical designation of glucosides and the prussic acid is released by the action of an enzyme. Poisoning usually occurs when animals graze on the sprouts that arise after cherry trees are cut in a fence-row, when cherry limbs are cast into the pasture by storms or telephone linemen trimming trees that interfere with wires, or when animals graze on cut-over land containing cherry sprouts or in wooded areas containing scrub cherry trees, particularly during the early spring.

The usual symptoms (Fig. 6) are staggering, difficult breathing, dilation of the eyes, convulsions and falling, followed by coma and death. As small a quantity as one pound of foliage may prove fatal. There is evidence to support the use of corn syrup and milk as an antidote for cherry poisoning, although the toxic effect may be so rapid as to render remedies useless.

COCKLEBUR. Young cockleburs (Xanthium spp.) in the two-leaf or cotyledonary stage (Fig. 7) are fatally poisonous to sheep, hogs (Fig. 1) and cattle. In the poisonous condition the two leaves are long and narrow, having no resemblance to the leaves of a mature cocklebur, and consequently the sprouts are frequently unrecognized. It is unfortunate that the poisonous succulent growth is the only stage in which cockleburs are ordinarily eaten by livestock. The toxic principle appears to be in the seeds and is transferred to the pair of temporary leaves.

The usual symptoms produced by cocklebur sprout poisoning are depression, nausea, in some cases frequent vomiting,

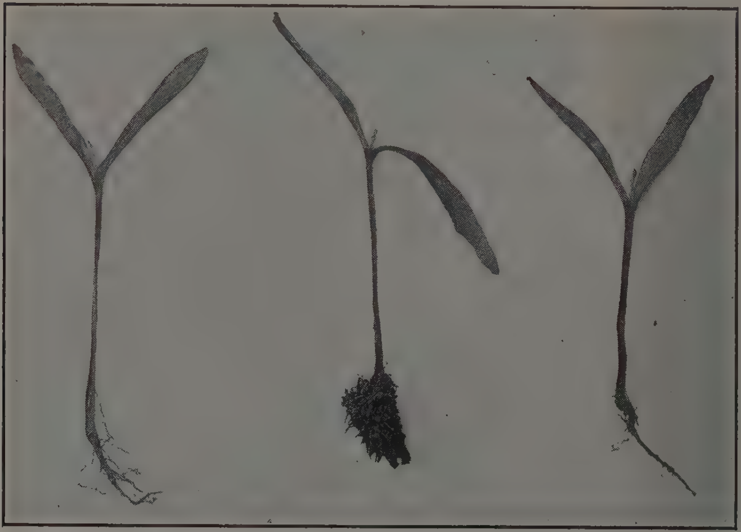

Fig. 7—Cocklebur sprouts in the dangerous two-leaf or cotyledonary stage.

weakness, unsteady gait, twisting of the neck muscles, labored respiration, rapid and weak pulse preceding death which usually takes place in from 12 to 24 hours after the first symptoms are noted. Internally there is congestion of the lungs and stomach lining with an accumulation of a yellowish fluid in the abdominal cavity.

Poisoning usually occurs when wet land, such as overflow land in the spring or land made wet by spring rains, begins to dry since it is then that the dangerous sprouts may appear by the thousands. Most cases of cocklebur sprout poisoning take place during the spring, although fatalities may occur throughout the growing season, particularly when livestock grazes along the banks of streams, ponds or lakes infested with the weed.

The use of fats, oils, whole milk or cream is beneficial and may save poisoned animals if these are administered as soon as trouble is noted. Cockleburs should be destroyed or else grazing animals should be kept away from infested land until the plants are beyond the narrow leaf stage.

The discovery that cocklebur sprouts are fatal to livestock has cleared up the cause of many mysterious losses of livestock, particularly pigs, that occur every spring throughout the state. Cocklebur sprout poisoning has frequently been confused with cholera, hemorrhagic septicaemia and other diseases of livestock.

BLACK LOCUST. The bark and seeds of black locust (*Robinia pseudo-acacia* L.), commonly found in fencerows, along roadsides and similar situations on farms throughout the state, contain a poisonous principle known as *robitin* that is so powerful in action that so small a dose as .0015 gram in a horse and .02 gram in cattle causes a toxic reaction.

Numerous cases of black locust poisoning in Indiana have been investigated, most of which have been caused either by cattle grazing on the sprouts or, more frequently, by horses gnawing the bark while temporarily tied to a locust tree. A few losses among sheep have also been observed as a result of eating the pods.

Dr. D. K. Buzzard, an Indiana veterinarian who has had considerable experience with locust poisoning, describes the symptoms as follows: "In horses, colicky pain with irregular pulse and purging followed by inaction of the bowels, nerv-

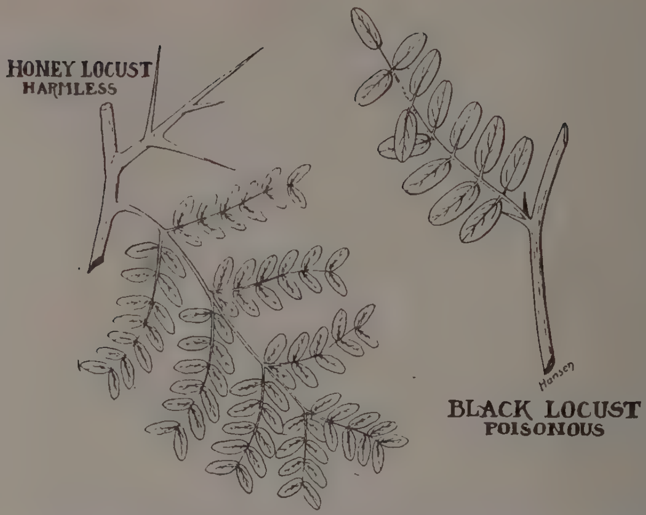

Fig. 8—Note the huge, branched spines and small leaflets of the harmless honey locust in contrast to the small spines and larger leaflets of the poisonous black or common locust.

ous depression and collapse. In cattle the symptoms are colicky pains, constipation, purging, followed by irregular pulse, nervous excitement and vertigo bordering on mania. There is no certain symptom or series of symptoms since locust poisoning may easily be mistaken for other types of poisoning, hence in diagnosis we must rely largely on the history of the case."

Black locust must not be confused with honey locust (Fig. 8) which, although more vicious in appearance due to the large, branched spines, is harmless. The leaves (leaflets) of honey locust are also much smaller than are the leaves of the dangerous black species.

There seems to be considerable variation in the toxic properties of black locust and the exact conditions under which poisoning occurs are not known. Strangely, most reports of locust poisoning do not come from the locust area of the southeastern part of the state where the tree is most commonly found.

The roots and bark of black locust are also poisonous to humans. In one instance thirty-two boys became severely ill from the effects of chewing locust bark.

STAGGERWEEDS. In all parts of Indiana, but principally in the southern highland section spring staggers is a common

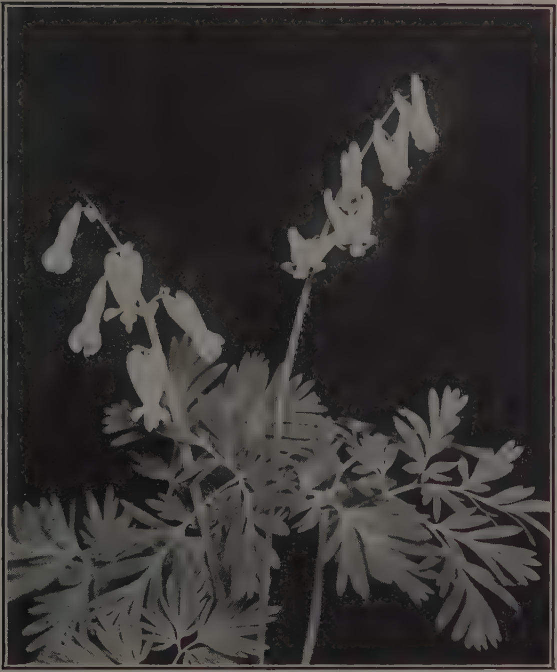

Fig. 9—Both the foliage and the bulbs of Dutchman's breeches (right), a plant distinguished by the two-spurred blossoms, are poisonous to cattle. The plant resembles squirrel corn (left), which is mildly poisonous and possesses heart-shaped flowers.

experience among cattle that have been turned into woodland pastures for early grazing. The trouble is frequently due to grazing on staggerweeds of which there are two species. One, also known as Dutchman's breeches (*Bicuculla cucullaria* [L.] Millsp.) (Fig. 9), is a handsome little wildflower with white, double-spurred blossoms, lace-like foliage and scaly bulbs (Fig. 10), while the other, frequently called dwarf larkspur (*Delphinium tricorne* Michx.), may be recognized by the blue or whitish blossoms, buttercup-like leaves and fleshy, bulbous roots (Fig. 11).

Both species, which frequently grow in company with each other, develop early from the fleshy, underground parts. Neither seems to cause much trouble after mid-May and they rarely poison horses and are apparently harmless to sheep. One Indiana farmer who lost heavily of cattle from Dutchman's breeches poisoning succeeded in practically destroying the pest by grazing heavily with sheep during the early spring.

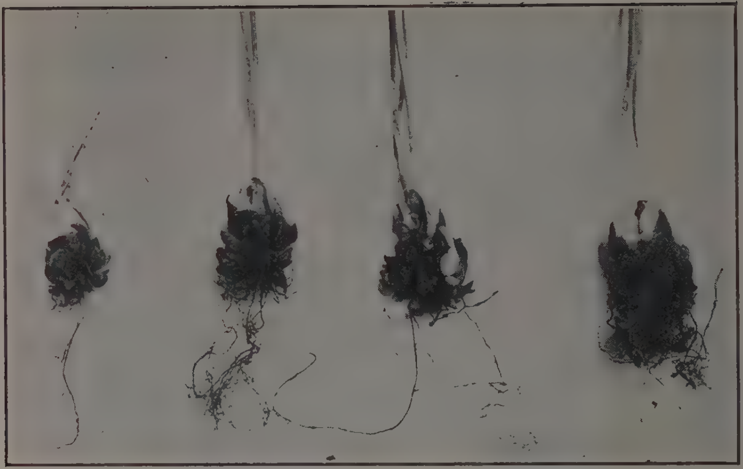

Fig. 10—The poisonous bulbs of Dutchman's breeches or staggerweed.

The poisonous principle in Dutchman's breeches has been isolated and found to be a toxic alkaloid that exists in both bulbs and tops. The toxic properties of dwarf larkspur are similar to those of the well known larkspur of western ranges.

The symptoms produced by the two plants are similar, the outstanding effect being the staggering gait. As one farmer described the effect of Dutchman's breeches on his cattle, "the animals became very weak, staggered and could barely walk.

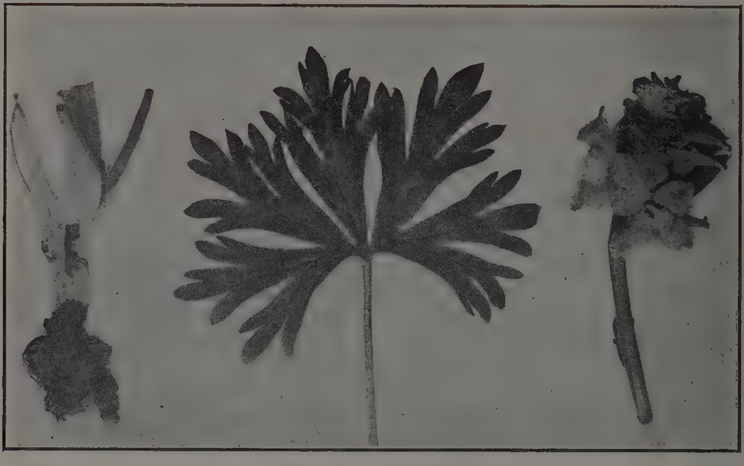

Fig. 11—Bulbs, leaf and flower of dwarf larkspur, a poisonous species found in woodland pastures.

They staggered for a few paces, rested awhile, staggered some more while the eyes became staring and glassy, and the victims gave little milk." In dwarf larkspur poisoning there is a general stiffness of gait, the animals fall and kick convulsively, constipation is severe and breathing difficult. Death usually results a few hours after the first symptoms are noted and is closely followed by bloating.

The best way to prevent staggerweed poisoning is to keep the animals out of the infested woods until after the middle of May. When trouble occurs, remove the livestock immediately, feed dry feed in the barn and consult a veterinarian. Melted lard poured into the throat may also save poisoned animals.

BUCKEYE. Buckeye (*Aesculus glabra* Willd.) sprouts and nuts are fatally poisonous to cattle, sheep and hogs while the nectar of at least one species is deadly to bees when they are compelled to feed on it during periods of shortage of other pasture.

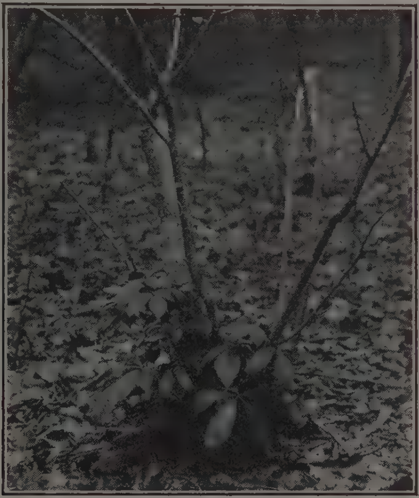

Fig. 12—Grazing on these buckeye sprouts resulted in the death of a cow and the illness of a calf. (Courtesy Dr. G. W. Fant.)

Poisoning of livestock usually results when animals graze on recently cleared land containing buckeye sprouts (Fig. 12), when the nuts are eaten in quantity by cattle grazing in woods containing little other forage, when animals graze on buckeye sprouts in fencerows during drought or other periods of pasture shortage or when livestock strips buckeye buds from small trees during the early spring.

The poisonous principle apparently acts on the nervous system and causes paralysis, incoordination of movement, labored breathing, twitching of the muscles (Fig. 13), dilation of the eye pupils, slobbering and coma preceding death, although the appetite seems to be unimpaired during the progress of the disease. The outstanding characteristic is the staggering gait like the reeling of an intoxicated man.

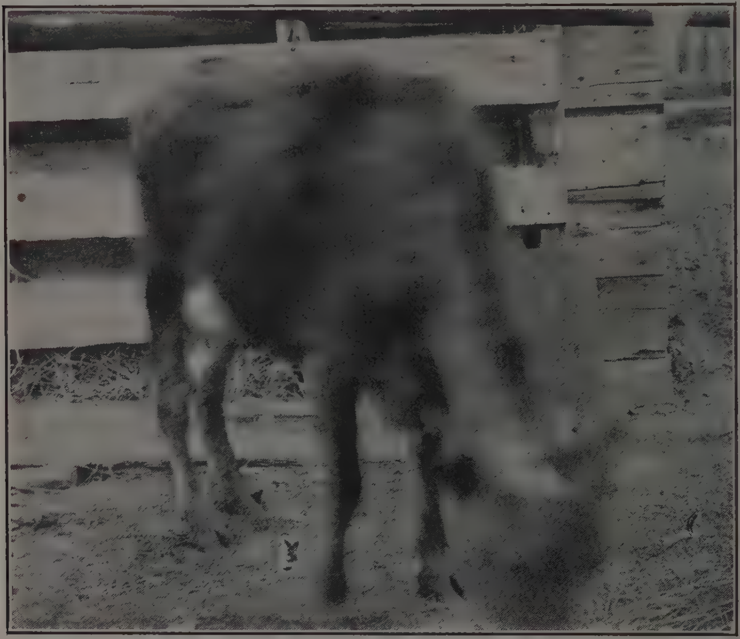

Fig. 13—This picture is not out of focus. The calf is trembling as a result of buckeye poisoning. (Courtesy Dr. G. W. Fant.)

Both the red buckeye (*Aesculus pavia* L.) and the horse chestnut (*Aesculus hippocastanum* L.), common cultivated species, are similar in poisonous action to the native buckeye. Horse chestnut occasionally escapes and becomes established as a wild species in Indiana. It can readily be recognized by the fact that the leaflets occur in groups of seven as compared with five in buckeye. The eating of horse chestnut fruits has been held responsible for death in children.

JIMSON WEED. Common Jimson weed (*Datura stramonium* L.) is poisonous in all its parts, particularly the seeds, the leaves being used in medicine. A number of fatal cases of human poisoning from Jimson weed have been reported, due principally to children eating the fruits or sucking the flowers.

Farm animals ordinarily leave Jimson untouched on account of the repugnant odor and unpleasant taste. Sometimes, however, when other green vegetation is scarce or due possibly to a faulty diet, hogs and cattle eat Jimson with fatal results. Occasionally, also, the young sprouts are eaten in dangerous quantities. Jimson poisoning is usually accompanied by nausea, marked dilation of the pupils of the eyes, excitement, increased pulse and muscular paralysis.

An interesting case of Jimson poisoning was recorded in Parke County, Indiana, where a farmer lost seven cows after the animals had partaken liberally of silage containing large amounts of Jimson weed. On another farm two pure bred Holstein cows died under circumstances that pointed toward Jimson sprouts as the cause of the trouble.

DEADLY NIGHTSHADE. Deadly nightshade (*Solanum nigrum* L.) (Fig. 14), sometimes called bittersweet, may be found in pastures, woods and waste places throughout the state. The species has long been regarded as poisonous although the toxicity varies greatly. It is believed by some that musky-odored plants are most dangerous. The poisonous principle, a chemical (glucoside) called *solanin,* is present in the stem and green berries, the mature fruits being apparently harmless and even edible since they have been used without ill effects in the making of pies and tarts. A horticultural variety known as Wonderberry has been developed.

A number of livestock losses have been noted in Indiana, principally among poultry, sheep and hogs, as a result of eating the green parts, usually the unripe berries, of this species. The symptoms ordinarily displayed are weakness, stupor and muscular paralysis preceding death, with convulsions, constipation and nausea sometimes present.

The plant should be mowed in pastures during early bloom, before the berries form. It is an annual, growing from seeds only.

POKEROOT. All parts of common pokeroot (*Phytolacca decandra* L.), particularly the roots and green berries, are poisonous to cattle, sheep, hogs, horses and humans, although the toxic principle is apparently destroyed by boiling since the young leaves are considered excellent as greens.

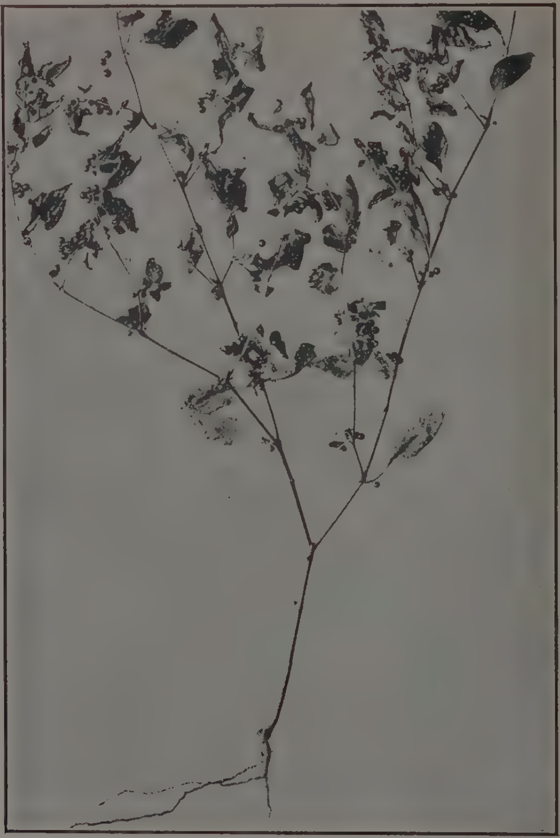

Fig. 14—Black or deadly nightshade. The foliage and green berries are dangerous to livestock.

Most instances of pokeroot poisoning in Indiana among livestock have been confined to hogs, and were due principally to eating the roots. Two human deaths from the eating of pokeroot, one caused by eating the berries and the other by mistaking the roots for parsnips, have also come under our observation.

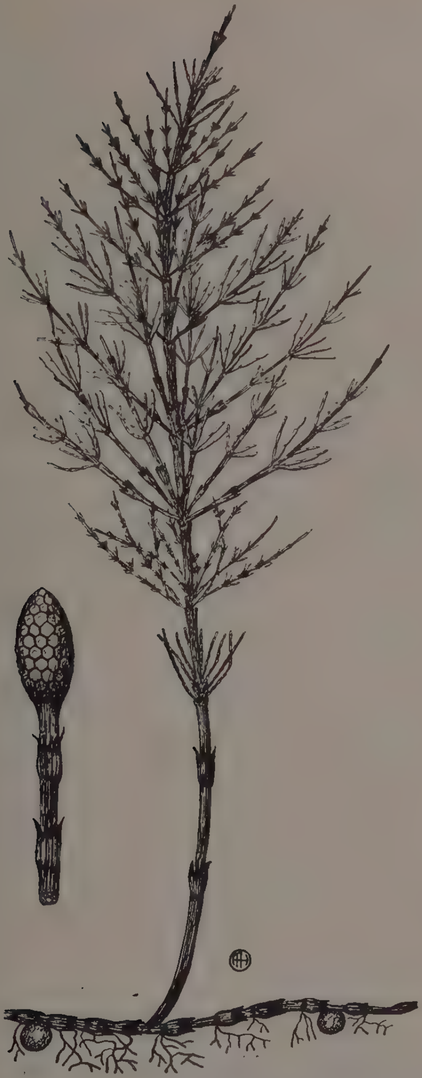

Fig. 15—Horsetail or scouring rush showing the creeping root and the poisonous vegetafive stage. The early spring or cone stage is also illustrated.

POISONOUS PLANTS OF MINOR IMPORTANCE

SCOURING RUSH (*Equisetum arvense* L.). When scouring rush or horsetail (Fig. 15), a species frequently found in barren fields and along railroads, is included in quantity in hay, a fatal disease of horses and sheep called equisetosis may result, although there is no evidence that the green plant is in the least dangerous under Indiana conditions.

Scouring rush poisoning usually appears during the winter, particularly when wild hay is fed, the animals apparently developing a depraved appetite for the plant. The outstanding symptoms are extreme emaciation, muscular weakness, marked nervousness, faulty vision, stiffness of gait, paralysis, coma and death. The appetite seems to be unimpaired during the progress of the trouble. Death may be sudden or lingering, the lungs and kidneys are usually congested, while during the final stages the pulse becomes rapid and weak and the temperature rises. An immediate change of feed to clean hay as soon as evidence of trouble appears usually gives relief.

There are two stages of scouring rush, the early spring growth, which is merely a leafless stem tipped by a cone, and a later development that somewhat resembles a miniature pine tree. Both stages arise from the same creeping root. The name scouring rush alludes to the fact that the late stage was formerly extensively used for scouring pots and pans on account of the high silica content.

MAYAPPLE OR MANDRAKE (*Podophyllum peltatum* L.). Occasional poisoning in cattle, hogs and sheep, particularly during the early spring, occurs as a result of eating the roots and young shoots of common Mayapple, a woodland species containing the poisonous principle *podophyllin*. The fruits and mature tops seem to be quite harmless.

Mayapple is the source of a drug utilized in medicine and there are records of human deaths due to overdoses of this drug. The powdered root is capable of causing severe inflammation of the eyes and deep-seated ulcers resembling venereal sores.

Symptoms of Mayapple poisoning in cattle are profuse salivation, moaning as though in pain, nervous excitement, dilation of the pupils of the eyes, congestion of the mucous membrane, marked diarrhoea, loss of appetite and coldness of the extremities.

The only case of Mayapple poisoning among hogs observed in Indiana occurred on a Daviess County farm where two animals were allowed to graze liberally on the young shoots, the only green vegetation available. Both hogs became ill, trembled slightly and died without signs of suffering. The animals were posted and the stomachs were found to be about half filled with Mayapple shoots.

ERGOT (*Claviceps purpurea* [Fr.] Tul.). Ergot is a fungus disease of rye (Fig. 16), quack grass, bluegrass, redtop and other members of the grass family. The fungus produces hard, blue-black or dark purple bodies (Fig. 17) that apparently replace the seeds and that contain a dangerous drug called *ergotin*. This drug is capable of causing a gangrenous type of livestock poisoning in which the tail, hoofs, and other extremities slough off, a form of disease characterized by severe nervousness, impaired appetite, general loss of condition, delirium and fatal convulsions, or abortion in cows, sows or mares. The trouble occasionally occurs as a result of eating ergotized wild hay.

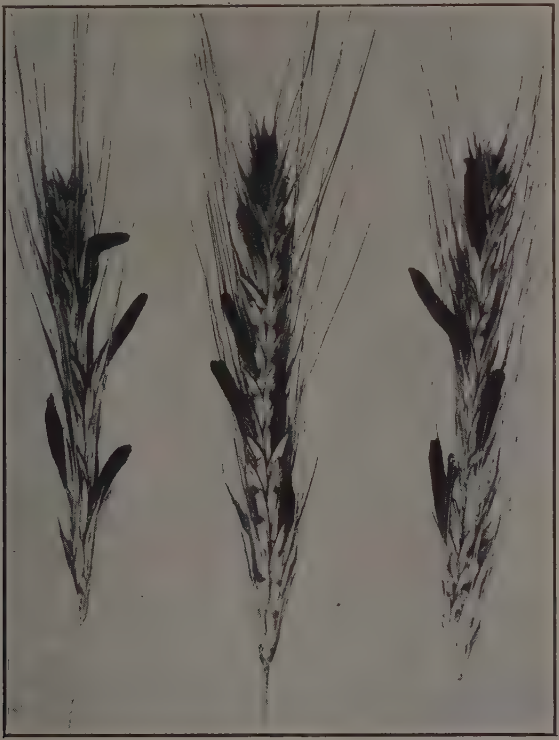

Fig. 16—Ergot infestation on rye is common in Indiana.

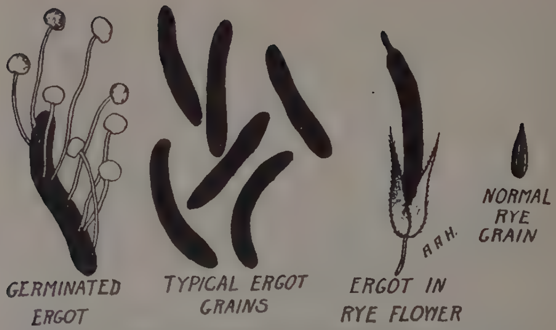

Fig. 17—Ergot on rye. The dark bodies may cause poisoning or abortion in livestock. They occur on members of the grass family only.

Owing in part to improved methods of seed cleaning and possibly to weather conditions unfavorable to the development of the fungus, ergot poisoning and abortion is comparatively rare. In the past, however, severe epidemics of ergotism have occurred in Indiana, influenced greatly by conditions favorable to the spread of the fungus. It is felt that ergot poisoning is a potential rather than an immediate danger influenced largely by conditions. During an epidemic of the gangrenous form of the disease that occurred a number of years ago in Indiana the trouble was at first confused with foot and mouth disease on account of the peculiar effect on the hoofs of infected animals.

RHUBARB (*Rheum rhaponticum* L.). The leaves (not the stalks) of garden rhubarb contain dangerous quantities of oxalates, and a number of human fatalities as a result of eating rhubarb foliage are recited in medical literature. Similar trouble has been observed in livestock as for example on a Shelby County farm where nine hogs died after eating a wheelbarrow full of rhubarb leaves thrown to them as feed. The animals foamed at the mouth, staggered and died in convulsions in from three to four hours after the first symptoms were noted. A post-mortem examination revealed large quantities of rhubarb leaves in the stomach. On a farm near Knightstown a cow died under similar circumstances.

CASTOR BEAN (*Ricinus communis* L.). The common castor bean contains a toxic principle called *ricin* that is concentrated in the seeds. One fatal case of poisoning has been observed in Indiana as a result of a calf grazing on the tops of the plant growing as an ornamental near a house.

WATER LILY (*Nymphaea tuberosa* [Paine] Greene). The breaking of a dam on a Daviess County, Indiana, farm drained a pond containing a heavy growth of water lilies. The plants were freely grazed by four hogs with the result that all became ill and two died. One authority records that the fruits of water lilies are fatal to hogs but in this case the entire plant, particularly the sprouts, seemed to be at fault.

KENTUCKY COFFEE TREE (*Gymnocladus dioica* [L.] Koch.). On a Tipton County farm a number of sheep died after grazing on the fruits and foliage of a coffee tree blown down during a storm.

SNEEZEWEED (*Helenium autumnale* L.). Experiments have demonstrated that sneezeweed, a yellow-blossomed species common in wet situations, is poisonous to horses, mules, sheep and cattle. The flowers seem to contain most of the poison, mature plants being most dangerous. Although it is bitter in flavor and is usually left untouched by livestock, animals occasionally develop a depraved appetite for the plant. The bitter principle affects milk. On a Hancock County farm three cows died under circumstances indicating sneezeweed poisoning, the outstanding symptoms being intoxication and fatal convulsions. Experiments in Mississippi indicate that a pint or two of melted lard poured into the throat gives rapid relief.

BLACK-EYED SUSAN (*Rudbeckia hirta* L.). Although experimental work on the subject is lacking there is abundant field evidence pointing to this common wild and ornamental species as the cause of poisoning in cattle and hogs and a number of cases of this character have been observed in Indiana. In cattle the trouble is characterized by severe digestive disturbance, colic, groaning, and passing of parts of the lining membrane in the feces. In hogs loss of consciousness followed by awakening and walking aimlessly for hours has been observed as a result of grazing on the roots and tops of black-eyed Susan.

WILD INDIGO (*Baptisia leucantha* Torr. and Gray.). A poisonous principle occurs in this species, common along fence-rows, that causes severe diarrhoea and refusal to eat. On a farm near Loogootee four cows died as a result of eating hay contaminated with wild indigo and similar losses have occurred in other parts of the state.

COCKLE (*Agrostemma githago* L.). Feeding tests conducted at the Purdue station have failed to confirm the common belief that grain screenings containing cockle cause fatalities in poultry. The only indication of cockle poisoning observed in Indiana was a doubtful case in which the death of four hogs was thought to be due to eating cockle plants and an examination of the stomach revealed quantities of what was identified as cockle roots.

CURSED CROWFOOT OR BUTTERCUP (*Ranunculus sceleratus* L.). All members of the buttercup genus are acrid and narcotic, causing irritation and inflammation of the digestive tract. Most dangerous is the cursed or celery-leaved species, frequently found in wet soil, which contains the poisonous principle *anemonol*, fatal to horses, cattle, hogs, sheep and man.

PRICKLY ASH (*Xanthoxylum americanum* Mill.). Sheep losses due to grazing on the foliage of prickly ash have been recorded. This usually happens when other forage is scarce.

CAT-TAIL (*Typha latifolia* L.). Fatal poisoning of horses, characterized by stiffness, disinclination to move, profuse perspiration and trembles preceding death, has been observed as a result of grazing freely on cat-tails, common plants of wet places.

WHORLED MILKWEED (*Asclepias verticillata* L.). Although an important problem on the western plains, only one case, an instance in which three calves died as a result of grazing on a solid acre of this species, has been recorded in Indiana. The plant is characterized by whorls of narrow leaves.

WATER PARSNIP (*Sium cicutaefolium* Schrank.). Water parsnip, a species somewhat resembling water hemlock, was held responsible for the death of four hogs on a farm near Oxford, Indiana. The symptoms were not fully recorded since the animals died overnight although frothing at the mouth, trembling, rapid respiration, slow heart action and bloating preceding death were noted. Other losses from this species, principally in hogs and cattle, have been observed in Indiana.

WINTER CRESS (*Barbarea vulgaris* R. Br.). All members of the mustard family are noted digestive irritants, particularly when eaten in quantity. Although not ordinarily dangerous, winter cress eaten in excess may prove fatal. In one interesting Indiana case a horse that had eaten liberally of winter cress from a wagon in which the weed was being hauled from a field exhibited labored breathing, trembling, an awkward, stiffened gait and symptoms of abdominal pains.

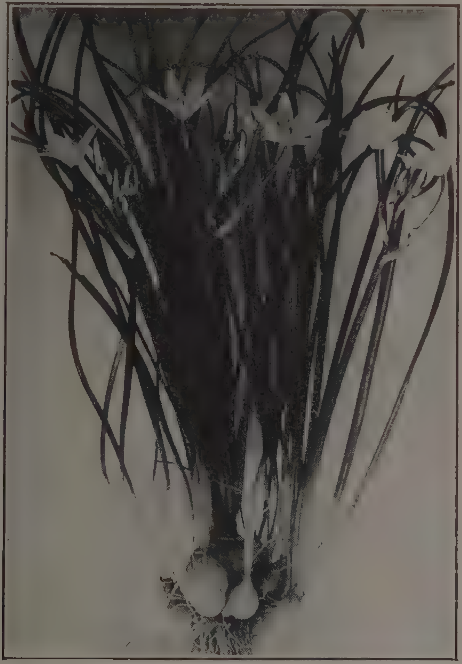

Fig. 18—Star flower, showing the poisonous bulbs. (Courtesy Dr. E. B. Mains.)

GROUNDSEL (Senecio spp.). Illness and death of cows in Indiana has been attributed to grazing on two species of groundsel (*S. plattensis* and *S. Jacobaea*). These plants have been associated with several livestock diseases (pictou cattle disease, Winton disease of horses, Missouri bottom disease).

BUTTON BUSH (*Cephalanthus occidentalis* L.). A toxic chemical called *cephalanthin* occurs in button ball bush, common along streams and in moist places, and illness of livestock due to grazing on the foliage of this species has been observed in Indiana. No fatalities from this cause have been noted.

STAR FLOWER or STAR OF BETHLEHEM (*Ornithogalum umbellatum* L.). The bulbs (Fig. 18) of this common field and lawn weed are poisonous. On a Clark County farm cattle were poisoned by eating the bulbs uprooted by hogs. Grazing animals should be kept out of newly plowed fields on which the bulbs of star flower have been exposed.

RED SORREL (*Rumex acetosella* L.). Red sorrel contains large quantities of oxalate of lime and may cause poisoning in cattle during June and July when the plant is most abundant.

BULL NETTLE (*Solanum carolinense* L.), BITTERSWEET (*S. dulcamara* L.) and MATRIMONY VINE (*Lycium vulgare* Dunal). These members of the potato family are poisonous. A number of instances have been observed in which sheep and cattle turned into abandoned gardens have died as a result of grazing on matrimony vine, an old fashioned ornamental. The usual symptoms are pronounced weakness, staggering, trembles and a high degree of nervousness characterized by twitching of the muscles of the neck and by fatal convulsions.

OAK (Quercus spp.). An exclusive diet of oak leaves has been shown experimentally to be dangerous, sometimes fatally so. A few cases of what appeared to be oak poisoning have been noted on scrub oak land in Jasper County and on cutover oak land in Jackson County, the outstanding symptoms being emaciation, unsteady gait, and the passage of hard, bloody feces. A change of pasture usually brings rapid relief. There is a common but unverified belief among Indiana farmers that the eating of acorns causes a decided decrease in the milk flow, particularly during the fall when acorns are plentiful.

PEACH (*Prunus Persica* Sieb. & Zucc.). Prussic acid, the poisonous principle of wild cherry and sorghum, occasionally develops in peach foliage and losses of livestock have occurred when farm animals grazed on peach sprouts or peach leaves that have fallen during autumn days. In one unusual case a sow was apparently fatally poisoned as a result of cracking a quantity of peach stones and eating the kernels.

MISCELLANEOUS. Among miscellaneous cases of forage poisoning encountered during the course of the field work may be mentioned the toxic effects of flowering spurge (*Euphorbia corallata* L.), bulbous water hemlock (*Cicuta bulbifera* L.), blue flag (*Iris versicolor* L.) and lobelia (*Lobelia syphilitica*

L.) on cattle; swamp milkweed (*Asclepias incarnata* L.) on sheep; wilted apple leaves (*Pyrus malus* L.) on a mule, and the roots of elder (*Sambucus canadensis* L.) on hogs.

CULTIVATED PLANTS THAT ARE DANGEROUS UNDER CERTAIN CONDITIONS

A few of our cultivated plants that are not ordinarily harmful become dangerous under certain conditions. Principal among these are sweet clover, sorghum, Sudan grass, alsike clover and rape.

Sweet Clover (*Melilotus alba* Desr.). With the increased popularity of sweet clover (Fig. 19) and its frequent use for

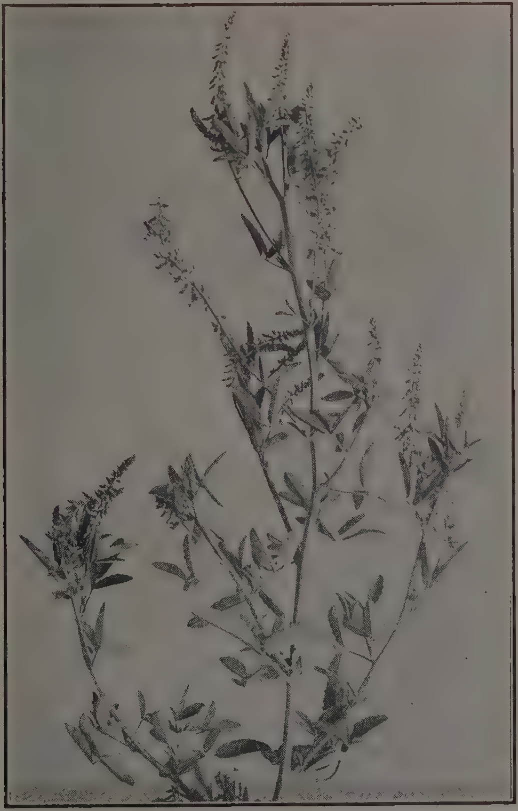

Fig. 19—Sweet clover is excellent for grazing or soil building, but when fed in quantity as hay may cause trouble.

hay, although primarily a pasture and soil improvement crop, a disease new to veterinary science has appeared in cattle and sheep. This disease is characterized principally by the loss of clotting power of the blood. The cause is unknown although the trouble is usually attributed to molds that develop in sweet clover hay. It apparently affects the milk since the disease may be contracted by suckling offspring through the agency of the milk.

Losses usually occur during the winter months, from January on, among animals that have been fed sweet clover hay or silage. The first indication of trouble may be bleeding of the nose. A stiff, jerky gait develops and peculiar swellings appear on all parts of the body but principally along the flanks, backs and sides. These swellings vary from the size of a pea to that of a cocoanut or larger, and they are filled with blood, consequently are soft and puffy to the touch. The animals go off feed gradually and finally die. The postmortem examination usually reveals internal bleeding with blood masses distributed throughout the body, the blood being thin and of a color resembling port wine. Younger animals seem to be most susceptible. The disease is caused only by the second year cutting of hay, a fact which may be due to the finer character of the first season growth since there are indications that the trouble is associated with the coarser growth of sweet clover.

On account of the strange effect of sweet clover on the blood no surgical operations should be performed on animals being fed sweet clover hay or silage. Several instances of fatal bleeding following dehorning or castration have occurred in Indiana. Although there seems to be little, if any, danger of harmful effects of sweet clover as pasture, nevertheless it is safer to remove the animals from such pasture at least a month before any surgical operations are performed.

In the case of valuable animals suffering from sweet clover poisoning it is often possible to save life by having a veterinarian make a transfusion of defibrinated blood from a healthy animal.

Trouble can be prevented by alternating the feeding of sweet clover hay or silage with some other feed every two weeks. Decreasing the amount of sweet clover in the ration is also important since the bad effect is evidently cumulative and no trouble has been noted in Indiana where sweet clover has been fed in moderate quantities. It has also been found that tame rabbits are very susceptible to the effects of sweet clover, exhibiting symptoms long before cattle contract the disease. For this reason the hay or silage may be fed simultaneously to rabbits and if trouble develops among them it is best to withhold further feeding to livestock since this is proof positive that the hay or silage is in a dangerous condition.

ALSIKE CLOVER (*Trifolium hybridum* L.). Sores and inflammation of white skin areas of farm animals are by no means rare in Indiana. Most of this trouble can be traced to allowing livestock to graze on alsike clover moist with dew or rain (Fig. 20), but occasionally rape (*Brassica napus* L.) or St. John's-wort (Hypericum spp.) may be at fault.

Fig. 20—Sheep and moist alsike clover are a bad combination.

Alsike or dew poisoning is not well understood but it seems to be confined entirely to the white skin areas of cattle, sheep, hogs, mules and horses and is most severe when hot sunshine strikes animals that have grazed on moist alsike. An excellent description of the trouble is given by Dr. H. A. Smith, veterinarian of Anderson, Indiana. He states, "Each year I have been called to see animals, usually horses, that show evidence of alsike poisoning. Ordinarily they refuse to eat, there is profuse drooling of saliva and swelling of the tongue, lips or side of the face, especially if the face is marked with white hairs. Then we get cases where a white foot suddenly swells and the horse begins to stamp and even bite at the painful area, which is swollen and hot, exuding a yellow serum. Later the white area may slough out, leaving a bald scar." In sheep there is usually swelling of the face, particularly of the eyes, ears, nose and mouth, followed by peeling of the affected parts.

Occasionally trouble of this character is due to allowing the animals to graze on rape. St. John's-wort (Fig. 21), a yellow-flowered weed sometimes found abundantly in poor-land pastures, may also cause skin poisoning of a similar nature in which the white skin areas of cattle may peel in sheets, the dark areas remaining unaffected. The poisonous principle is here believed to be the oil that may be seen in glands when a leaf of the plant is held toward sunlight.

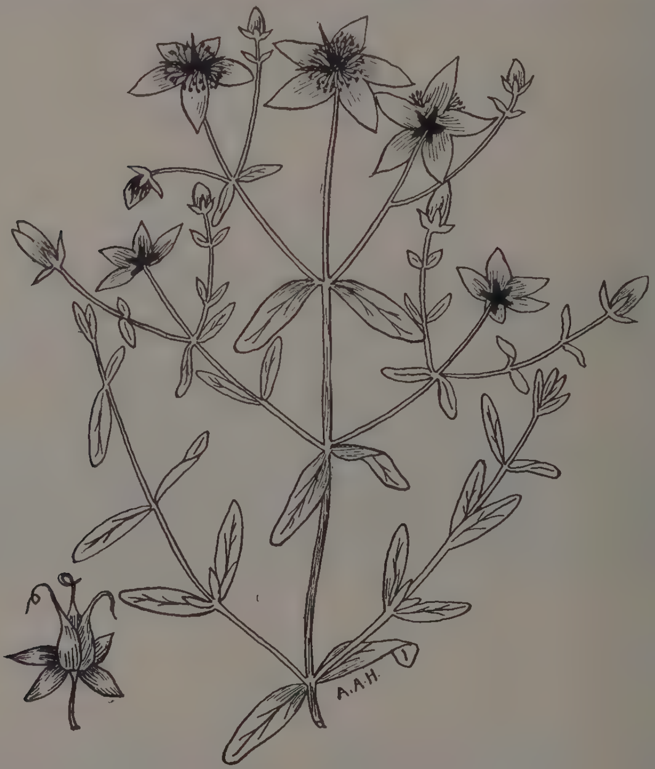

Fig. 21—St. John's-wort, a cause of skin poisoning in run-down pastures. The flowers are bright yellow.

Whether skin poisoning of this type is internal or external in origin is not known. As soon as trouble becomes apparent, an immediate change of pasture will bring quick relief. Unless this is done the result may be fatal.

SORGHUM (*Holcus sorghum* L.), SUDAN GRASS (*H. sudanensis* Bailey), and JOHNSON GRASS (*H. halepensis* L.). When the growth of sorghum, Sudan grass (Fig. 22) or Johnson grass is stunted by frost injury or drought, a poisonous principle known as prussic acid (the same as is found in wild cherry), develops in fatal quantities. Most cases of poisoning of this type in Indiana are due to allowing animals to graze on the second growth of sorghum, particularly when it is withered by frost. The poison, however, disappears on drying so there is no danger when the plants are cured for hay.

Fig. 22—Sudan grass, which in common with Sorghum and Johnson grass becomes poisonous when wilted or frosted.

Sudan grass is a very minor crop in Indiana while Johnson grass is established as a weed in the southern part of the state.

In the southern states Johnson grass, although recognized as a serious weed, is sometimes cultivated for hay and pasture.

The symptoms are similar to wild cherry poisoning. Some observers state that the odor of prussic acid, which is similar to that of burnt almonds, can be detected on the breath of poisoned animals. Death may be very rapid or lingering.

POTATO (*Solanum tuberosum* L.). When either the tubers or the sprouts (Fig. 23) of the common Irish potato turn green after exposure to sunlight the poisonous principle *solanin* develops in quantities sometimes fatal to horses, hogs and other livestock and even to humans. Poisoning usually results from eating young greened tubers or old sprouted potatoes. In one instance a Madison County farmer lost two yearling heifers after they grazed on about a bushel of spoiled, discarded potatoes. In another case the death of a horse was attributed to eating exposed potatoes that had been overlooked following digging. On a farm near Lamar thirty chickens died from the effects of eating greened potato sprouts fed during February.

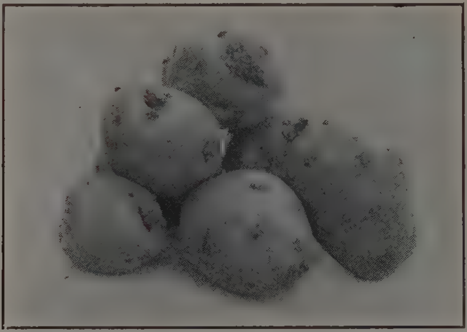

Fig. 23—Green potato sprouts contain the dangerous poison solanin.

MECHANICAL PLANT INJURIES

HAIRBALLS or PHYTOBEZOARS. Hairballs of plant origin are usually caused by the coalescing of plant hairs into spheres (Fig. 24) in the stomachs of grazing animals. Occasionally these hairballs drop into the intestines, causing stoppage that results in a particularly distressing and painful form of death.

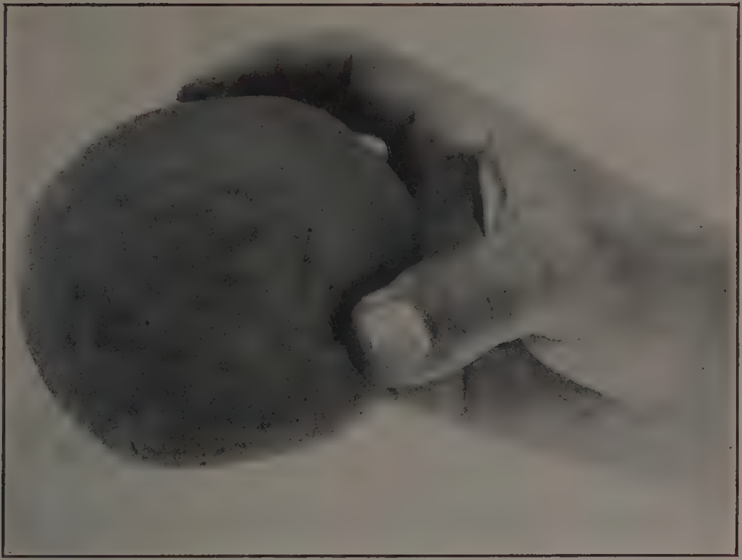

Fig. 24—Crimson clover hairball removed from the stomach of a horse.

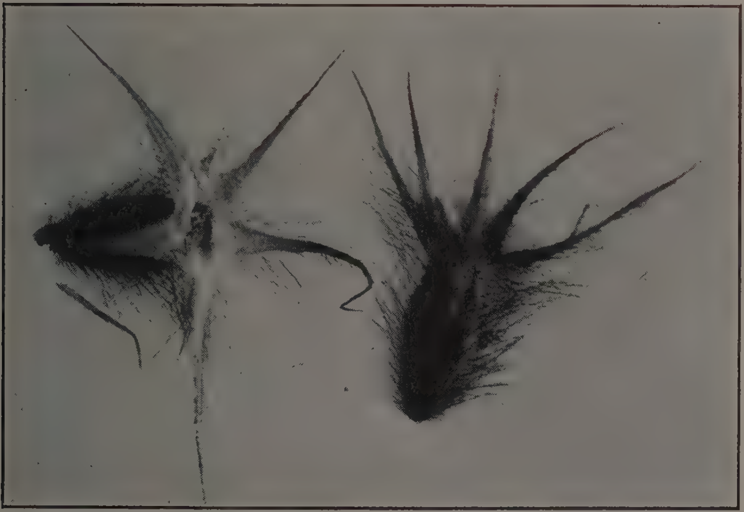

Fig. 25—Enlarged view of the calyces of crimson clover showing the hairs that form hairballs in the stomachs of animals.

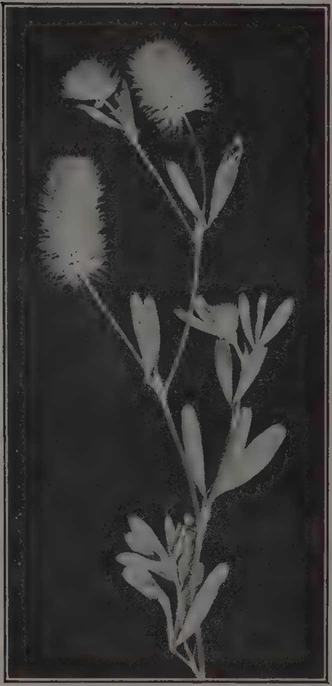

Fig. 26—Rabbit-foot clover, the fuzzy heads of which may cause the formation of hairballs in the stomachs of grazing animals. Common in run-down pastures.

Livestock losses of this character have been recorded in Indiana from flowering crimson clover, where the trouble is due to the hairs on the calyces (Fig. 25), and to over-ripe rye. Any plant equipped with barbed hairs or beards, such as millet, oats, barley, wheat, rabbit-foot clover (Fig. 26) and cocklebur, may cause trouble of this character. Losses from hairball formation are frequently diagnosed incorrectly since the true cause of the trouble cannot be ascertained unless post-mortem examination of the animals is made. When horses are allowed to eat liberally of barley the beards sometimes form spheres under the tongue that cannot be dislodged without assistance such as may be rendered by a veterinarian.

Masses of cockleburs and sandburs may also clog the digestive tracts of grazing animals and cause serious internal injury. The death of a colt on a farm near Bentonville was found to be due to irritation and inflammation of the stomach wall by masses of cockleburs. Poultry losses due to the lodgement of cockleburs and burdock burs in the throat are not rare.

IMPACTION. Common causes of impaction of the digestive tract, some of which have been noted in Indiana, include the woody stems of big English clover, the vegetative stage of horsetail or scouring rush (Equisetum sp.), and corn stalks and rye straw fed without sufficient water.

BARBED BEARDS AND HAIRS. When the beards or awns of wheat, barley, squirrel tail grass (*Hordeum jubatum* L.) (Fig. 27), and other grasses are examined under the microscope tiny barbs are disclosed that somewhat resemble the barbs on fish hooks. When grasses of this character become ripe and brittle in hay the beards break into sections during mastication that penetrate the mouth parts and the lining of the digestive tract and cause serious inflammation. They may also enter the eye, causing blindness. Hide injuries of this nature may also occur. On one Indiana farm four horses died as a

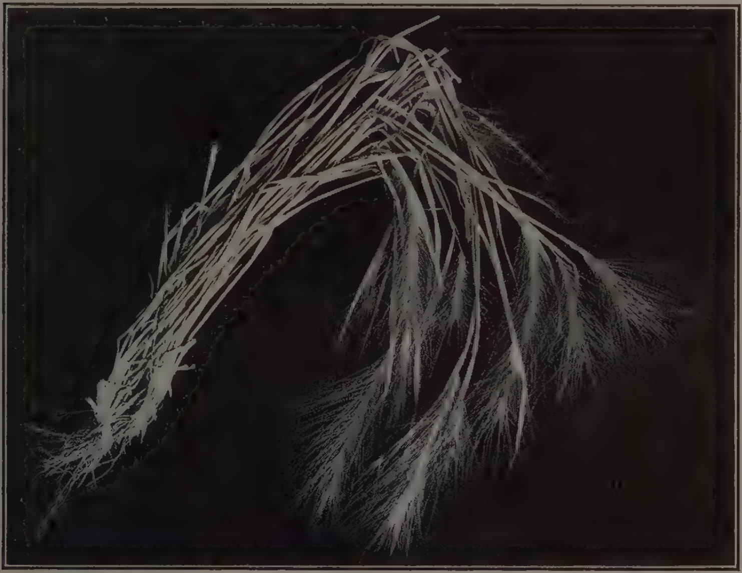

Fig. 27—Squirrel tail grass showing the beards that may penetrate the mouth parts and lining of the digestive tract, causing fatal inflammation.

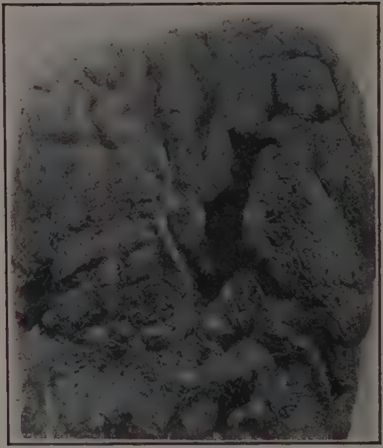

Fig. 28—Swollen tongue of a horse that died from the effects of eating over-ripe squirrel tail grass. Note the penetrating beard sections. Photograph by Dr. R. A. Craig.

result of the penetration of the mouth parts by beard sections of a squirrel tail grass included in the hay. The tongues became so swollen (Fig. 28) that swallowing was impossible and death by starvation resulted.

BURS and SPINES. Livestock injuries, particularly to the mouth parts and to the feet of cloven-hoofed animals, have been noted from the spines and burs of such plants as Russian thistle, sandbur, buffalo bur and unicorn plant (Martynia sp.).

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June, 1930

SIXTEENTH ANNUAL REPORT OF THE CREAMERY LICENSE DIVISION

For the Year Ending March 31, 1930

Purdue University
Agricultural Experiment Station
Lafayette, Indiana

THE EXAMINING BOARD

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Creamery License Division

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Mr. W. F. Epple	Glassware Inspector
Mr. V. D. Rhodes	Assistant Inspector
Mr. L. D. Miller[1]	Assistant Inspector
Mr. C. E. Schumacher	Assistant Inspector

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[1] Resigned.

MILK HANDLED BY LICENSED PLANTS AND TOTAL ESTIMATED MILK PRODUCTION, 1920-1929

YEAR	Number of Licensed Plants	Pounds of Milk or Its equivalent Handled by Licensed Plants	*Number of Milk Cows	Total Milk Production
1920	183	1,227,971,123	659,000	3,086,007,190
1921	198	1,350,320,469	653,000	3,035,325,150
1922	234	1,471,978,897	659,000	3,093,440,591
1923	220	1,439,266,503	652,000	3,133,036,289
1924	234	1,698,110,981	659,000	3,200,137,516
1925	243	1,758,946,467	679,000	3,280,146,910
1926	272	1,830,970,397	665,000	3,447,213,947
1927	307	2,132,280,140	679,000	3,669,804,287
1928	334	2,488,168,847	679,000	3,792,498,038
1929	344	3,110,017,610	693,000	3,842,440,026
1930			721,000	

*Indiana Crops and Livestock, 1930. Department of Agricultural Statistics.

SIXTEENTH ANNUAL REPORT OF THE CREAMERY LICENSE DIVISION

T. H. BINNEY

Indiana Dairy Statistics, 1929

Although mergers and consolidations have taken place, and a decrease in amounts of dairy products manufactured was predicted for Indiana in 1929, the trend of the dairy industry has been toward increased manufacture of dairy products. During the past year the pounds of milk or its equivalent, handled by licensed plants, increased 621,848,763 pounds over the previous year. This large increase was mostly due to an increase in manufacture by some of the old plants rather than through new plants which commenced operating during the past year.

At the time of applying for the renewal of licenses, all creameries, milk plants, cheese factories, condenseries, etc., report the amount of butter, milk, cheese, or other dairy products made or sold during the year. With the information given on the application blanks, it is possible to compile accurate statistics concerning the total production of licensed manufacturing plants. The following table is a summary of the reports received from licensed plants for the years indicated.

OUTPUT OF LICENSED PLANTS FOR 1916, 1920, 1924, 1928 and 1929

	1916	1920	1924	1928	1929
Pounds of Butter	33,026,796	42,577,180	53,462,104	60,409,086	62,700.705
Pounds of Milk	55,059,940	155,950,136	257,417,090	452,088,139	537,463,634
Pounds of Cream	5,799,663	12,224,488	25,219,252	65,614,237	36,052,145
Gallons of Ice Cream	2,111,701	4,132,318	4,865,465	4,904,409	5,250,345
Pounds of Cheese	82,667	233,806	574,686	5,107,087	10,126,417
Pounds of Sweetened Condensed Milk	1,619,880	6,920,592	8,735,498	12,956,783	3,355,734
Pounds of Evaporated Milk	13,657,248	10,265,791	23,912,054	39,490,607	37,973,360
Pounds of Plain Bulk Condensed Milk	2,774,880	5,977,716	19,065,245	25,789,980	31,102,559

The increase in the amount of butter made is 2,291,619 pounds or 3.8 per cent. Butter is the only product manufactured in licensed plants which, since 1920, has shown an increase each year over the previous year. A total of 537,463,634 pounds of milk and 36,052,145 pounds of cream were sold in licensed plants during the past year. This represents an increase of 18.8 per cent of milk and a decrease of 81.9 per cent of cream in 1929 as compared with 1928. The large decrease in sweet cream may be partly due to the fact that the market on that product was "off" and the cream was made into butter. The amount of ice cream manufactured during the past year shows an increase of 345,936 gallons or 7.0 per cent. Cheese production increased 5,019,330 pounds or 98.2 per cent. Sweetened condensed milk decreased 9,601,049 pounds or 74.1 per cent, evaporated milk decreased 1,517,247 pounds or 3.8 per cent, and plain bulk condensed milk increased 5,312,579 pounds or 20.6 per cent.

An estimate of the total dairy products in the state may be secured by using the above statistics and estimating the amount of dairy products manufactured and sold in the plants which are not licensed.

Amount of Butter, Milk, Ice Cream, Condensed Milk and Cheese Estimated as Produced in Indiana During 1929

Pounds of Creamery Butter	62,700,705
Pounds of Dairy Butter	10,476,000
Pounds of Milk	1,531,459,189
Gallons of Ice Cream	9,359,814
Pounds of Condensed Milk	72,431,653
Pounds of Cheese	10,126,417
Pounds of Cottage Cheese	2,736,358

By taking the amount of milk used in the manufacture of each of the various dairy products the total milk production of the state may be calculated. In making this calculation, it has been necessary to estimate the amount of milk and cream consumed direct, the amount of dairy butter made, the amount of milk fed to calves, and the amount of milk lost on farms and in factories.

Total (Estimated) Milk Production

Creamery butter used	1,316,714,805
Dairy butter used	219,996,000
Milk consumed direct	1,533,160,093
Ice cream used	128,697,443
Cheese used	101,264,170
Condensed milk used	181,079,132
Milk fed to calves	98,980,000
Milk shipped out of state	332,614,488
Losses on farms and in factories	117,375,184
Total	4,029,881,315
Milk shipped in	187,441,289
Total milk production in Indiana	3,842,440,026

Creamery Licenses

Every creamery, shipping station, milk factory, cheese factory, person or agent, firm, company, association or corporation, receiving, buying and paying for milk or cream on the basis of the amount of butterfat contained therein, is required to hold a creamery license. A creamery license is valid for one year unless revoked by the Purdue University Agricultural Experiment Station for a violation of the Law or Rules and Regulations under which the license is granted. Points requiring creamery licenses are well distributed over the entire state, as shown by the accompanying map.

Owing to a slight decline in the number of cream stations being operated during the past year, the total number of creamery licenses issued was 1932 as compared with 1948 for the previous year. The number of licensed plants increased by 10 whereas the cream stations show a decrease of 26 in number.

The following table shows the kind and number of plants licensed during the past year.

CREAMERY LICENSES ISSUED FROM 1923 TO 1929 INCLUSIVE

PLANTS AND STATIONS	Number and Year						
	1923	1924	1925	1926	1927	1928	1929
Butter	51	51	51	64	58	56	58
Milk	61	71	78	91	108	129	141
Ice Cream	14	15	14	17	15	11	16
Cheese	4	4	3	3	9	18	17
Condensed	3	7	4	7	8	8	9
Butter and Milk	31	34	31	33	43	39	33
Butter and Ice Cream	15	17	16	12	14	17	13
Butter and Condensed	0	1	1	1	1	0	0
Butter and Cheese	0	0	0	0	0	3	2
Butter, Milk, and Ice Cream	18	12	16	13	16	13	15
Butter, Milk and Condensed	2	2	4	4	4	5	5
Butter, Milk, Ice Cream and Condensed	6	6	6	4	6	7	7
Butter, Milk, Cheese and Condensed	0	0	0	0	0	0	1
Milk and Ice Cream	9	10	13	19	20	24	18
Milk and Condensed	4	2	4	3	3	2	5
Milk, Ice Cream and Condensed	2	2	2	1	2	2	3
Milk, Ice Cream and Cheese	0	0	0	0	0	0	1
Total number of Plants	220	234	243	272	307	334	344
Stations	1,583	1,588	1,618	1,631	1,653	1,614	1,588
Total Licenses Issued	1,803	1,822	1,861	1,903	1,960	1,948	1,932

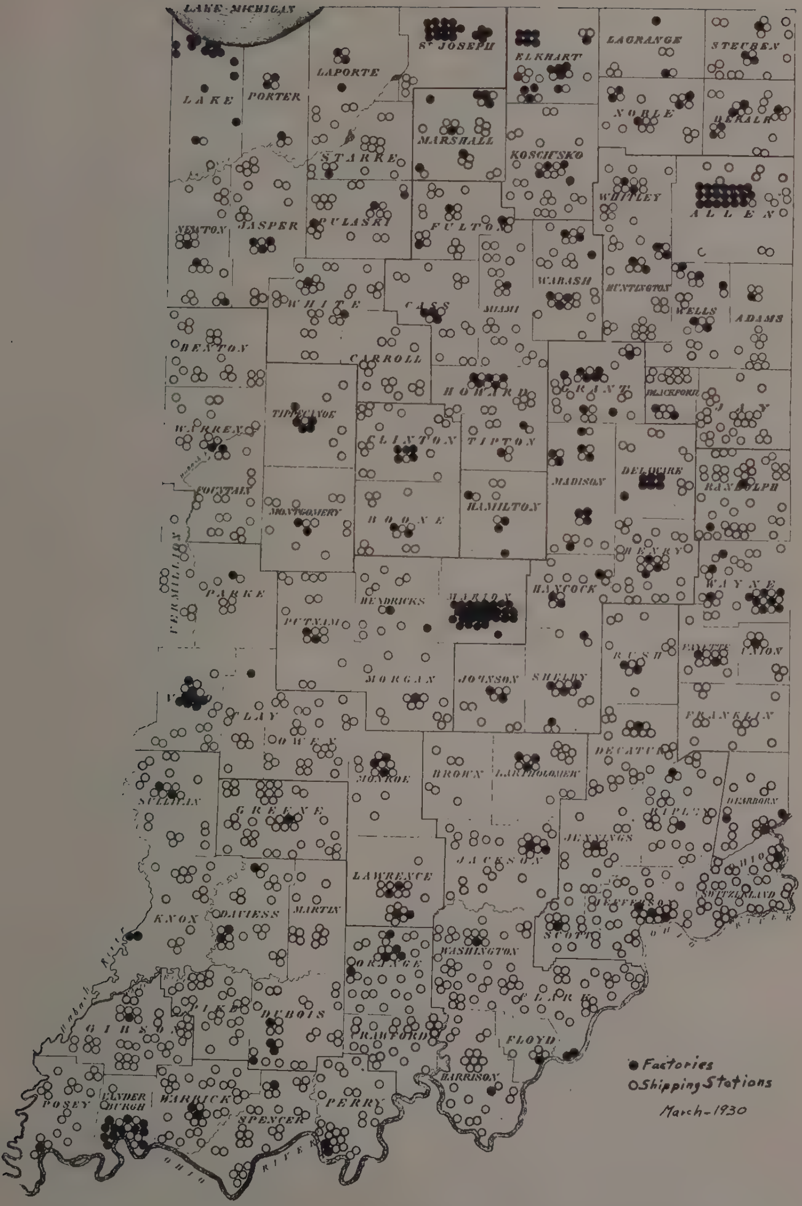
It will be noted that plants handling whole milk have again increased in number over the previous year. Within six years the number of plants handling milk alone have doubled in number. From present indications the number next year will be even larger.

Milk routes have spread over large portions of the state, causing a shortage of cream, and resulting in a reduction of the number of cream stations being operated. At the present time there are a large number of nonpaying cream stations in the state which will eventually be taken out causing a further reduction in the number. The short time in which stations have operated in some towns during the past year would indicate that the larger companies were experimenting with them to determine whether or not the stations could be operated on a paying basis.

The following table shows the number of plants which reported each of the five products for the years indicated:

NUMBER OF PLANTS REPORTING BUTTER, MILK, ICE CREAM, CHEESE AND CONDENSED MILKS FROM 1923 TO 1929, INCLUSIVE

PRODUCT	Number of Plants Reporting						
	1923	1924	1925	1926	1927	1928	1929
Butter	123	123	125	131	142	140	134
Milk	133	139	154	168	202	221	229
Ice Cream	64	62	67	66	73	74	73
Cheese	4	4	3	3	9	21	21
Condensed Milk	17	20	21	20	24	24	30


LAKE MICHIGAN
ST JOSEPH
ELKHART
LAGRANGE
STEUBEN
LAKE
PORTER
LAPORTE
STARKE
MARSHALL
KOSCIUSKO
NOBLE
DEKALB
WHITLEY
ALLEN
NEWTON
JASPER
PULASKI
FULTON
WABASH
HUNTINGTON
WELLS
ADAMS
WHITE
CASS
MIAMI
BENTON
CARROLL
HOWARD
GRANT
BLACKFORD
JAY
WARREN
TIPPECANOE
CLINTON
TIPTON
MADISON
DELAWARE
RANDOLPH
FOUNTAIN
MONTGOMERY
BOONE
HAMILTON
VERMILLION
PARKE
HENDRICKS
MARION
HANCOCK
HENRY
WAYNE
PUTNAM
RUSH
FAYETTE
UNION
CLAY
MORGAN
JOHNSON
SHELBY
FRANKLIN
OWEN
MONROE
BROWN
BARTHOLOMEW
DECATUR
DEARBORN
SULLIVAN
GREENE
RIPLEY
JENNINGS
JACKSON
LAWRENCE
OHIO
SWITZERLAND
JEFFERSON
KNOX
DAVIESS
MARTIN
SCOTT
WASHINGTON
ORANGE
CLARK
PIKE
DUBOIS
GIBSON
CRAWFORD
FLOYD
HARRISON
POSEY
VANDERBURGH
WARRICK
SPENCER
PERRY
OHIO RIVER
● Factories
○ Shipping Stations
March-1930

Location of Licensed Plants and Cream Stations for the Year Ending March 31, 1930.

Testers' Licenses and Examinations

All plants or stations which buy milk or cream on a butterfat basis must have in their employ a licensed tester who is responsible for the accuracy of the tests made.

Testers' licenses are issued to operators of the Babcock test who pass an examination given by the Creamery License Division. The examination consists of both laboratory and written work which deals directly with the sampling and testing of both milk and cream. Candidates must receive a grade of seventy per cent to pass the examination. Those who are successful receive a certificate of proficiency which entitles them to secure a tester's license on payment of the regular fee.

Temporary permits were issued to 1007 persons to test during the year ending March 31, 1930. Out of this number 691 appeared for the examination at one of the nine examination points in the state. One hundred forty-four of those who appeared failed to make a passing grade. The number of failures (144) added to the number who failed to appear (316) makes a total of 460 or 45.6 per cent of those who received permits were not eligible to secure a tester's license.

Twenty-five hundred and sixty-two testers' licenses were issued during the past year; a decrease of one hundred and six from the previous years' total of twenty-six hundred and sixty-eight.

Number of Candidates Examined and Testers' Licenses Issued for the Years Ending March 31, 1920, 1924, 1928, 1929 and 1930.

	1920	1924	1928	1929	1930
Number of Individual Examinations	1,339	850	904	781	691
Number of Failures	226	125	290	188	144
Number of Persons Passing Examination	1,113	725	614	593	547
Number of Testers' Licenses Issued	2,371	2,518	2,661	2,668	2,562

The results of the seventy-five examinations which were held at the nine examination points in the state are given in the following table:

RESULTS OF TESTERS' EXAMINATIONS, 1929-1930

PLACE OF EXAMINATION	Number of Examinations	Number of Candidates	Average Grades (Per Cent)		
			All Candidates	Candidates Passed	Candidates Failed
Lafayette	14	169	76.2	83.2	48.7
Muncie	9	83	73.6	80.7	51.3
Fort Wayne	10	70	80.6	83.3	66.2
Plymouth	2	10	81.1	84.6	49.0
New Albany	7	45	75.5	79.5	59.5
Evansville	8	82	72.4	79.0	45.4
Terre Haute	8	69	78.1	81.1	63.9
Indianapolis	9	89	78.7	84.3	53.2
North Vernon	8	74	76.2	82.1	54.2
Totals	75	691	76.3	82.1	54.2

Glassware Inspection

One of the essentials in securing an accurate test of milk or cream is the use of accurate glassware and accurate weights. To insure against the use of inaccurate milk and cream test bottles, milk pipettes, and weights, the law requires that all such pieces be examined for accuracy by the Purdue University Agricultural Experiment Station. When found to be correct they are stamped with the letters "S. G. P.," meaning "Standard Glassware Purdue." Only such glassware that complies with the specifications described in sections seven and twelve, chapter 340, Indiana Statute, Acts of 1913, are examined for accuracy. Indiana Standard Glassware complies with the recommendation of the Official Dairy Instructors' Association and is the type adopted by a majority of the states.

During the past fiscal year 54,612 pieces of Babcock testing glassware were examined by the Glassware Inspector of the Agricultural Experiment Station. In addition 494 nine-gram weights were inspected and all found to be correct. This is 2190 pieces of glassware less, and 226 nine-gram weights more than were inspected last year.

The total per cent of glassware found to be incorrect during the past year was considerably higher than the previous year. While there were no inaccurate pipettes and only one inaccurate milk test bottle, there were thirty more inaccurate cream test bottles than the previous year. One hundred and five incorrect cream test bottles out of a total of 36,954 bottles calibrated appears to be a small number, yet if these bottles were allowed to go into stations or plants where each would be used once a day, the result would be over 32,000 incorrect tests being made during a year.

The following table gives the amount of each kind of glassware inspected, and the number of pieces found to be incorrect:

GLASSWARE INSPECTION

KINDS OF GLASSWARE	Total Number of Pieces	Number Incorrect	Per Cent Incorrect
Cream test bottles	36,954	105	.284
Milk test bottles	13,824	1	.007
Milk pipettes	3,834	0	.000
Summary	54,612	106	.194

Testers' Licenses Revoked

One of the duties of the Creamery License Division is to insure both the producers and manufacturers that accurate weights and tests of milk and cream are being made by operators of the Babcock test. Inspectors of the Division are continually checking cream and milk stations, and factories, to determine the accuracy of testing, weights, and records of milk and cream purchased. When an operator is found manipulating tests, weights, or records, either intentionally or unintentionally, he is warned that such practices is a violation of the Creamery and Testers' License Law. If such violations continue, evidence is obtained by the inspectors, and the operator is asked to appear before the State Creamery Examining Board to show cause why his license should not be revoked.

During the past year the following testers were requested to appear before the Examining Board and after considering the evidence the Board recommended to the Purdue University Agricultural Experiment Station that their testers' licenses be revoked:

Mrs. Hattie Curts, Fredericksburg, Washington County, Indiana; tester for Gray-Von Allmen Sanitary Milk Co., Louisville, Kentucky.

Mr. Owen Stine, Bremen, Marshall County, Indiana, tester for Wakarusa Cooperative Creamery Company, Wakarusa, Indiana.

Mr. Frank Butts, Rossville, Clinton County, Indiana, tester for Swift and Company, Logansport, Indiana.

Mr. Ed. Shemley, Napoleon, Ripley County, Indiana, tester for Napoleon Creamery, Napoleon, Indiana.

Mrs. Pearl Connally, Shelbyville, Shelby County, Indiana, tester for the Wadley Company, Indianapolis, Indiana.

Mrs. Ethel Wilson, Greentown, Howard County, Indiana, tster for Swift and Company, Marion, Indiana.

Miss Carrye Wolpert, Elizabeth, Harrison County, Indiana, tester for Armour Creameries, Louisville, Kentucky.

Miss Elizabeth Kron, Elizabeth, Harrison County, Indiana, tester for Armour Creameries, Louisville, Kentucky.

Mr. James Dougherty, Jasonville, Greene County, Indiana, tester for Armour Creameries, Terre Haute, Indiana.

Mrs. Mary Dean, Hartford City, Blackford County, Indiana, tester for Schlosser Brothers, Fort Wayne, Indiana.

Miss Cora Hubbell, Coal City, Owen County, Indiana, tester for Pioneer Creamery Company, Champaign, Illinois.

LICENSED MANUFACTURING PLANTS IN INDIANA

Name	Address	Products
The Ace Dairy	Fort Wayne, R. 4	Milk
E. C. Adams Products Co.	Fairmount	Butter, Milk and Ice Cream
Adler Dairy Co.	Fort Wayne	Milk
Oscar Adler Dairy	Fort Wayne	Milk
Ahles Edgewood Dairy	Evansville, R. 3	Milk
Albion Creamery Co.	Albion	Butter
Fred Alexander	Crawfordsville, R. 6	Butter
Alexandria Pure Milk Co.	Alexandria	Milk
Alspaugh Ice Cream Co.	Newcastle	Ice Cream
Amboy Creamery Co.	Marion	Ice Cream and Milk
American Dairy Co.	Evansville	Milk and Butter
Angola Co-operative Dairy Products Co.	Angola	Butter and Ice Cream
Armour Creameries	Rochester	Butter
Armour Creameries	Terre Haute	Butter
Associated Dairies Co.	Fort Wayne	Milk
Auburn Dairy	Auburn	Milk
Babybrand Dairy Co.	Fort Wayne	Milk
Baker and Pelton	Fremont	Butter and Ice Cream
Chas. C. Baker	Muncie, R. 3	Butter
Ballard Ice Cream Co.	Danville	Milk
Ballard Ice Cream Co.	Indianapolis	Ice Cream, Milk and Butter
Banquet Ice Cream and Milk Co.	Indianapolis	Milk and Ice Cream
Barnett Bros. Sunlight Creamery	Logansport	Milk and Butter
Beatrice Creamery Co.	Muncie	Butter and Ice Cream
Beaver Ridge Dairy Co.	South Bend	Milk
Beckstein-Popp Dairy	Fort Wayne	Milk
Bedford Dairy Co.	Bedford	Milk and Ice Cream
Belcher-Hinkle Dairy	Bloomington	Milk
Bender Ice Cream Co.	Richmond	Ice Cream
Bixler and Carson Dairy	Indianapolis	Milk
Blosser Dairy	Nappanee	Milk
Blue Valley Creamery Co.	Indianapolis	Butter
Boonville Pure Milk Co.	Boonville	Milk, Butter and Ice Cream
Bordens Farm Prod. Co. of Illinois	Crown Point	Milk
Bordens Farm Prod. Co. of Illinois	Lowell	Milk
Bosstick Pure Milk and Ice Cream Co.	Sullivan	Milk and Ice Cream
Bowman Dairy Co.	Kouts	Milk
Breyer Ice Cream Co.	Kendallville	Condensed Milk
Browder Ice Cream Co.	Indianapolis	Milk and Ice Cream
Bunker Hill Creamery Co.	Bunker Hill	Butter
Calverts Dairy	Edinburg	Milk
Cambridge Ice and Dairy Co.	Cambridge City	Milk
Capitol Dairies, Inc., No. 1	Indianapolis	Milk

Capitol Dairies, Inc., No. 2	Indianapolis	Milk
Carey and Sons	Indianapolis	Milk
Central Dairy	Ossian	Milk
Chamberlin Ice Cream Co.	Lafayette	Ice Cream and Milk
Chapman & Son	Frankfort	Milk
Church Dairy	Valparaiso	Milk
City Dairy Co.	Connersville	Milk
City Dairy Co.	Kendallville	Milk
City Dairy Co.	South Bend	Milk and Butter
Clark County Ice Cream Co.	Jeffersonville	Ice Cream
Clover Farms	Fishers	Milk
Cloverleaf Creameries, Inc.	Decatur	Butter and Ice Cream
Cloverleaf Creameries, Inc.	Huntington	Butter and Ice Cream
Cloverleaf Dairy	Elkhart	Milk
Cloverleaf Dairy	Gary	Milk and Butter
Collier Bros	Martinsville	Ice Cream, Butter and Milk
Columbia Dairy	Columbia City	Milk
Columbus Co-operative Creamery Co	Columbus	Butter, Milk and Ice Cream
E. T. Conant and Son	Noblesville	Milk and Butter
Cook Bros. Dairy	Elkhart	Milk
County Line Cheese Factory	Auburn	Cheese
Covalt Dairy Co.	Muncie, R. R.	Milk
Craigville Cheese Co.	Craigville	Cheese
Crescent Dairy Co.	Kokomo	Milk
Crystal Dairy	Warsaw	Milk
Dale Creamery Association	Dale	Butter
Daum Dairies	Connersville	Milk and Ice Cream
Walter M. Denehie	Terre Haute	Milk
Dixie Dairy	Gary	Milk
Douglas-Skidmore Milk Co.	Frankfort	Milk
East Chicago Dairy Co.	East Chicago	Milk and Ice Cream
East Hammond Dairy Co.	Hammond	Milk
East Side Jersey Dairy	Anderson	Milk and Butter
Economy Creamery Co.	Economy	Butter
Eel River Creamery Co.	North Manchester	Butter
Elkhart Dairy	Elkhart	Milk
Ellsworth Ice Cream Co.	Huntingburg	Butter and Ice Cream
Elmore's Creamery	Elwood	Milk
Elwood Creamery Co.	Elwood	Ice Cream and Milk
Eskay Dairy	Fort Wayne	Milk and Butter
Evansville Packing Co.	Evansville	Butter
Excelsior Dairy	Wabash	Milk
Fairview Dairy Co.	Anderson	Milk
Fairway Dairy	Fort Wayne	Milk
Farmers Dairy	Carlos	Butter
Farmers Marketing Association	Columbus	Butter
Farmers Produce Association	Crawfordsville	Butter
Fernung Dairy	Kokomo, R. R. 5	Milk
Fertig Dairy	Franklin	Ice Cream

W. R. Fisher	Indianapolis	Milk
Fort Wayne Milk Producers Corp.	Fort Wayne	Milk
Fort Wayne Milk Producers Corp.	Garrett	Milk
Franklin Pure Milk Co.	Franklin	Milk and Butter
Fraziers Dairy	Frankfort	Milk
George Freese's Sons	Nappanee	Butter and Ice Cream
French Lick Hotel Co.	French Lick	Butter
R. W. Furnas Ice Cream Co.	Fort Wayne	Ice Cream
R. W. Furnas Ice Cream Co.	Indianapolis	Ice Cream and Milk
R. W. Furnas Ice Cream Co.	Morristown	Condensed Milk
R. W. Furnas Ice Cream Co.	South Bend	Ice Cream
R. W. Furnas Ice Cream Co.	Terre Haute	Ice Cream and Milk
F. H. George and Co.	Fort Wayne	Butter
Frederick Glass	Madison	Ice Cream
Glen Echo Dairy Co.	Evansville	Milk
Gnau Bros. Dairy	Tell City	Milk
Golden Guernsey Dairy	Frankfort	Milk, Butter
Gold Medal Dairy Co.	Evansville	Milk
Golden Rule Creamery Co.	Monticello	Butter and Milk
Goshen Milk Condensing Co.	Goshen	Condensed Milk, Milk and Butter
E. S. Grady Milk Depot	Elkhart	Milk
Graham Farms	Elnora	Cheese
Graham Farms	Washington	Cheese and Butter
Greek Candy Kitchen	Jasper	Ice Cream
Greenfield Creamery Co.	Greenfield	Milk
Green and Son	Shelbyville	Milk and Butter
Greensburg Creamery Co.	Greensburg	Milk
Greencastle Sanitary Dairy	Greencastle	Milk
Grewe Dairy Co.	Evansville	Milk, Butter and Ice Cream
Grocers Dairy Products Co.	Kokomo	Milk, Butter, Ice Cream and Condensed Milk
Guernsey Milk and Ice Cream Co.	Lebanon	Milk
Hagerstown Dairy	Hagerstown	Milk
Hammond Dairy Co.	Akron	Milk
Handy's Dairy	Greencastle	Milk
Hardin Milk Co.	Greenfield	Milk
Harrison Hill Dairy	Fort Wayne	Milk
Hartford City Dairy	Hartford City	Milk
Hawpatch Co-operative Association	Ligonier	Butter and Milk
Haxton Pure Milk Co.	Hobart	Milk and Butter
Haynes Dairy	Garrett	Milk
Hillcrest Farm	Windfall	Butter and Milk
Himes Bros. Dairy	Richmond	Milk
Holland Creamery Association	Holland	Butter
Home Creamery Co.	Morocco	Butter
Hoosier Condensed Milk Co.	Bluffton	Condensed Milk and Ice Cream
Hoosier Dairy Products Co.	Noblesville	Ice Cream and Milk

Hoosier Dairy Products Co.	Rushville	Ice Cream and Milk
Hoosier State Creamery	Rensselaer	Butter
Hornaday Milk Co.	Indianapolis	Milk
R. B. Hough Dairy	Richmond	Milk
Huff's Creamery	Bremen	Butter
Hunding Dairy Co.	Wellsboro	Milk
Hy-Grade Dairy Products Co.	Crawfordsville	Milk and Butter
Ideal Pure Milk Co.	Evansville	Butter, Milk, Ice Cream and Condensed Milk
Indiana Condensed Milk Co.	Lebanon	Condensed Milk and Milk
Indiana Condensed Milk Co.	Sheridan	Condensed Milk
Indiana Dairy Co.	South Bend	Milk
Indiana Dairy Marketing Association	Muncie	Milk, Butter and Condensed Milk
Indiana Ice and Dairy Co.	Anderson	Butter, Milk and Condensed Milk
Indiana Produce Co.	Huntingburg	Butter
International Dairy Co.	Deep River	Milk
Jasper County Creamery	Rensselaer	Butter
Jersey Creamery Co.	Newcastle	Milk, Butter and Ice Cream
Jessup and Antrim Ice Cream Co.	Indianapolis	Ice Cream, Milk and Condensed Milk
Johnson Butter Co.	Terre Haute	Butter, Milk and Ice Cream
Johnson Butter Co.	Bloomington	Butter, Milk, Ice Cream and Condensed Milk
Keener Township Dairy Co.	Demotte	Milk
Kewanna Butter and Produce Co.	Kewanna	Butter
Kingan and Company	Indianapolis	Milk
A. W. King's Dairy	Richmond	Milk
King's Dairy	Fort Wayne	Milk
King's Sanitary Dairy	Terre Haute	Milk and Butter
Koch Dairy Co.	Evansville	Milk, Butter and Ice Cream
Kosanke Bros.	Argos	Butter
Kraft Cheese Co.	Bloomfield	Cheese
Kraft Cheese Co.	Fowlerton	Cheese
Kraft Cheese Co.	Marshall	Cheese
Kraft Cheese Co.	Paoli	Cheese
Kraft Cheese Co.	Salem	Cheese
Kraft Cheese Co.	Scottsburg	Cheese
Kraft Cheese Co.	Sharpsville	Cheese
Kraft Cheese Co.	Shirley	Cheese
Kraft Cheese Co.	Sullivan	Cheese
Kraft Cheese Co.	Summitville	Cheese
Kraft Cheese Co.	Sweetsers	Cheese
Kraft Cheese Co.	Van Buren	Cheese

Kroger Grocery & Baking Co	Indianapolis	Milk and Condensed Milk
John Kruger	Francesville	Milk
Kyle Creamery Association	Aurora, R. R.	Butter
Lafayette Ice Cream Co.	Lafayette	Ice Cream and Milk
Lanesville Creamery Co.	Lanesville	Butter
Laurel Creamery Co.	Laurel	Butter
Lemont Dairy	Brook	Milk
Leonard Creamery Co.	Paoli	Milk
Liberty Creamery Co.	Liberty	Butter and Milk
Ligonier Milk Prod. Association	Ligonier	Milk
Lillybrand Dairy	Fort Wayne	Milk
Lima Creamery Co.	Howe	Butter
Mack and Co.	Monon	Ice Cream
Madison Creamery Co.	Madison	Butter
Marion Pure Milk Co.	Marion	Milk
Marley Dairy	Monterey	Milk
Martin's Creamery	Salem	Milk and Butter
Mathews Dairy	South Bend	Milk
Mayer Milk Co.	Indianapolis	Milk
Maywood Milk Co.	Maywood	Milk
Med-O-Bloom Dairy	Kokomo	Milk
Meadow Brook Farms	Hicksville, Ohio	Butter
Middlebury Co-operative Creamery	Middlebury	Butter
Miller Bros. Dairy	Goshen	Milk
Fred Miller Bakery and Ice Cream Company	Evansville	Ice Cream
J. M. Miller	Culver	Milk and Butter
Miller Yarling Dairy	Shelbyville	Milk
Mishawaka Farmers Dairy Co.	Mishawaka	Milk
Model Ice Cream Co.	Terre Haute	Milk, Ice Cream and Condensed Milk
Morphis Dairy	Gary	Milk
Mt. Vernon Creamery Co.	Mt. Vernon	Butter, Milk and Ice Cream
Muncie Pure Milk Co.	Muncie	Milk
Wm. Murfield	Mishawaka	Butter
Mutual Milk Co.	Indianapolis	Milk
Nance's Creamery	Brazil	Butter and Ice Cream
Napoleon Creamery	Napoleon	Butter
Nappanee Dairy	Nappanee	Milk
C. E. Naughton	Winamac	Butter
Neuman Milk Co.	Indianapolis, R. R.	Milk and Butter
New Paris Creamery	New Paris	Butter and Milk
North Hammond Dairy Co.	Hammond	Milk
North Judson Dairy	North Judson	Milk
North Side Sanitary Dairy Co.	Mishawaka	Milk
Northwestern Milk Co.	Indianapolis	Milk
Oakhurst Dairy	Evansville	Milk
Olympia Dairy	Columbus	Milk
Orchard Hill Creamery	Mitchell	Butter and Milk

Orchard Knoll Farm Creamery	Moores Hill	Butter
Orleans Creamery Co	Orleans	Butter and Ice Cream
Page Milk Co.	Shelbyville	Milk
Pango Milk Chocolate Co	Warsaw	Milk and Condensed Milk
Parlor City Creamery	Bluffton	Butter
Pendleton Creamery	Pendleton	Milk
Peoples Dairy	Fort Wayne	Milk
Phend Dairy Co	Goshen	Milk
Plainfield Milk Co	Plainfield	Milk
Pleasant Hill Dairy Co	Fort Wayne	Milk
Amassa J. Pletcher	Goshen	Butter
Polk Sanitary Milk Co.	Indianapolis	Milk and Butter
Prairie View Dairy	East Chicago	Milk and Butter
Producers Creamery	Marion	Butter, Milk and Condensed Milk
Producers Dairy Co.	South Bend	Milk
Purdue University Creamery	Lafayette	Butter, Milk and Ice Cream
Pure Cream Products Co.	Tell City	Butter and Ice Cream
Pure Dairy Products Co	Gary	Milk
Purity Dairy	North Manchester	Milk
Purity Dairy Co.	Huntington	Milk
Purity Dairy Co.	Indianapolis	Milk and Butter
Purity Dairy Co.	Marion	Milk
Purity Dairy Products Co.	Evansville	Milk and Ice Cream
Purity Maid Products Co	New Albany	Ice Cream, Butter and Milk
Quality Dairy Co.	Boonville	Butter, Milk and Ice Cream
Ray & Arnold	Logansport	Butter and Milk
Reliable Dairy Co	South Bend	Milk and Butter
Rensselaer Creamery and Produce Co	Rensselaer	Butter
Rea Riggin and Sons	Muncie, R. R.	Milk and Butter
Ripley County Creamery	Versailles	Butter
Rising Sun Creamery	Rising Sun	Butter
W. F. Ritzman	Lawrenceburg	Butter and Ice Cream
River Park Dairy	South Bend	Milk
Riverside Dairy	Columbia City	Milk
Riverside Dairy Co.	Mishawaka	Milk
Roanoke Creamery Co.	Roanoke	Butter
W. H. Roberts and Sons	Indianapolis	Milk
Rock Bottom Dairy Farm	Flat Rock	Butter
Rush Creamery Co.	Rushville	Butter
Sanitary Milk and Ice Cream Co	Peru	Butter, Milk, Condensed Milk and Ice Cream
Schapers Dairy	Fort Wayne	Milk
Schlosser Bros.	Bremen	Milk
Schlosser Bros.	Frankfort	Butter

Schlosser Bros	Fort Wayne	Butter and Ice Cream
Schlosser Bros	Indianapolis	Butter
Schlosser Bros	Plymouth	Butter, Ice Cream and Milk
Schlosser Bros	South Bend	Milk
Schmitz Bros. Dairy	Palmer	Milk
Frank Schnaiter's Dairy	Madison	Ice Cream
Scholl Dairy Co	LaPorte, R. R.	Milk and Ice Cream
Shannon Dairy	Jeffersonville	Milk and Butter
Sherman White & Company	Fort Wayne	Butter
Sherman White & Company	Goodland	Butter
Shideler's Dairy	Roanoke	Milk
Snyder Dairy	Seymour	Milk
South Bend Pure Milk Co	South Bend	Milk
South Gary Dairy	Gary	Milk
South Side Milk Co	Indianapolis	Milk
Spring Brook Dairy	Bremen	Milk
Standard Dairy	Evansville	Milk
St. Joe Valley Produce Co	Bristol	Butter
H. Suabedissen and Sons	South Bend	Milk
Sugar Creek Creamery Co	Evansville	Butter
Sugar Creek Creamery Co	Indianapolis	Butter
Sunlight Dairy Co	Bloomington	Milk
Sunrise Dairies	Laketon	Butter
Sunshine Creamery	Zanesville	Butter and Milk
Sunshine Farms	Lafayette	Milk and Condensed Milk
Superior Dairy	Garrett	Milk
Superior Milk and Ice Cream Co	Lafayette	Ice Cream and Milk
Swift & Co	Alexandria	Butter and Cheese
Swift & Co	Logansport	Butter
Swift & Co	Marion	Butter
Swift & Co	Wabash	Cheese
Tansy Milk Co	Beech Grove	Milk
Teegarden Milk Association	Teegarden	Milk
Terre Haute Pure Milk and Ice Cream Company	Terre Haute	Milk, Ice Cream, Butter and Condensed Milk
Thomas Dairy	Elkhart	Milk and Ice Cream
Thompson Dairy Co	North Vernon	Milk
Thompson Dairy Co	Seymour	Milk and Ice Cream
Thompson Sanitary Dairy	Richmond	Milk
Tipton Ice Cream Co	Tipton	Milk and Ice Cream
Tip Top Creamery Co	Princeton	Milk and Ice Cream
Tip Top Creamery Co	Vincennes	Butter, Milk, Condensed Milk and Ice Cream
Tip Top Creamery Co	Washington	Milk and Ice Cream
Tonne Dairy	Fort Wayne	Milk
Turner Creamery Co	Paoli	Butter and Ice Cream

United Milk Products Corporation	Berne	Condensed Milk and Cream
United Milk Products Corporation	Butler	Condensed Milk
United Milk Products Corporation	Wolcottville	Condensed Milk
United Milk Products Corporation	Yorktown	Condensed Milk and Cream
Valparaiso Home Ice Co.	Valparaiso	Ice Cream
VanCamp Milk Co.	Angola	Condensed Milk
Velvet Dairy Prod. Co.	Mitchell	Milk
Velvet Ice Cream Co.	Wabash	Ice Cream
Vincennes Pure Milk Co.	Vincennes	Milk
Fred R. Vingens	LaPorte	Milk
Wabash Creamery	Attica	Milk
The Wadley Company	Indianapolis	Butter
The Wadley Company	Terre Haute	Butter
Wakarusa Co-operative Creamery	Wakarusa	Butter and Milk
Walnut Street Dairy	Hartford City	Milk
Wambaugh Sanitary Dairy	Elkhart	Milk
Sidney Wanzer and Sons	Servia	Milk
Warsaw Milk Co.	Warsaw	Milk
Wayne Dairy Products Co.	Richmond	Butter, Milk and Condensed Milk
L. H. Weaver	Indianapolis	Milk
Weber Milk Co.	Indianapolis	Milk and Butter
Wells and Wells Milk Co.	Indianapolis	Milk
West End Milk Co.	Newcastle	Milk
Western Reserve Creamery	Kokomo	Butter
Williams Dairy	Richmond	Milk
Willida Dairy	South Bend	Milk
Winchester Dairy Products Co.	Winchester	Milk and Butter
Winona Dairy	Winona Lake	Milk
Wittner Dairy	South Bend	Milk
Wolcott Dairy	Bedford	Milk
Zapps Dairy	New Albany	Butter and Milk
Zufall Dairy Co.	Williamsport	Milk and Butter

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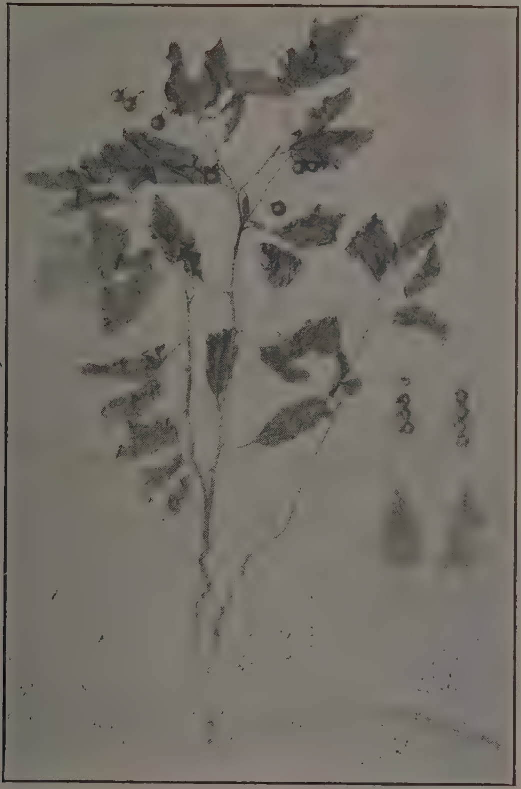
INSPECTION OF AGRICULTURAL SEEDS



Horse nettle. This weed is a perennial that is spreading rapidly in Indiana.

Agricultural Experiment Station
Purdue University
Lafayette, Indiana

This circular contains a report of the Agricultural Seed Inspection for the year ending June 30, 1930. The complete analysis of 1,045 official seed samples is given with full particulars. In addition 2,280 free test samples of seed were tested during the year.

In accordance with a ruling of the State Seed Commissioner, wholesale seedsmen are required to attach at least one state label to each package of seed delivered to the retail seedsman, who, in turn, is required to attach sufficient additional labels to cover the weight of the package.

Since it is impossible to test all seed promptly during the rush season, directions are given for making germination tests at home.

Shipments of seed seriously misbranded were withdrawn from sale and dealers relabeled such seed correctly and made refunds amounting to $260.00.

Dodder is being spread rapidly by the use of dodder infested seed.

Proper use of this publication will enable purchasers to discriminate between seedsmen who handle good seed and those who handle poor seed. Before buying seed farmers are urged to examine Table VI, "The Standing of Seed Distributors," and Table VII, "The Results of Tests on 1,045 Official Samples."

INSPECTION OF AGRICULTURAL SEEDS

H. R. KRAYBILL, State Seed Commissioner

O. S. ROBERTS R. O. BITLER REGINA B. SCHULTE*

EDITH M. PATT PAULINE BALBACH

This report contains the results of the inspection of agricultural seeds for the period from July 1, 1929, to June 30, 1930. The inspectors visited the seed dealers in all sections of the state and collected 1,493 official samples of seed. Complete analyses of these samples were made and reports were sent to the retail dealers as well as to the distributors of the seed. In addition, 2,280 free test samples and 103 Custom House samples were analyzed. The testing of these samples entailed the making of 3,174 purity tests, 14,888 germination tests, 43 examinations and 140 identifications.

The Indiana Seed Law is essentially a correct labeling law. The law does not prevent the sale of poor seed. It merely requires that definite information be placed on the label in order that the purchaser may decide for himself whether he wishes to use good seed or poor seed. In order that the necessary information may be available the law requires that the seed be labeled with official Indiana State Labels showing the minimum percentage of purity and germination and the maximum number of each of the noxious weed seeds per pound. The purpose of the law is to give the purchaser sufficient information to enable him to buy good seed and also to protect the honest and reliable seed dealer and farmer from the practices of the unscrupulous, dishonest and careless seedsman.

RESPONSIBILITIES OF THE WHOLESALE SEEDSMAN

The wholesale seedsman is required to attach at least one Indiana State Label to each package of seed delivered to the retail seedsman.

RESPONSIBILITIES OF THE RETAIL SEEDSMAN

The retail seedsman is required to attach sufficient state labels properly filled out to each package of seed to cover the total weight of the seed before the seed is offered or exposed for sale. These labels can be chosen of such denominations of weight so that they may be removed and attached to a portion of the seed which may be sold from the original package.

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* In cooperation with the Seed Laboratory, Bureau Plant Industry, U. S. D. A.

It should be remembered that every package of seed of one pound or more when sold for seeding purposes must have attached to it sufficient state labels properly filled out to cover the total weight of the package. It should also be remembered that it is just as much a violation of the state law to offer or expose seed for sale for seeding purposes without tagging to full weight as it is to sell the same without tagging.

RESPONSIBILITIES OF THE PURCHASER

The farmer should examine the official label carefully before purchasing seed and ascertain whether the seed is of the quality he desires. He should insist that all seed which he purchases be tagged properly with official state labels. Attention should be paid to the date of germination on the seed tag. If the germination test was made more than six months before, in many cases it will be well to insist upon a more recent germination test. Table VI gives the standing of the distributors as determined by the 1930 inspection and Table VII shows the results of the analysis of 1,045 official samples. A study of these tables will enable you to determine the quality of seed handled by the various seedsmen and whether the seed which they sold met their guarantee. The seed law is designed to offer you protection but it will not give you that protection unless you make use of the opportunity which the law provides for you.

FARMERS' EXEMPTION

A farmer is exempt from the provisions of the seed law when the seed is grown, sold and delivered by that farmer on his own premises to the purchaser himself. If, however, the seed is advertised for sale by the public press, circular or catalogue or if the seed is delivered by a common carrier, the farmer is considered as a vendor and must comply with the provisions of the act. Seed taken to community sales for sale must be labeled in accordance with the law.

FREE TESTING OF SEEDS

During the past year 2,280 samples of seed were tested free of charge for farmers and seedsmen. The privilege of having these tests made is one of much value to the farmer and the smaller seed dealers who do not have facilities for testing seeds. Not all of the tests requested can be made promptly during the busy season from January to March. For that reason it is important that you send your samples in as early as possible, preferably from September to December.

Satisfactory tests may be made of the larger field seeds at home, leaving the laboratory facilities of the Experiment Station available for the grasses and clovers which are more difficult to analyze.

DIRECTIONS FOR MAKING YOUR OWN GERMINATION TESTS

The seed to be germinated should be mixed thoroughly and the required number of seeds (100 seeds of grains and 200 of clovers and other small seeds) counted out just as they come.

The plate germinator is satisfactory and very simple to operate. Place the seeds to be germinated between two thicknesses of folded blotting paper or cloth (heavy grade of muslin or canton flannel). This should be moistened and placed between ordinary tin or porcelain plates and kept in a warm room where the range in temperature is from approximately 85 degrees during the day to 65 degrees at night. Select a place for the test not too near a window, stove or register.

The time required for germination tests differs with different kinds of seed. Under favorable conditions grass and clover seeds begin to sprout in three or four days. Continue your tests ten days or two weeks.

Examine your tests every two days, making a record of the number of seeds that have sprouted. Also keep the blotting paper or cloth sufficiently moist. The number of seeds which germinate out of the 100 seeds will give the percentage of germination.

DIRECTIONS FOR TAKING OF SAMPLES

1. The minimum weight of seed forwarded for test should be approximately:
    (a) Two ounces (cupful) of grass seed of any kind or of white and alsike clover;
    (b) Five ounces (cupful) of red and crimson clover, alfalfa, millet, flax or seed of like size;
    (c) One pound (pint) of cereals or seed of like size.

2. They may be drawn:
    (a) With seed triers;
    (b) With long stickers;
    (c) By hand, taking approximately equal parts of the sample from at least three different places in the sack, including the top and opposite sides as near the bottom as practicable.

3. Samples should be drawn from each bag when there are not more than five bags in the lot, from every fifth bag when there are more than five bags, but never from less than five bags. Each sample so drawn is combined into one composite sample.

TOLERANCE

Under the most perfect and approved conditions of testing seeds, variations will occur in purity and germination tests. For this reason the Association of Official Seed Analysts has adopted tolerance or allowances for purity and germination tests. Samples of seed with a guarantee within the tolerances are not considered to be seriously misbranded under the provisions of the Indiana Seed Law, but seed dealers will be expected to change the guarantee on the unsold portions to correspond to the analysis found by the Seed Commissioner.

TABLES OF TOLERANCES FOR GERMINATION TESTS

Percentage of Germination	Percentage of Allowable Variation
90 or over	6
80 or over and less than 90	7
70 or over and less than 80	8
60 or over and less than 70	9
50 or over and less than 60	10
40 or over and less than 50	10
30 or over and less than 40	9
20 or over and less than 30	8
10 or over and less than 20	7
0 or over and less than 10	6

TOLERANCE FOR PURITY TEST

In determining the tolerance for purity the sample shall be considered as being made up of two parts: (1) pure seed and (2) everything not pure seed. The tolerance allowed shall be two-tenths of 1 per cent plus 20 per cent of the lesser part. Example: Seed marked 98 per cent pure, the lesser part is 100 minus 98, or 2. Twenty per cent of 2 equals 0.4. Therefore, the tolerance allowed would be 0.2 plus 0.4, or 0.6.

VIOLATION OF THE LAW

It is a violation of the State Seed Law to offer, expose for sale or sell seed without having it tagged to full weight with official labels or to misbrand the seed. During the past year three cases of non-tagging of seed and twenty cases of misbranding were called to the attention of prosecuting attorneys. The cases resulted in fifteen convictions, four held in abeyance, and one not reported by prosecuting attorney to date.

REFUNDS

Several cases of misbranding have been settled by the seedsman replacing the misbranded seed with new lots of seed or by refunding to the purchaser the cost of the seed. The payment of refunds and the exchange of the seed does not cancel the violation, but it does show the seedsman's good intentions and indicates that he is willing to do all that he can to correct the violation. During this year refunds amounting to $260.00 were paid by seedsmen to the consumer.

FILLING OUT OFFICIAL LABEL

Purity

The minimum purity means the percentage of pure seed of the kind and variety given on the official label. Statements of purity, as 97 per cent, including 2 per cent crop seeds, or 95 per cent and 2 per cent crop seeds, will not be permitted. In cases where the seed contains two or more kinds of agricultural seed, each present in excess of 5 per cent, the seed should be labeled with the green colored mixture labels, Style C.

The percentage of purity on the large seeds such as soybeans, corn, wheat, vegetable seeds, etc., must be given on the official label the same as on any other seed.

The filling out of the column "per cent of seed" on the mixture labels can be best explained by an example. For instance, if a mixture is composed of 60 per cent Kentucky Blue Grass with a purity of 80 per cent and 40 per cent of Red Top with a purity of 90 per cent, the per cent of Blue Grass should be given as 48 per cent, obtained by taking 80 per cent of 60. The Red Top should be given as 36 per cent, obtained by taking 90 per cent of 40.

Germination

There still appears to be some misunderstanding as to the method of stating the percentage of germination on the official label. The term minimum germination means the percentage of sprouts obtained in the prescribed time for the test. If the seed contains hard seeds this percentage should be stated after the term "hard seed" on the official label. In no case should the sum of the percentage of sprouts and hard seeds be given as percentage of minimum germination.

Distributors should not ship seed until the germination test is completed. The statement "In Test" on the official label does not meet the provisions of the seed law. Further, if there is a demand for the seed the dealer may be tempted to sell the seed before he receives a report on the germination, thus placing himself liable to prosecution.

Noxious Weed Seeds

The number per pound of each of the noxious weed seeds present must be listed on the reverse side of the tag irrespective of the number present. The term "trace" is not permissible. The statement of the noxious weeds in terms of per cent or in terms of proportion will not be permitted.

Place Where Grown

The official tag must give the name of the state, territory or foreign country where the seed was grown. Terms such as Domestic, U. S. A., Northwestern and Central States do not meet the requirements of the law, and seed found so labeled will be immediately removed from sale until the tags have been corrected.

DODDER

Dodder is the most dangerous weed that infests clover and alfalfa and may destroy the entire value of the crop for seed and injures it for hay. This weed is spreading rapidly in Indiana, and unless prompt steps are taken to stop its spread it will seriously interfere with our clover seed production.

It is a twining parasite that usually appears in clover and alfalfa in the form of yellowish colored patches scattered over the field. The seeds, which are produced in abundance, are somewhat grayish or yellowish brown, spherical in shape, and can be readily distinguished from clover and alfalfa seed by their dull roughened seed coat. The seed produces a tiny leafless twisting plant resembling a thin tooth pick. As it twists it comes in contact with the growing alfalfa or clover, immediately loses its hold on the ground and attaches itself to its new support by suckers, through which it sucks out the life juices from its new host.

While dodder is usually introduced on the farm by the use of impure seed, it can also be introduced by the use of dodder infested hay, manure and flood water. Dodder seed may remain viable in the soil for five years or longer and a favorable growing season will cause the seed to germinate.

Small infested patches of dodder should be either mowed and removed from the field before the dodder matures seed or burned in the field. If seed has been formed burning is the only safe method of eradication. If the infestation is so great that patch treatment is impracticable the crop may be plowed under or utilized for hay before the seed has formed. Since corn, soybeans, cowpeas, oats, wheat and rye are not susceptible to injury by dodder, a rotation consisting of these crops should be used after an infestation of the soil with dodder seed.

Certified, Verified and Affidavit Seed

Certified seed is seed whose purity, germination and variety is certified to by some state certifying agency or an agency closely associated with some state office or department. The seed is shipped in sealed sacks with a certified seed tag attached. During the growing season the fields are inspected to ascertain trueness to variety of crop, and after the harvest the seed is tested to determine whether it meets the prescribed standards of the certifying agency. In Indiana the Indiana Corn Growers' Association certifies corn, wheat and soybeans. The other most commonly certified seed found in the state is Grimm Alfalfa.

Verified-Origin seed is seed whose origin is attested to by certain government approved seed dealers. Seed verification service deals with origin only, meaning Place Where Grown, and gives no guarantee as to the variety, purity or viability of the seed. At the present time red clover and alfalfa are the only seeds verified as to origin. Verified seed is tagged with tags bearing the official verification emblem.

Affidavit Grimm is alfalfa seed for which the grower has made affidavit as to its being Grimm Alfalfa. This affidavit seed is not regulated by either State or Federal Government.

Summary of 1930 Inspection

The seed samples secured during 1930 were of better quality and more closely met their guarantee than those of any previous year of seed inspection. However an examination of Table III shows clearly that a large part of the seed sold could be greatly improved by proper cleaning.

The percentage of samples seriously misbranded in 1930 was only half of that of the previous year. With the exception of a few, the seedsmen are showing an increased interest and desire to cooperate with the department in the enforcement of the seed law.

Tables IV and V show the percentages of official samples of red clover, alfalfa, sweet clover, alsike clover and timothy having various noxious weed seeds. The most noticeable fact is that the percentage of red clover showing the presence of dodder is increasing greatly. Last year 28.46 per cent of the red clover samples showed the presence of dodder. This is one of the worst noxious weeds in Indiana and farmers should be careful to purchase seed free from dodder seed.

TABLE I.—AVERAGE ANALYSIS OF SAMPLES IN 1922 SEED INSPECTION

	Number of Samples	Purity per cent	Inert Matter per cent	Germ. per cent	Hard Seeds per cent	Number Weed Seeds per Pound	No. Noxious Weed Seeds per Pound
Alfalfa	33	99.19	0.33	81.42	10.44	1,228	128
Blue Grass	20	66.35	28.51	58.50	....	33,001	2,566
Alsike Clover	70	94.27	1.05	78.97	12.94	4,757	2,214
Red Clover	195	98.05	0.54	88.00	6.72	7,358	1,722
Sweet Clover	27	96.40	2.63	66.91	11.87	2,370	387
White Clover	7	95.28	0.62	79.30	14.68	15,650	10,843
Cowpeas	17	97.86	1.88	70.94	....	38	3
Millet	12	98.03	1.55	75.54	....	2,211	15
Oats	47	97.62	1.52	85.97	....	213	51
Orchard Grass	13	82.36	15.83	74.33	....	32,308	28,847
Rape	11	99.59	0.31	83.23	....	263	16
Red Top	19	83.69	12.56	81.37	....	75,163	3,810
Soy Beans	12	97.55	2.24	84.04	2.20	37	1
Sudan Grass	8	95.21	2.38	72.50	....	974	....
Timothy	85	98.90	0.55	86.72	....	2,792	1,278
Mixtures	11	76.79	11.97	57.55	11.19	81,833	26,825
Garden Seed	35	98.08	....	71.65	....	....	....
Miscellaneous	13	96.08	2.46	65.15	3.20	3,368	845

TABLE II.—AVERAGE ANALYSIS OF SAMPLES IN 1929 SEED INSPECTION

	Number of Samples	Purity per cent	Inert Matter per cent	Germ. per cent	Hard Seeds per cent	Number Weed Seeds per Pound	Number Noxious Weed Seeds per Pound	Range in Number Noxious Weed Seeds per Pound
Alfalfa	59	98.66	0.43	79.97	7.49	2,798	156	0– 7,848
Blue Grass	8	75.29	19.86	73.19	....	13,584	2,559	0– 9,450
Alsike Clover	121	96.01	1.00	82.01	9.00	5,188	2,450	0–61,425
Japan Clover	12	94.56	2.69	78.17	9.21	10,942	3,389	72–21,060
Red Clover	376	98.32	0.41	86.37	7.16	3,560	1,247	0–30,177
Sweet Clover	192	99.18	0.30	74.66	6.22	1,482	276	0–38,979
White Clover	2	90.50	1.54	81.50	4.25	27,149	23,666	6,372–40,950
Corn	36	99.88	0.12	94.93	....	....	....	....
Cowpeas	8	97.50	2.45	83.06	0.13	1	....	....
Millet	12	99.10	0.47	83.29	....	1,586	....	....
Oats	6	98.62	0.80	94.25	....	36	20	0– 56
Orchard Grass	1	87.67	11.71	84.50	....	2,475	1,350	1,350–1,350
Red Top	15	91.50	8.09	88.93	....	18,560	3,680	300–8,550
Rye	9	95.86	2.21	88.45	....	248	12	0– 52
Soy Beans	184	98.55	1.36	83.55	0.25	16	1	0– 144
Sudan Grass	4	93.64	5.04	71.13	....	1,469	17	0– 51
Timothy	108	99.37	0.28	87.14	....	1,794	1,048	0–21,582
Wheat	3	99.94	0.06	92.00	....	12	1	0– 4
Mixtures	35	86.42	8.42	73.16	11.23	21,216	7,860	0–69,613
Garden Seed	25	99.92	0.07	86.24	....	12	5	0– 86
Miscellaneous	2	98.40	0.81	78.25	....	....	....	....

TABLE III.—AVERAGE ANALYSIS OF SAMPLES IN 1930 SEED INSPECTION

	Number of Samples	Purity per cent	Inert Matter per cent	Germ. per cent	Hard Seeds per cent	Number Weed Seeds per Pound	Number Noxious Weed Seeds per Pound	Range in Number Noxious Weed Seeds per Pound
Alfalfa	97	99.33	0.27	76.51	13.06	852	16	0– 189
Blue Grass	35	82.72	16.61	73.94	....	8,249	977	0– 6,750
Alsike Clover	92	97.83	0.68	83.40	10.21	2,897	2,087	0–36,801
Japan Clover	33	95.71	2.10	86.03	6.39	8,701	669	9– 4,077
Red Clover	249	98.63	0.34	86.29	7.44	2,151	1,230	0–43,191
Sweet Clover	161	99.47	0.24	76.06	7.53	552	35	0– 450
White Clover	6	95.45	0.38	74.71	14.42	4,815	3,165	0– 8,100
Corn	73	99.80	0.20	91.36	....	....	....	....
Cowpeas	3	96.54	3.41	72.67	....	4	....	....
Millet	7	98.71	0.34	88.14	....	2,957	....	....
Oats	5	98.24	0.96	74.80	....	59	14	0– 63
Orchard Grass	6	80.98	17.44	77.17	....	4,878	2,478	90– 7,200
Rape	4	99.80	0.13	90.28	....	56	45	0– 45
Red Top	29	89.11	9.20	87.35	....	31,490	4,149	0–36,900
Soy Beans	69	98.40	1.46	90.53	0.29	9	....	....
Sudan Grass	3	98.33	1.47	82.50	....	78	....	....
Timothy	106	99.16	0.26	89.04	....	1,141	651	0– 7,308
Mixtures	17	88.07	8.06	73.14	11.08	15,814	4,319	756–24,687
Garden Seed	47	99.92	0.07	90.96	....	10	....	....
Miscellaneous	3	97.92	0.80	82.67	....	3,780	150	0– 450

TABLE IV.—PERCENTAGE OF SAMPLES SHOWING THE PRESENCE OF EACH OF THE NOXIOUS WEED SEEDS

Noxious Weeds	Red Clover			Alfalfa			Sweet Clover		
	1923 per cent	1929 per cent	1930 per cent	1923 per cent	1929 per cent	1930 per cent	1923 per cent	1929 per cent	1930 per cent
Buckhorn	68.70	37.68	72.76	11.11	4.29	0.0	15.78	10.36	7.65
Bracted plantain	17.98	8.74	15.86	1.58	1.43	1.94	0.0	0.90	1.09
Canada thistle	2.51	1.43	2.03	0.0	0.0	0.0	13.15	13.96	14.21
Chicory	1.79	1.30	1.22	1.58	0.0	0.0	0.0	0.0	0.54
Common plantain	71.22	25.29	39.84	0.0	1.43	0.97	2.63	2.25	3.22
Corn cockle	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Curled dock	49.28	28.16	55.28	30.15	15.71	25.24	13.15	25.23	12.02
Dodder	18.70	19.82	28.46	47.61	41.43	43.69	0.0	1.35	1.64
Horse nettle	0.0	0.0	0.0	0.0	1.43	0.0	0.0	0.0	0.0
Mustard	3.23	2.74	2.03	0.0	0.0	2.91	18.40	39.19	46.45
Oxeye daisy	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.45	0.0
Prickly lettuce	5.75	1.17	0.81	1.58	4.29	0.0	0.0	0.90	0.54
Quack grass	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.90	3.83
Sorrel	15.82	20.60	27.64	7.93	4.29	0.97	0.0	5.86	3.83
White top	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Wild carrot	18.34	10.17	15.45	0.0	0.0	0.0	2.63	0.90	0.54
Wild garlic or onion	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Yellow trefoil	5.75	16.56	17.48	4.76	8.57	1.94	7.89	12.61	5.46

TABLE V.—PERCENTAGE OF SAMPLES SHOWING THE PRESENCE OF EACH OF THE NOXIOUS WEED SEEDS

Noxious Weeds	Alsike Clover			Timothy		
	1923 per cent	1929 per cent	1930 per cent	1923 per cent	1929 per cent	1930 per cent
Buckhorn	13.58	21.77	40.38	11.03	44.37	38.98
Bracted plantain	2.46	0.81	3.85	1.29	13.38	10.17
Canada thistle	3.70	12.10	9.62	.64	1.41	3.39
Chicory	0.0	0.0	0.96	0.0	0.0	0.0
Common plantain	22.22	61.29	38.46	43.50	80.99	88.98
Corn cockle	0.0	0.0	0.0	0.0	0.0	0.0
Curled dock	59.25	55.65	46.15	22.0	29.58	17.80
Dodder	0.0	2.42	4.81	0.0	0.70	0.0
Horse nettle	0.0	0.0	0.0	0.0	0.0	0.0
Mustard	0.0	5.65	2.88	0.0	3.52	0.85
Oxeye daisy	1.23	0.81	0.0	1.94	10.56	6.78
Prickly lettuce	0.0	1.61	0.0	0.0	0.0	0.0
Quack grass	0.0	0.0	0.0	0.0	0.0	0.0
Sorrel	34.56	68.55	54.81	28.57	51.41	55.08
White top	0.0	0.81	0.0	0.0	0.0	0.0
Wild carrot	0.0	0.0	0.0	0.64	2.82	1.69
Wild garlic or onion	0.0	0.0	0.0	0.0	0.0	0.0
Yellow trefoil	19.75	68.55	69.23	0.0	0.70	0.0

TABLE VI.—SUMMARY OF SEED INSPECTION, JULY 1, 1929 TO JULY 1, 1930

NAME AND ADDRESS OF CERTIFIER	Number of Samples Examined	Number of Samples Passed	Number Technically Misbranded	Number Seriously Misbranded	Number Unlabeled
Ackerman Co., The, Lima, Ohio	1			1	
Ainsworth & Sons, W. T., Mason City, Ill	5	2	3		
Ainsworth Boone Co., Kentland, Ind	8	8			
Armstrong Landon Co., Kokomo, Ind	1			1	
Arney, John, Odon, Ind	1		1		
Associated Seed Growers, Milford, Conn	4	1	3		
Associated Seed Growers, New Haven, Conn	1		1		
Barr Grain Co., O. L., Bicknell, Ind	1	1			
Beach & Simmers, Albany, Ind	1		1		
Becker & Sons, J. H., Corydon, Ind	2	1	1		
Berne Equity Exchange, Berne, Ind	1		1		
Berne Milling Co., Berne, Ind	1			1	
Berry Seed Co., Clarinda, Iowa	5		2	3	
Boone Grove Grain Co., Boone Grove, Ind	1			1	
Boonville Elevator Co., Boonville, Ind	1			1	
Boonville Milling Co., Boonville, Ind	1			1	
Bowers, Ova, Sheridan, Ind	1				1
Brown Seed Co., Alfred J., Grand Rapids, Mich	1			1	
Bulleit & Son, V. H., Corydon, Ind	2	2			
Byers Seed Co., Franklin, Ind	3	1		2	
Campbell & Co., Kendallville, Ind	5	4	1		
Campbell Bros., Greencastle, Ind	2	1		1	
Cass Co. Farm Bureau, Logansport, Ind	1	1			
Chambers Seed Co., Louisville, Ky	16	1	2	9	4
Chance Bros., Connersville, Ind	1	1			
Chavis Seed Co., Fowler, Ind	6	3	1	2	
Clayton Milling Co., Clayton, Ind	1	1			
Cloverdale Hdwe. Co., Cloverdale, Ind	1		1		
Condon Bros., Rockford, Ill	6	5		1	
Co-operative Elevator Co., Winamac, Ind	2		1	1	
Cordes Hardware Co., Seymour, Ind	1		1		
Courteen Seed Co., Milwaukee, Wis	1		1		
Cover, W. J., Mt. Gilead, Ohio	1			1	
Crabbs Reynolds Taylor Co., Crawfordsville, Ind	101	79	16	6	
Crawfordsville Seed Co., Crawfordsville, Ind	45	37	5	3	
Crowell Grain Co., Columbia City, Ind	1	1			
Decatur Co. Coop. Co., Greensburg, Ind	2	2			
Deniston, Wm. H., Rochester, Ind	3	2	1		
Dickinson Co., The Albert, Chicago, Ill	73	57	14	2	
Dilley & Son, Phillip, Huntingburg, Ind	4	4			
Dillon, Owen E., Freedom, Ind	1			1	
Ebert's Grain Co., Scottsburg, Ind	4	3	1		
Eckhart, R. B., Buck Creek, Ind	1	1			
Egnor, J. W., Spencer, Ind	1	1			
Evans & Hedworth, Remington, Ind	1	1			
Everitt Seed Store, Indianapolis, Ind	9	2	2	4	1
Farmers Coop. Co., Cicero, Ind	1		1		
Farmers Coop. Co., Royal Center, Ind	1			1	
Farmers Coop. Elevator, Centerville, Ind	1		1		
Farmers Coop. Elevator Co., Seymour, Ind	4	2	1	1	
Farmers Elevator Co., Monticello, Ind	1			1	
Farmers Elevator Co., South Whitley, Ind	3	2	1		
Farmers Equity Exchange, Van Buren, Ind	1		1		
Foster-Kendall Co., Carmel, Ind	7	5	1	1	
Fox, Ozro, Blue Ridge, Ind	1				1
Frank Bros., Carmi, Illinois	2		2		
Franklin, W. F., Danville, Ind	1	1			
Fretz Feed Store, R. C., Waterloo, Ind	1	1			
Funk Bros. Seed Co., Bloomington, Ill	2				2
Gardner Seed Co., Rochester, New York	1	1			
Gaudin, Geo., Vevay, Ind	1		1		
Gelzleichter & Son, Huntington, Ind	4	2	1	1	
Geneva Equity Exchange, Geneva, Ind	1	1			
Gibson Co. Shipping Ass'n., Princeton, Ind	2	1		1	
Gilispie, David	1				1
Glenwood Grain Co., Glenwood, Ind	2		1		1
Goodrich Bros., Winchester, Ind	32	17	6	9	
Gotto-Mathias Co., Michigan City, Ind	6	5	1		
Graft, C. V., Winchester, Ind	2	2			
Graves, A. J., Tell City, Ind	1	1			
Griffin Hardware, Carlisle, Ind	1	1			
Gunson & Co., L. P., Rochester, New York	2	2			
Haldeman-Baum Co., Akron, Ind	2	2			
Hardin, Hamilton & Lewman, Louisville, Ky	2		1	1	

TABLE VI.—Continued

Name and Address of Certifier	Number of Samples Examined	Number of Samples Passed	Number Technically Misbranded	Number Seriously Misbranded	Number Unlabeled
Hartwig, Chas. W., Valparaiso, Ind	1	....	1	....	....
Hassler, Paul, Newberry, Ind	1	1	....	....	....
Haywood, Henry, Bloomfield, Ind	1	....	....	....	1
Heitschmidt, A. C., Michigan City, Ind	2	1	1	....	....
Heldt Co., The, Evansville, Ind	10	4	2	4	....
Heldt & Voelker Co., Evansville, Ind	4	3	....	1	....
Henry Co. Farm Bureau Coop. Ass'n, Newcastle, Ind	2	1	....	....	1
Hill, D. B., Sparksville, Ind	1	....	....	....	1
Hjelm, John W., Chesterton, Ind	1	....	....	....	1
Holser & Co., B. I., Walkerton, Ind	5	1	3	1	....
Hoosier Grain & Supply Co., Bluffton, Ind	3	1	1	1	....
Hooton-Davis Seed Co., Lebanon, Ind	38	34	1	3	....
Huntertown Grain Co., Huntertown, Ind	2	1	....	1	....
Indiana Canners Ass'n., Matthews, Ind	1	....	1	....	....
Indiana Farm Bureau Pur. Dept. Inc., Indianapolis, Ind	40	28	11	1	....
Indiana Seed Company, Indianapolis, Ind	39	29	9	1	....
Jackson, Ezra, Petersburg, Ind	1	....	....	....	1
Johnson, Oliver J., Chicago, Ill	2	....	1	1	....
Johnson Co., Seed Ass'n., Franklin, Ind	3	3	....	....	....
Jones Bros. Hardware Co., Peru, Ind	1	1	....	....	....
Kellogg Seed Co., John L., Chicago, Ill	2	2	....	....	....
Kellogg Seed Co., Milwaukee, Wis	7	6	....	1	....
Kiefer Feed & Supply Co., Sharpsville, Ind	3	1	....	2	....
Kindermann's Sons, Wm., Boonville, Ind	1	....	....	1	....
Klingensmith, E. J., New Augusta, Ind	1	1	....	....	....
Knox Co. Farm Bureau, Vincennes, Ind	1	1	....	....	....
Kouts Elevator, Kouts, Ind	1	1	....	....	....
Kraus, Sam, Fort Wayne, Ind	10	8	1	1	....
Kraus & Apfelbaum, Fort Wayne, Ind	34	18	14	2	....
Lash Milling Co., Farmersburg, Ind	1	1	....	....	....
Leas, D. L., Waterloo, Ind	3	2	....	1	....
Lee, R. E., Lebanon, Ind	1	1	....	....	....
Lee & Overlees, Lebanon, Ind	2	1	....	1	....
Leisure, Lindall, Elwood, Ind	1	....	1	....	....
Leonard Seed Co., Chicago, Ill	1	....	....	1	....
Lewis Implement & Seed Co., Louisville, Ky	5	1	2	2	....
Lindgren, Fred, Elkhart, Ind	1	1	....	....	....
Littlejohn, W. D., Kentland, Ind	2	2	....	....	....
Loughry Bros. Milling & Grain Co., Monticello, Ind	3	....	....	3	....
McCarty Seed Co., J. A., Evansville, Ind	6	1	4	1	....
McCarty Seed Co., J. A., Terre Haute, Ind	2	1	1	....	....
McCullough Seed Co., J. Chas., Cincinnati, Ohio	49	20	16	13	....
McCullough Sons Co., J. M., Cincinnati, Ohio	2	1	....	1	....
Manthey's Seed Store, Cincinnati, Ohio	4	....	2	2	....
Marburger Bros., Peru, Ind	2	....	2	....	....
Market Gardeners Seed Co., Cincinnati, Ohio	4	....	....	4	....
Martin, Earl, Waldron, Ind	1	....	....	....	1
Mayer Grain Co., South Whitley, Ind	6	2	2	2	....
Mazur Seed Co., Indianapolis, Ind	4	1	1	2	....
Miller Grain Co., Bainbridge, Ind	2	....	2	....	....
Mitchel, Paul, Battle Ground, Ind	2	....	1	1	....
Mitchelhill Seed Co., St. Joseph, Mo	1	....	....	1	....
Moll, J. J., Mt. Vernon, Ind	1	....	....	1	....
Morris, E. H., Crossville, Ind	1	....	....	....	1
Morris Grain & Seed Co., Morris, Ill	5	....	2	3	....
Morrow Grain Co., Wabash, Ind	1	1	....	....	....
Naber & Co., Chas. F., Fairmount, Ind	1	1	....	....	....
Nading Grain Co., Wm., Waldron, Ind	4	4	....	....	....
Nathan Grain Co., Ft. Wayne, Ind	3	2	....	1	....
Nathan Grain Co., St. Joe, Ind	1	1	....	....	....
Nedderman, Roy, Sunman, Ind	1	....	1	....	....
New Augusta Grain & Supply Co., New Augusta, Ind	1	....	....	....	1
Newcastle Elevator, Newcastle, Ind	1	1	....	....	....
Nixon & Vandeventer, Attica, Ind	1	1	....	....	....
Noble Bros., Gibson City, Ill	1	1	....	....	....
North Madison Coal Co., North Madison, Ind	1	1	....	....	....
O. & M. Seed Co., Green Springs, Ohio	2	....	....	....	2
Ohio Valley Seed Co., Evansville, Ind	14	5	3	6	....
Olds Seed Co., L. L., Madison, Wis	1	1	....	....	....
Pentecost & Craft, Terre Haute, Ind	1	....	....	1	....
Pfeifer, Jr., Geo. L., Arcola, Ill	1	....	....	1	....
Plant Seed Co., St. Louis, Mo	1	....	1	....	....
Posey Feed & Seed Co., Mt. Vernon, Ind	3	1	....	2	....
Purcell Seed Co., Evansville, Ind	18	6	3	8	1

TABLE VI.—Continued

Name and Address of Certifier	Number of Samples Examined	Number of Samples Passed	Number Technically Misbranded	Number Seriously Misbranded	Number Unlabeled
Quinlan Seed Store, Terre Haute, Ind.	2	1	1	....	....
Quirk, J. B., North Madison, Ohio	4	3	1	....	....
Rakestraw, H. E., Oakford, Ind.	3	....	....	....	3
Records & Son, L. N., Edinburg, Ind.	1	1	....	....	....
Rice Seed Co., Jerome B., Cambridge, New York	2	2	....	....	....
Rolling Prairie Lumber & Grain Co., Rolling Prairie, Ind.	2	....	2	....	....
Ross Seed Co., Louisville, Ky.	14	5	6	3	....
Sample, John L., Madison, Ind.	3	2	....	1	....
Schultheis, A. M., Haubstadt, Ind.	3	....	2	1	....
Schultz, J. M., Dieterich, Ill.	4	....	2	1	1
Schultz Seed Company, Olney, Ill.	7	2	1	4	....
Scott Seed Company, New Albany, Ind.	31	14	13	4	....
Seberger Seed Company, Crown Point, Ind.	2	1	1	....	....
Seymour, C. R., Kimmel, Ind.	2	2	....	....	....
Sholes & Co., H. A., Chicago, Ill.	2	....	....	1	1
Snapp Grain Company, Ridgeville, Ind.	4	....	4	....	....
Sowash, E. K., Crown Point, Ind.	1	....	....	1	....
Springer Elevator, W. D., Kennard, Ind.	1	....	1	....	....
Spurgin, Archie B., Columbus, Ind.	2	2	....	....	....
Stainbrook, Geo., Franklin, Ind.	2	2	....	....	....
Starke Co. Farm Bureau, Knox, Ind.	2	2	....	....	....
Steuben Grain Company, Pleasant Lake, Ind.	2	2	....	....	....
Strock, Frank, Hudson, Ind.	4	4	....	....	....
Sullivan, Leon, Arlington, Ind.	2	....	....	2	....
Sunfield Seed Service, Chicago, Ill.	31	7	6	18	....
Sunshine Feed Store, Ft. Wayne, Ind.	6	4	2	....	....
Sutton Co., G. D., Mason City, Ill.	3	3	....	....	....
Syler, Clay, North Manchester, Ind.	2	1	1	....	....
Teweles Seed Co., L., Milwaukee, Wis.	20	12	7	1	....
Tipton County Farm Bureau, Tipton, Ind.	1	1	....	....	....
Tipton Milling Company, Tipton, Ind.	1	....	....	1	....
Trow Co., W., Madison, Ind.	1	....	1	....	....
Vaughn Seed Store, Chicago, Ill.	3	2	1	....	....
Victoria Mill & Elevator, Jasper, Ind.	5	3	1	1	....
Warren-Teed Seed Company, Chicago, Ill.	16	10	5	1	....
Wertheimer & Sons Co., N., Ligonier, Ind.	13	3	5	5	....
Whelan, Omer G., Richmond, Ind.	1	....	....	1	....
Wilson, John, Roachdale, Ind.	2	1	1	....	....
Wolfe Grain Company, Shipshewana, Ind.	5	5	....	....	....
Wolfe Seed Co., Ft. Wayne, Ind.	2	1	1	....	....
Woodbury-Elliot Company, Muncie, Ind.	3	3	....	....	....
Woodruff & Sons, F. H., Milford, Conn.	18	18	....	....	....
Woods & Pritsch, Sheridan, Ind.	1	....	1	....	....
Worthington Grain Company, Worthington, Ind.	1	1	....	....	....
Wyatt Seed & Feed Store, Petersburg, Ind.	2	1	1	....	....

TABLE VII

ALFALFA

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, per cent	Inert Matter, per cent	Germination, per cent	Hard Seeds, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds		Number per Pound of each of the Noxious Weed Seeds Specified in the Law
9504	Farmers Grain Co., Pershing	Ackerman Co., The	C	99.52	......	83.0	14.0	12-29	....	C	None
	Alfalfa, Lot U	Lima, Ohio	F	99.60	0.16	78.5	10.0	3-30	477	F	Dodder 27
8888	Joy, Wm., South Whitley[1]	Berry Seed Co.	C	99.00	......	93.0	0.0	8-29	....	C	None
	Alfalfa, Lot 10340	Clarinda, Iowa	F	98.05	0.69	80.0	9.0	2-30	4,599	F	Dodder 9
9866	Eberts Grain Co., Scottsburg[2]	Chambers Seed Co.	C	99.00	......	80.0	10.0	1-30	....	C	None
	Alfalfa, Lot 61	Louisville, Ky.	F	99.70	0.22	85.0	9.0	5-30	180	F	Dodder 180
9929	*Stephenson & Co., Leavenworth[3]	Chambers Seed Co.	C	......	......	......	......	......	....	C	
	Alfalfa Clover	Louisville, Ky.	F	98.94	0.00	67.5	1.5	14-30	1,170	F	None
9344	Heise Bros., Mitchell	Crabbs Reynolds Taylor Co.	C	99.64	......	75.0	15.0	8-30	....	C	Curled dock 18
	Idaho Alfalfa, Lot F.C.	Crawfordsville, Ind.	F	99.60	0.16	81.0	15.0	4-30	198	F	Curled dock 18
8576	†Lindgren, Fred., Elkhart	Crabbs Reynolds Taylor Co.	C	98.18	......	85.0	8.0	4-29	....	C	None
	Common Alfalfa, Lot 9F2	Crawfordsville, Ind.	F	99.07	0.14	88.0	3.5	8-29	459	F	Dodder 9
9950	Shirley, O. C., Knightstown	Crabbs Reynolds Taylor Co.	C	99.74	......	80.0	5.0	2-30	....	C	None
	Colorado Alfalfa, Lot FK	Crawfordsville, Ind.	F	99.64	0.10	75.0	11.5	6-30	459	F	Dodder 9
9058	Demoret Grain Co., Bath	Crawfordsville Seed Co.	C	99.50	......	92.0	5.0	12-29	....	C	None
	Alfalfa Clover, Lot 660	Crawfordsville, Ind.	F	99.65	0.04	84.5	4.0	4-30	540	F	None
9491	Newcastle Elev. Co., Newcastle	Crawfordsville Seed Co.	C	99.00	......	86.0	4.0	1-30	....	C	None
	Grimm Alfalfa, Lot 709	Crawfordsville, Ind.	F	99.46	0.28	91.5	0.0	4-30	900	F	None
9493	Newcastle Elev. Co., Newcastle	Crawfordsville Seed Co.	C	99.00	......	87.0	8.0	1-30	....	C	None
	Alfalfa, Lot 661	Crawfordsville, Ind.	F	99.37	0.00	92.0	3.0	4-30	270	F	None
9465	Parke Co. Farm Bureau, Rockville	Crawfordsville Seed Co.	C	99.00	......	87.0	8.0	1-30	....	C	None
	Alfalfa Clover, Lot 661	Crawfordsville, Ind.	F	99.30	0.02	88.5	7.0	4-30	729	F	Dodder 9
9466	Parke Co. Farm Bureau, Rockville	Crawfordsville Seed Co.	C	99.00	......	86.0	4.0	1-30	....	C	None
	Grimm Alfalfa, Lot 907	Crawfordsville, Ind.	F	99.38	0.23	84.0	1.5	4-30	1,350	F	None
65	Bashore Feed Store, Warsaw	Dickinson Co., The Albert	C	99.26	......	70.0	22.0	......	....	C	None
	Genuine Grimm Alfalfa, Lot 27124	Chicago, Ill.	F	99.72	0.16	76.0	15.0	7-30	189	F	Field dodder 9
9573	Belshaw Farmers & Gleaners, Lowell	Dickinson Co., The Albert	C	99.26	......	60.0	33.0	11-29	....	C	None
	Alfalfa Clover, Lot 281081	Chicago, Ill.	F	98.83	0.83	68.0	21.5	4-30	810	F	None
9579	Belshaw Farmers & Gleaners, Lowell	Dickinson Co., The Albert	C	99.92	......	70.0	23.0	12-29	....	C	None
	Certified Grimm Alfalfa, Lot 2726	Chicago, Ill.	F	99.76	0.18	71.5	19.5	4-30	180	F	None

*Not labeled.
†Certified by retailer.
C and F stands, respectively, for Claimed and Found.

[1] Misbranded. Returned and other seed furnished.
[2] Removed from sale. Misbranded. Returned to Distributor.
[3] Returned to Distributor.

ALFALFA—Continued

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, per cent	Inert Matter, per cent	Germination, per cent	Hard Seeds, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds		Number per Pound of each of the Noxious Weed Seeds Specified in the Law
8766	Chance Bros., Connersville	Dickinson Co., The Albert	C	99.14	....	82.0	11.0	10-29	....	C	None
	Alfalfa, Lot 281054	Chicago, Ill.	F	98.79	0.08	86.5	9.5	1-30	720	F	None
8877	Cordes Hardware Co., Seymour	Dickinson Co., The Albert	C	98.18	......	76.0	14.0	11-29	....	C	None
	Alfalfa Clover, Lot 281052	Chicago, Ill.	F	99.33	0.08	83.5	6.5	2-30	855	F	Curled dock 9; dodder 36
8878	Cordes Hardware Co., Seymour	Dickinson Co., The Albert	C	99.48	......	64.0	30.0	1-30	....	C	None
	Grimm Alfalfa, Lot 2732	Chicago, Ill.	F	99.74	0.04	56.0	34.0	2-30	360	F	None
9835	†Cordes Hardware Co., Seymour	Dickinson Co., The Albert	C	99.32	......	73.0	20.0	2-30	....	C	None
	Alfalfa, Lot 2884	Chicago, Ill.	F	99.20	0.04	75.0	11.0	5-30	1,206	F	Dodder 36
9640	Roper & Brown, Hobart	Dickinson Co., The Albert	C	99.44	.....	84.0	11.0	12-29	....	C	None
	Alfalfa Clover, Lot 28117	Chicago, Ill.	F	99.40	0.48	90.0	7.5	5-30	360	F	None
8578	†Seberger Seed Co., Crown Point[4]	Dickinson Co., The Albert	C	99.00	......	79.0	14.0	6-29	....	C	None
	Common Alfalfa, Lot 281036	Chicago, Ill.	F	99.12	0.04	83.0	9.0	7-29	918	F	Dodder 18
9829	†Seberger Seed Co., Crown Point[5]	Dickinson Co., The Albert	C	99.00	......	81.0	13.0	4-29	....	C	None
	Common Alfalfa, Lot 281029	Chicago, Ill.	F	99.24	0.16	84.5	3.5	5-30	729	F	Dodder 9
8689	Spurgin, Archie B., Columbus	Dickinson Co., The Albert	C	99.14	......	82.0	11.0	11-29	....	C	None
	Alfalfa, Lot 281054	Chicago, Ill.	F	99.10	0.18	82.0	10.0	12-29	519	F	Curled dock 9
9404	Hinshaw Grain Co., Summitville	Goodrich Bros.	C	99.24	......	87.0	6.0	1-30	....	C	None
	Alfalfa, Lot Lark	Winchester, Ind.	F	99.02	0.64	74.5	19.5	4-30	1,269	F	Curled dock 9
9768	Goodrich Bros., Gaston[6]	Goodrich Bros.	C	99.25	.....	90.0	0.0	12-29	....	C	None
	N. W. Alfalfa, Lot Lark	Winchester, Ind.	F	99.06	0.72	73.0	17.5	5-30	369	F	Curled dock 9
9603	Goodrich Bros., Winchester	Goodrich Bros.	C	98.96	.....	72.0	18.0	1-30	....	C	None
	Common Alfalfa, Lot Lark	Winchester, Ind.	F	99.23	0.53	73.0	14.0	5-30	459	F	Curled dock 9
9781	McCordsville Grain Co., McCordsville	Goodrich Bros.	C	99.00	......	70.0	21.0	2-28	....	C	None
	Red Tag Grimm Alfalfa, Lot 776	Winchester, Ind.	F	99.12	0.11	81.5	5.5	5-30	2,610	F	None
9895	Wyatt Seed & Feed Co., Petersburg	Heldt Co., The	C	99.40	......	85.0	10.0	3-30	....	C	None
	Alfalfa, Lot 1977	Evansville, Ind.	F	99.44	0.12	85.5	6.5	5-30	2,070	F	None
9446	Hoosier Grain & Supply Co., Van Buren	Hoosier Grain & Supply Co.	C	99.62	......	85.0	9.0	2-30	....	C	None
	Grimm Alfalfa, Lot 1	Van Buren, Ind.	F	99.31	0.57	82.5	9.0	4-30	90	F	None
9448	†Hoosier Grain & Supply Co., Van Buren	Hoosier Grain & Supply Co.	C	99.56	......	80.0	14.0	2-30	....	C	None
	Alfalfa, Lot 4	Bluffton, Ind.	F	98.59	0.87	80.0	6.5	4-30	810	F	None
8591	Hooton-Davis Seed Co., Lebanon	Hooton-Davis Seed Co.	C	99.00	......	72.0	26.0	12-28	....	C	Curled dock 90
	Common Alfalfa, Lot F-124	Lebanon, Ind.	F	98.85	0.20	77.0	15.5	9-29	4,095	F	Curled dock 135
9412	Marion Hardware Co., Marion	Hooton-Davis Seed Co.	C	99.30	......	70.0	23.0	12-29	....	C	None
	Common Alfalfa, Lot E-464	Lebanon, Ind.	F	99.41	0.24	66.5	28.5	4-30	198	F	Curled dock 9; dodder 9
9092	New Augusta Grain & Supply Co., New Augusta	Hooton-Davis Seed Co.	C	98.85	......	77.0	15.0	10-29	....	C	Curled dock 90
	Alfalfa Clover, Lot F-124	Lebanon, Ind.	F	98.79	0.18	86.0	5.0	4-30	1,089	F	Curled dock 189

9826	Owen Farmers Supply Co., Spencer	Hooton-Davis Seed Co.	C	99.30	......	70.0	23.0	12-29	......	C	None
	Common Alfalfa, Lot 3	Lebanon, Ind.	F	99.50	0.18	63.0	28.5	5-30	99	F	Dodder[4]
9602	Blackford Co. Cooperative Ass'n., Inc., Hartford City	Indiana Farm Bureau Pur. Dept., Inc.	C	99.65	......	60.0	12.0	11-29	......	C	None
		Indianapolis, Ind.	F	99.72	0.26	79.0	14.0	5-30	9	F	Curled dock 9
	Grimm Alfalfa, Lot GA 740										
9357	Clinton Co. Farm Bureau, Frankfort	Indiana Farm Bureau Pur. Dept., Inc.	C	99.65	......	80.0	12.0	11-29	......	C	None
	Grimm Alfalfa, Lot GA 140	Indianapolis, Ind.	F	99.56	0.40	76.5	10.5	3-30	189	F	Dodder 9
9634	Farm Bureau Supply Dept., Valparaiso	Indiana Farm Bureau Pur. Dept., Inc.	C	99.50	......	80.0	12.0	1-30	......	C	None
	Common Alfalfa, Lot CA-840	Indianapolis, Ind.	F	99.59	0.27	74.5	16.0	5-30	450	F	None
9410	Grant Co. Farm Bureau, Marion	Indiana Farm Bureau Pur. Dept., Inc.	C	99.50	......	80.0	12.0	1-30	......	C	None
	Common Alfalfa, Lot CA-840	Indianapolis, Ind.	F	99.61	0.27	75.0	20.0	4-30	546	F	Dodder 36
9480	Henry Co. Farm Bureau, Newcastle	Indiana Farm Bureau Pur. Dept., Inc.	C	99.65	......	80.0	12.0	11-29	......	C	None
	Grimm Alfalfa, Lot GA-740	Indianapolis, Ind.	F	99.62	0.32	76.5	11.5	3-30	90	F	None
9484	Henry Co. Farm Bureau, Newcastle	Indiana Farm Bureau Pur. Dept., Inc.	C	99.50	......	80.0	12.0	1-30	......	C	None
	Common Alfalfa, Lot CA-840	Indianapolis, Ind.	F	99.74	0.16	76.5	17.5	4-30	369	F	Dodder 9
9138	Purdue Agronomy Dept.	Indiana Farm Bureau Pur. Dept., Inc.	C	99.50	......	80.0	12.0	1-30	......	C	None
	Common Alfalfa, Lot CA-840	Indianapolis, Ind.	F	99.80	0.06	77.0	18.0	2-30	108	F	Large seeded alfalfa dodder 18
9139	Purdue Agronomy Dept.[7]	Indiana Farm Bureau Pur. Dept., Inc.	C	99.65	......	80.0	12.0	11-29	......	C	None
	Grimm Alfalfa, Blue Tag, Lot GA-740	Indianapolis, Ind.	F	99.72	0.20	77.5	13.5	2-30	144	F	Small seeded alfalfa dodder 54
9610	Jay Co. Farm Bureau, Portland	Indiana Farm Bureau Pur. Dept., Inc.	C	99.50	......	80.0	12.0	1-30	......	C	None
	Common Alfalfa, Lot CA-840	Indianapolis Ind.	F	99.76	0.22	82.5	10.5	5-30	108	F	Dodder 18
9622	Jay Co. Farm Bureau, Portland	Indiana Farm Bureau Pur. Dept., Inc.	C	99.65	......	80.0	12.0	11-29	......	C	None
	Grimm Alfalfa, Lot GA-740	Indianapolis, Ind.	F	99.56	0.41	79.5	11.5	5-30	9	F	Dodder 9
9477	Wayne Co. Farm Bureau, Richmond	Indiana Farm Bureau Pur. Dept., Inc.	C	99.65	......	80.0	12.0	11-29	......	C	None
	Grimm Alfalfa, Lot GA-740	Indianapolis, Ind.	F	99.69	0.29	72.0	18.5	3-30	99	F	Dodder 9
9478	Hagerstown Grain Co., Hagerstown	Indiana Seed Co.	C	99.30	......	70.0	22.0	12-29	......	C	None
	Common Alfalfa, Lot E-464	Indianapolis, Ind.	F	99.38	0.24	66.0	28.0	4-30	189	F	Curled dock 9
9062	Oneal, W. Sherman, Rushville	Indiana Seed Co.	C	99.56	......	77.0	15.0	1-29	......	C	None
	Common Alfalfa Clover, Lot A-57	Indianapolis, Ind.	F	99.70	0.20	82.5	9.5	2-30	729	F	Common plantain 9
9787	Pritchard & Rafert, Pendleton	Indiana Seed Co.	C	99.00	......	70.0	23.0	12-29	......	C	None
	Common Alfalfa, Lot E-464	Indianapolis, Ind.	F	99.43	0.26	66.0	24.5	5-30	279	F	Curled dock 9
9098	Quinlan Seed Store, Terre Haute	Indiana Seed Co.	C	99.30	......	70.0	23.0	12-29	......	C	None
	Common Alfalfa, Lot E-464	Indianapolis, Ind.	F	99.10	0.50	66.0	28.0	4-30	189	F	Dodder 9
8934	Ross Seed Store, Noblesville	Indiana Seed Co.	C	99.56	......	77.0	15.0	3-29	......	C	None
	Common Alfalfa, Lot A-57	Indianapolis, Ind.	F	99.61	0.14	80.0	11.0	2-30	720	F	None
9806	Spurgin, Archie B., Columbus	Indiana Seed Co.	C	99.14	......	82.0	11.0	11-29	......	C	None
	Common Alfalfa, Lot 281054	Indianapolis, Ind.	F	98.75	0.00	83.5	6.5	5-30	1,449	F	Dodder 9
9654	†Farmers Elevator Co., South Whitley	Kraus, Sam	C	99.76	......	77.0	14.0	2-30	......	C	None
	Alfalfa, Lot 2896	Fort Wayne, Ind.	F	99.78	0.06	70.5	16.5	4-30	540	F	None
9589	Beach & Simmers, Albany	Kraus & Apfelbaum	C	99.56	......	80.0	14.0	2-30	......	C	None
	Common Alfalfa, Lot 4	Fort Wayne, Ind.	F	99.38	0.44	70.5	22.5	4-30	153	F	Dodder 9; mustard 54
9616	Berne Equity Exchange, Berne	Kraus & Apfelbaum	C	99.25	......	83.0	8.0	1-30	......	C	None
	Common Alfalfa, Lot 5	Fort Wayne, Ind.	F	99.22	0.36	77.0	9.5	5-30	900	F	None

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*Not labeled.

†Certified by retailer.

C and F stands, respectively, for Claimed and Found.

[4] Retagged.

[5] Sample secured from Antone Rietmann, Dyer, Ind.

[6] Removed from sale. Misbranded. Retagged.

[7] Returned to Distributor.

ALFALFA—Continued

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, per cent	Inert Matter, per cent	Germination, per cent	Hard Seeds, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds		Number per Pound of each of the Noxious Weed Seeds Specified in the Law
9153	Crowell Grain Co., Columbia City	Kraus & Apfelbaum	C	99.54	......	73.0	23.0	1–30	....	C	None
	N. W. Alfalfa, Lot 1	Fort Wayne, Ind.	F	99.45	0.27	73.0	20.0	4–30	270	F	None
9674	Holser & Co., B. I., Walkerton	Kraus & Apfelbaum	C	99.35	......	75.0	17.0	2–30	....	C	None
	Common Alfalfa, Lot 3	Fort Wayne, Ind.	F	99.24	0.40	69.0	16.5	5–30	666	F	Curled dock 27; dodder 9
8981	Kraus & Apfelbaum, Fort Wayne	Kraus & Apfelbaum	C	99.25	......	74.0	22.5	1–29	....	C	None
	Alfalfa, Lot 2	Fort Wayne, Ind.	F	99.16	0.16	68.5	21.5	2–30	1,116	F	Curled dock 27; dodder 9
9851	LaPaz Grain Co., LaPaz	Kraus & Apfelbaum	C	99.38	......	75.0	17.0	2–30	....	C	None
	Common Alfalfa, Lot 6	Fort Wayne, Ind.	F	99.66	0.06	69.0	23.5	5–30	720	F	None
9852	LaPaz Grain Co., LaPaz	Kraus & Apfelbaum	C	99.42	......	88.0	5.0	1–30	....	C	None
	B. F. Grimm Alfalfa, Red Tag	Fort Wayne, Ind.	F	99.43	0.28	79.5	2.5	5–30	1,080	F	None
56	Merkert, John F., Leiters Ford	Kraus & Apfelbaum	C	99.42	......	88.0	5.0	2–30	....	C	None
	Black Foot Grimm Alfalfa	Fort Wayne	F	99.31	0.37	81.0	3.0	7–30	1,359	F	Field dodder 9
9249	Strock, Frank, Hudson	Kraus & Apfelbaum	C	99.55	......	77.0	15.0	2–30	....	C	None
	Common Alfalfa, Lot 4	Fort Wayne, Ind.	F	99.27	0.45	77.0	12.0	4–30	549	F	Curled dock 9
9256	Strock, Frank, Hudson	Kraus & Apfelbaum	C	99.42	......	88.0	5.0	1–30	....	C	None
	Grimm Alfalfa, Red Tag, BF	Fort Wayne, Ind.	F	99.30	0.44	86.0	2.0	4–30	810	F	None
9070	Masters, Charles L., Brookville[9]	Mantheys Seed Store	C	99.00	......	94.0	0.0	12–29	....	C	None
	Alfalfa Clover, Lot 1059	Cincinnati, Ohio	F	98.67	0.26	86.0	6.5	2–30	747	F	Curled dock 18; dodder 9
9546	Haynes & Son, Eaton	McCullough Seed Co., The J. Chas.	C	99.82	......	95.0	4.0	11–29	....	C	None
	Alfalfa, Lot 3807	Cincinnati, Ohio	F	99.84	0.06	85.5	6.5	4–30	459	F	Dodder 9
9497	Richmond Feed Milling Co., Richmond[9]	McCullough Seed Co., The J. Chas.	C	99.52	......	92.0	3.0	1–30	....	C	Curled dock 9
	Alfalfa, Lot 3879	Cincinnati, Ohio	F	99.36	0.26	65.0	25.0	4–30	504	F	Curled dock 18; small seeded alfalfa dodder 36
9500	Richmond Feed Milling Co., Richmond[10]	McCullough Seed Co., The J. Chas.	C	99.07	......	95.0	0.0	3–29	....	C	None
	(Grower's Affidavit) Grimm Alfalfa, Lot 3103	Cincinnati, Ohio	F	98.46	0.08	63.0	29.5	4–30	738	F	Curled dock 9; dodder 9
9890	Sample, John L., Madison	McCullough Seed Co., The J. Chas.	C	99.88	......	90.0	6.0	2–30	....	C	None
	Western Alfalfa, Lot 3975	Cincinnati, Ohio	F	99.90	0.00	81.0	6.5	5–30	387	F	Dodder 27
8644	Wayne Co. Farm Bureau, Richmond[10a]	McCullough Seed Co., The J. Chas.	C	99.60	......	96.0	0.0	6–29	....	C	None
	Alfalfa, Lot 2711	Cincinnati, Ohio	F	99.62	0.16	82.0	6.0	11–29	108	F	Dodder 18
9874	Daviess Co. Farm Bureau, Washington	Ohio Valley Seed Co.	C	99.40	......	85.0	10.0	3–30	....	C	None
	Common Alfalfa, Lot E217	Evansville, Ind.	F	99.34	0.14	74.5	13.5	5–30	2,250	F	None
9824	Owen Farmers Supply Co., Spencer[11]	Ohio Valley Seed Co.	C	99.50	......	90.0	0.0	12–29	....	C	None
	Alfalfa, Lot D302	Evansville, Ind.	F	99.48	0.16	72.5	10.5	5–30	1,080	F	None
9265	Posey Seed & Feed Co., Mount Vernon[10a]	Posey Seed & Feed Co.	C	99.50	......	91.0	......	1–30	....	C	Curled dock 16
	Alfalfa Clover, Lot D537	Mount Vernon, Ind.	F	99.38	0.32	75.0	12.5	4–30	1,449	F	Dodder 9

9273	Reising Sons, N., Poseyville[12]	Purcell Seed Co.	C	.....	.....	.....	.....	.....	.....	C	None
	"Tru Val" Alfalfa Clover, Lot P-1	Evansville, Ind.	F	99.50	0.26	78.5	2.5	3-30	819	F	Large seeded alfalfa dodder 9
9906	Culbertson, Clyde L., Vevay	Ross Seed Co.	C	99.10	.....	82.5	9.0	1-30	.....	C	None
	Alfalfa, Lot 984	Louisville, Ky.	F	99.37	0.14	62.0	21.0	4-30	3,330	F	None
9840	†Farmers Cooperative Elev. Co., Seymour	Ross Seed Co.	C	99.10	.....	82.5	9.0	1-30	.....	C	None
	Common Alfalfa Clover, Lot 984	Louisville, Ky.	F	99.30	0.20	73.0	14.0	5-30	2,610	F	None
9904	Gibson Sons Co., George B., Rising Sun	Scott Seed Co.	C	99.00	.....	80.0	12.0	1-30	.....	C	None
	Alfalfa, Lot 1485	New Albany, Ind.	F	99.74	0.06	82.5	9.0	5-30	720	F	None
9914	Jackson & Son, P. E., Lawrenceburg	Scott Seed Co.	C	99.25	.....	82.0	10.0	2-30	.....	C	None
	Alfalfa, Lot 1894A	New Albany, Ind.	F	99.46	0.19	79.5	10.0	5-30	1,029	F	Dodder 9
9878	†Trow Co., W., Madison	Scott Seed Co.	C	99.00	.....	78.0	14.0	1-30	.....	C	None
	Grimm Alfalfa, Lot 1486	New Albany, Ind.	F	99.54	0.08	62.0	30.0	5-30	9	F	Curled dock 9
9882	Trow Co., W., Madison	Scott Seed Co.	C	99.00	.....	85.0	10.0	2-30	.....	C	None
	Alfalfa, Lot 1494A	New Albany, Ind.	F	98.92	0.18	74.5	13.5	5-30	2,529	F	Large seeded alfalfa dodder 9
9836	Union Hdwe. Co., Seymour	Scott Seed Co.	C	99.25	.....	82.0	10.0	2-30	.....	C	None
	Alfalfa, Lot 1494A	New Albany, Ind.	F	98.30	0.20	70.0	13.5	5-30	3,969	F	Dodder 9
9462	Criss Bros., Lewis[13]	Schultz Seed Co.	C	99.29	.....	90.0	0.0	1-30	.....	C	None
	Alfalfa Clover, Lot 6584	Olney, Ill.	F	99.22	0.20	70.5	6.0	3-30	1,359	F	Mustard 9
8922	Farmers Elevator Co., Monticello[14]	Sunfield Seed Service	C	99.50	.....	93.0	0.0	12-29	.....	C	None
	Dak. No. 12 Alfalfa, Lot 10415	Chicago, Ill.	F	98.80	0.92	45.0	46.0	2-30	90	F	None
9718	Farmers Grain & Supply Co., Oak[13]	Sunfield Seed Service	C	99.75	.....	94.0	0.0	.....	.....	C	None
	State Certified Grimm Alfalfa, Lot 10243	Chicago, Ill.	F	99.40	0.52	77.5	12.5	4-30	270	F	None
9738	Urmston Grain & Seed Co., Galveston[14]	Sunfield Seed Service	C	99.50	.....	93.0	.....	1–	.....	C	None
	Montana Grimm Alfalfa, Lot 10420	Chicago, Ill.	F	99.18	0.58	68.5	17.5	5-30	603	F	Bracted plantain 18; mustard 45
9115	Sunshine Feed Store, Sullivan	Sunshine Feed Store	C	99.50	.....	73.0	23.0	1-30	.....	C	None
	N. W. Alfalfa, Lot 2	Fort Wayne, Ind.	F	99.34	0.26	66.5	27.0	3-30	630	F	None
9057	Oneal, W. Sherman, Rushville	Teweles Seed Co., L.	C	99.50	.....	88.0	7.0	12-29	.....	C	None
	Montana Grimm Alfalfa, Badger Brand	Milwaukee, Wis.	F	99.54	0.30	82.5	8.0	4-30	549	F	Bracted plantain 9
8581	Rochester Cooperative Co., Rochester	Teweles Seed Co., L.	C	99.00	.....	84.0	11.0	6-29	.....	C	None
	Montana Grimm Alfalfa, Badger Brand	Milwaukee, Wis.	F	98.27	1.19	71.5	16.5	8-29	900	F	None
8582	Rochester Cooperative Co., Rochester	Teweles Seed Co., L.	C	95.25	.....	82.0	16.0	12-28	.....	C	None
	Northwestern Alfalfa, Badger Brand	Milwaukee, Wis.	F	99.00	0.40	80.0	10.0	8-29	1,557	F	Dodder 27
9653	Syler, Clay, North Manchester	Teweles Seed Co., L.	C	99.50	.....	88.0	7.0	2-30	.....	C	None
	Grimm Alfalfa, Badger Brand	Milwaukee, Wis.	F	99.34	0.62	87.5	4.5	5-30	90	F	None
8580	Syler & Syler, Nappanee	Teweles Seed Co., L.	C	99.50	.....	82.0	13.0	6-29	.....	C	None
	Idaho Alfalfa, Verified, Lot 8000	Milwaukee, Wis.	F	98.85	0.22	79.0	9.5	8-29	1,296	F	Curled dock 18; dodder 18
9379	Wynn, Arlie S., Rochester	Teweles Seed Co., L.	C	99.45	.....	89.0	6.0	2-30	.....	C	None
	Idaho Grimm Alfalfa, Lot Blackfoot	Milwaukee, Wis.	F	99.22	0.46	83.5	2.5	4-30	1,179	F	Curled dock 9
9777	Farmers Elevator Co., Monticello	Warren-Teed Seed Co.	C	99.62	.....	75.0	16.0	1-30	.....	C	None
	Alfalfa, Lot F-266	Chicago, Ill.	F	99.80	0.06	65.5	28.0	5-30	297	F	Dodder 27

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*Not labeled.

†Certified by retailer.

C and F stands, respectively, for Claimed and Found.

[9] Retagged.

[10] Removed from sale. Misbranded. Retagged. Sample secured from Frank Pardick, Richmond, Ind.

[10a] Removed from sale. Misbranded. Retagged.

[11] Removed from sale. Misbranded. Retagged. All sold.

[12] Not tagged. Labels furnished.

[13] Removed from sale. Misbranded. Retagged.

[14] Removed from sale. Misbranded. Returned to Distributor.

ALFALFA—Continued

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, per cent	Inert Matter, per cent	Germination, per cent	Hard Seeds, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds		Number per Pound of each of the Noxious Weed Seeds Specified in the Law
68	Halderman-Baum Co., Akron	Warren-Teed Seed Co.	C	99.64	......	87.0	4.0	2-30	......	C	None
	Alfalfa Clover, Lot F-268	Chicago, Ill.	F	99.56	0.06	79.0	4.0	7-30	720	F	None
9757	Kiefer Feed & Supply Co., Elwood	Warren-Teed Seed Co.	C	99.64	......	83.0	7.0	2-30	......	C	None
	Common Alfalfa, Lot F-268	Chicago, Ill.	F	99.54	0.12	83.0	4.5	4-30	729	F	Curled dock 9
9887	†Sample, John L., Madison	Warren-Teed Seed Co.	C	99.72	......	74.0	23.0	12-29	......	C	None
	Common Alfalfa, Lot F-143	Chicago, Ill.	F	99.68	0.08	72.5	15.5	5-30	819	F	Curled dock 9
9197	Cristner Bros., Topeka	Wertheimer & Son	C	99.68	......	90.0	0.0	1-30	......	C	None
	Alfalfa, Lot 8606	Ligonier, Ind.	F	99.54	0.22	86.0	2.5	4-30	1,080	F	None
9713	Peru Grain & Coal Co., Peru	Wertheimer & Son	C	99.58	......	80.0	11.0	2-30	......	C	None
	Common Alfalfa, Lot 9604	Ligonier, Ind.	F	99.54	0.40	76.5	11.5	5-30	369	F	Dodder 9
8579	Warsaw Feed Store, Warsaw	Wolf Seed Co.	C	99.25	......	81.0	10.0	6-29	......	C	None
	Utah Hy-Test Alfalfa, Lot 5091	Fort Wayne, Ind.	F	99.13	0.40	74.5	14.0	8-29	2,169	F	Curled dock 9

BLUE GRASS

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, per cent	Inert Matter, per cent	Germination, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds		Number per Pound of each of the Noxious Weed Seeds Specified in the Law
9746	Armstrong & Landon Co., Kokomo[15]	Crabbs Reynolds Taylor Co.	C	85.00	......	84.0	1–30	....	C	None
	Kentucky Blue Grass, Lot CZ	Crawfordsville, Ind.	F	86.47	13.25	77.0	6–30	7,200	F	Red Sorrel 1,350
9505	Chance Bros. Connersville	Crabbs Reynolds Taylor Co.	C	86.90	......	80.0	10–29	....	C	None
	Kentucky Blue Grass, Lot GU	Crawfordsville, Ind.	F	81.19	18.52	78.5	5–30	4,050	F	None
9557	Knecht Milling Co., Hartford City[16]	Crabbs Reynolds Taylor Co.	C	85.00	......	80.0	1–30	....	C	None
	Kentucky Blue Grass, Lot GZ	Crawfordsville, Ind.	F	85.52	17.02	71.0	5–30	7,650	F	Buckhorn 450; red sorrel 1,350
9408	Marion Hardware Co., Marion	Crabbs Reynolds Taylor Co.	C	88.90	......	85.0	8–29	....	C	None
	Kentucky Blue Grass, Lot GU	Crawfordsville, Ind.	F	89.93	9.89	74.5	5–30	3,600	F	None
9124	Riggs & Son, W. G., Sullivan[15]	Crabbs Reynolds Taylor Co.	C	85.00	......	80.0	1–30	....	C	None
	Kentucky Blue Grass, Lot GZ	Crawfordsville, Ind.	F	83.51	16.09	66.0	3–30	5,400	F	Red sorrel 1,350
9389	See & Son, Macy[17]	Crabbs Reynolds Taylor Co.	C	88.90	......	80.0	10–29	....	C	None
	Kentucky Blue Grass, Lot GU	Crawfordsville, Ind.	F	88.97	10.85	67.5	4–30	2,250	F	None
9845	Worthington Grain Co., Worthington[18]	Crabbs Reynolds Taylor Co.	C	86.00	......	85.0	11–29	....	C	None
	Canadian Blue Grass, Lot GK	Crawfordsville, Ind.	F	76.06	14.09	93.5	6–30	7,650	F	Common plantain 2,250
9483	Newcastle Elevator, Newcastle	Crawfordsville Seed Co.	C	88.00	......	86.0	1–30	....	C	None
	Kentucky Blue Grass, Lot 916	Crawfordsville, Ind.	F	92.09	7.71	90.5	5–30	900	F	None
8834	†Gotto-Mathias Co., Michigan City	Dickinson Co., The Albert	C	80.10	......	74.0	10–29	....	C	Curled dock 64
	Kentucky Blue Grass, Lot 03251	Chicago, Ill.	F	81.99	17.73	80.0	2–30	4,050	F	None
9566	Sowash, E. K., Crown Point	Dickinson Co., The Albert	C	78.30	......	76.0	2–30	....	C	Red sorrel 412
	Kentucky Blue Grass, Lot 032106	Chicago, Ill.	F	70.58	28.93	73.0	5–30	11,700	F	Red sorrel 1,350
9838	†Farmers Cooperative Elev. Co., Seymour[16]	Lewis Implement & Seed Co.	C	78.00	......	75.0	......	....	C	None
	Kentucky Blue Grass	Louisville, Ky.	F	69.86	28.94	63.0	5–30	22,050	F	Red sorrel 3,600
9221	Strain, A. F., Princeton	Heldt Co., The	C	85.0	......	80.0	2–30	....	C	None
	Thelco Blue Grass, Lot 1911	Evansville, Ind.	F	88.18	11.53	81.0	4–30	3,150	F	None
9744	Armstrong & Landon Co., Kokomo[15]	Hooton-Davis Seed Co.	C	85.00	......	80.0	1–30	....	C	None
	Kentucky Blue Grass, Lot B-179	Lebanon, Ind.	F	82.84	14.99	59.0	6–30	48,600	F	Red sorrel 900
27	Farmers Supply Co., Edinburg	Indiana Seed Co.	C	80.00	......	77.0	1–30	....	C	None
	Kentucky Blue Grass, Lot F-177	Indianapolis, Ind.	F	78.02	21.60	81.5	7–30	4,500	F	None
9793	Klingensmith, E. J., New Augusta[20]	Indiana Seed Co.	C	82.00	......	78.0	12–29	....	C	None
	Kentucky Blue Grass, Lot 44	Indianapolis, Ind.	F	79.22	20.49	79.5	6–30	2,250	F	Red sorrel 450

*Not labeled.

†Certified by retailer.

C and F stands, respectively, for Claimed and Found.

[15] Removed from sale. Misbranded. All sold.

[16] Removed from sale. Misbranded. Retagged.

[17] Retagged.

[18] Removed from sale. Misbranded. Returned to Distributor. Contains 6.18% Kentucky Blue Grass with 90.0% Germination.

[20] Retagged.

BLUE GRASS—Continued

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, per cent	Inert Matter, per cent	Germination, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds		Number per Pound of each of the Noxious Weed Seeds Specified in the Law
8626	Mazur Seed Co., Indianapolis[21]	Indiana Seed Co.	C	80.00	......	78.0	8-29	......	C	Curled dock 450
	Kentucky Blue Grass, Lot B-22	Indianapolis, Ind.	F	81.45	18.19	69.0	11-29	7,200	F	Red sorrel 450
8935	Ross Seed Store, Noblesville	Indiana Seed Co.	C	85.00	......	80.0	8-	......	C	None
	Kentucky Blue Grass, Lot 83	Indianapolis, Ind.	F	86.09	13.62	72.5	3-30	2,250	F	Curled dock 450
9374	Haldeman-Baum Co., Akron	Kraus, Sam	C	82.26	......	80.0	10-29	......	C	None
	21 lb. Kentucky Blue Grass, Lot B-358SK	Fort Wayne, Ind.	F	87.87	11.76	86.0	4-30	3,150	F	None
9385	Haldeman-Baum Co., Akron	Kraus, Sam	C	99.12	......	93.0	1-30	......	C	None
	English Blue Grass, Lot 34107	Fort Wayne, Ind.	F	98.77	0.44	98.5	4-30	2,529	F	Yellow trefoil 9
9917	Jackson & Son, P. E., Lawrenceburg[22]	Market Gardeners Seed, The	C	85.00	......	85.0	1-30	......	C	None
	Kentucky Blue Grass, Lot 176	Cincinnati, Ohio	F	73.45	25.12	78.5	6-30	20,700	F	Buckhorn 450; curled dock 450; red sorrel 5,850
9029	Krick & Son, A., Milan	McCullough Seed Co., The J. Chas.	C	82.40	......	85.0	11-29	......	C	Red sorrel 900
	Fancy Kentucky Blue Grass, Lot 3773	Cincinnati, Ohio	F	84.45	15.36	81.0	3-30	7,200	F	Buckhorn 450; red sorrel 900
9096	Indiana State Highway Commission, Indianapolis	McCullough Seed Co., The J. Chas.	C	88.00	......	84.0	9-29	......	C	Red sorrel 1,300
	Kentucky Blue Grass, Lot 3619	Cincinnati, Ohio	F	86.57	12.93	78.0	3-30	11,250	F	Red sorrel 800
8758	Linkhart & Son, J. W., North Vernon[23]	McCullough Seed Co., The J. Chas.	C	78.47	......	85.0	9-29	......	C	None
	Fancy Kentucky Blue Grass, Lot 3476	Cincinnati, Ohio	F	82.86	16.76	61.0	1-30	5,400	F	None
9892	Sample, John L., Madison	McCullough Seed Co., The J. Chas.	C	80.10	......	80.0	2-30	......	C	None
	Fancy Kentucky Blue Grass, Lot 3943	Cincinnati, Ohio	F	76.27	23.53	81.5	6-30	1,800	F	None
8611	Mazur Seed Co., Indianapolis[24]	Mazur Seed Co.	C	82.05	......	80.0	3-29	......	C	None
	Blue Grass, Lot O	Indianapolis, Ind.	F	83.77	15.83	56.5	11-29	2,250	F	None
9111	Quinlan Seed Store, Terre Haute[23]	Mitchelhill Seed Co.	C	87.28	......	86.0	2-30	......	C	None
	Kentucky Blue Grass, Lot Mitch	St. Joseph, Mo.	F	91.51	7.90	77.0	5-30	2,700	F	Oxeye daisy 450; red sorrel 450
9870	Daviess Co. Farm Bureau, Washington[25]	Ohio Valley Seed Co.	C	83.50	......	....	12-29	......	C	Curled dock 90; red sorrel 270
	Blue Grass, Lot E-29	Evansville, Ind.	F	82.18	17.62	85.5	6-30	3,150	F	Curled dock 225; red sorrel 225
9330	Burton & Son, A., French Lick[26]	Purcell Seed Co.	C	90.00	......	88.0	1-30	......	C	None
	Judge Blue Grass, Lot 5421	Evansville, Ind.	F	79.13	20.57	68.5	4-30	5,400	F	None
9807	†Spurgin, Archie B., Columbus	Ross Seed Co.	C	97.40	......	80.0	1-30	......	C	None
	Kentucky Blue Grass, Lot 872	Louisville, Ky.	F	97.34	2.56	81.0	6-30	......	F	None
9844	Bloomfield Mill & Elev. Co., Bloomfield[27]	Schultz Seed Co.	C	82.50	......	84.0	12-29	......	C	None
	Kentucky Blue Grass	Olney, Ill.	F	79.58	18.80	68.5	6-30	31,500	F	Red sorrel 450
9903	Culbertson, Clyde L., Vevay[28]	Scott Seed Co.	C	78.00	......	71.0	7-29	......	C	Curled dock 90
	Kentucky Blue Grass, Lot 29	New Albany, Ind.	F	75.89	24.01	39.0	6-30	3,150	F	Red sorrel 1,800
9916	Sawdon, R. A., Aurora[26]	Scott Seed Co.	C	75.00	......	75.0	12-29	......	C	None
	Kentucky Blue Grass, Lot 34	New Albany, Ind.	F	68.41	31.12	51.0	6-30	18,450	F	Red sorrel 2,700

8866	Thorn & Sons, L., New Albany[28]	Scott Seed Co.	C	76.00	......	78.0	7–29	....	C	Curled dock 90; red sorrel 900
	Blue Grass, Lot 28	New Albany, Ind.	F	74.68	24.83	48.0	2–30	18,000	F	Buckhorn 450; red sorrel 3,600
9704	Bash & Co., C. E., Huntington	Teweles Seed Co., L.	C	87.00	......	88.0	1–30	....	C	None
	Kentucky Blue Grass, Lot Badger Brand	Milwaukee, Wis.	F	84.29	15.15	88.0	6–30	4,950	F	None
8984	Henderson-Reed Bros. Co., Ft. Wayne	Teweles Seed Co., L.	C	87.00	......	88.0	12–29	....	C	None
	Kentucky Blue Grass, Lot Badger Brand	Milwaukee, Wis.	F	86.06	13.65	83.5	3–30	2,700	F	None

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*Not labeled.

†Certified by retailer.

C and F stands, respectively, for Claimed and Found.

[21] Sample secured from Indianapolis Municipal Air Port.

[22] Removed from sale. Misbranded. All sold.

[23] Removed from sale. Misbranded. Retagged.

[24] Misbranded. Sample secured from Indianapolis Park Department.

[25] Tag incomplete.

[26] Removed from sale. Misbranded. All sold.

[27] Removed from sale. Misbranded. Retagged.

[28] Removed from sale. Misbranded. Returned to Distributor.

ALSIKE

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, per cent	Inert Matter, per cent	Germination, per cent	Hard Seeds, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds		Number per Pound of each of the Noxious Weed Seeds Specified in the Law
9743	Armstrong-Landon Co., The, Kokomo[29]	Armstrong-Landon Co., The	C	98.00	......	85.0	......	2–30	....	C	Buckhorn 300; common plantain 600; curled dock 300
	Alsike	Kokomo, Ind.	F	92.30	0.80	83.75	12.75	5–30	2,277	F	Buckhorn 558; common plantain 18; curled dock 126
9444	Howell, Elmer, Shelbyville	Berry Seed Co.	C	99.50	......	94.00	......	12–29	....	C	None
	Alsike, Lot 11127	Clarinda, Iowa	F	98.87	0.05	86.75	8.75	3–30	531	F	Buckhorn 36; yellow trefoil 270
9956	Scottsburg Elevator, Scottsburg[30]	Chambers Seed Co.	C	98.00	......	90.00	5.00	3–30	....	C	None
	Alsike Clover, Lot 13	Louisville, Ky.	F	91.83	2.57	80.00	11.50	5–30	23,176	F	Bracted plantain 18; buckhorn 324; common plantain 234; curled dock 216; dodder 594; yellow trefoil 540
9395	Chavis Seed Co., Fowler[31]	Chavis Seed Co.	C	96.00	......	98.00	......	1–30	....	C	None
	Alsike Clover, Lot JS	Fowler, Ind.	F	96.18	2.48	56.50	31.50	3–30	1,197	F	Common plantain 522
9696	Cooperative Elevator Co., Winamac[32]	Cooperative Elevator Co.	C	99.00	......	88.00	......	2–30	....	C	None
	Alsike Clover, Lot Ire	Winamac, Ind.	F	94.42	0.38	75.25	12.25	5–30	31,005	F	Buckhorn 36; curled dock 144; red sorrel 30,375
9365	Cook, E. N., Plymouth	Crabbs Reynolds Taylor Co.	C	98.65	......	90.00	4.00	1–30	....	C	None
	Alsike Clover, Lot 5AA	Crawfordsville, Ind.	F	98.61	0.20	87.00	6.75	3–30	198	F	Common plantain 18; red sorrel 36; yellow trefoil 144
8894	Crabbs Reynolds Taylor Co., Lafayette	Crabbs Reynolds Taylor Co.	C	98.11	......	87.00	8.00	12–	....	C	None
	Alsike Clover, Lot AX	Crawfordsville, Ind.	F	97.99	0.15	90.25	6.75	2–30	198	F	Buckhorn 72; curled dock 18; red sorrel 108
9519	Farmers Cooperative Elev. Co., Sheridan	Crabbs Reynolds Taylor Co.	C	98.65	......	90.00	4.00	1–30	....	C	None
	Alsike Clover, Lot 5AA	Crawfordsville, Ind.	F	98.77	0.15	86.25	7.00	4–30	801	F	Red sorrel 18; yellow trefoil 108
9643	Farmers Cooperative Elev. Co., Westville	Crabbs Reynolds Taylor Co.	C	98.70	......	90.00	5.00	2–30	....	C	None
	Alsike Clover, Lot 9AA	Crawfordsville, Ind.	F	99.00	0.19	91.00	5.75	5–30	702	F	Bracted plantain 18; buckhorn 18; yellow trefoil 216
9706	Huntington Equity Exchange, Huntington	Crabbs Reynolds Taylor Co.	C	99.50	......	92.00	5.00	1–30	....	C	None
	Alsike, Lot 7AA	Crawfordsville, Ind.	F	99.16	0.20	96.50	0.50	5–30	486	F	Yellow trefoil 486
9068	Masters, Chas. L., Brookville	Crabbs Reynolds Taylor Co.	C	97.86	......	85.00	5.00	10–29	....	C	None
	Alsike Clover, Lot AS	Crawfordsville, Ind.	F	97.99	0.42	87.75	10.25	2–30	504	F	Buckhorn 36; curled dock 18
9046	Nixon & Van Deventer, Attica	Crabbs Reynolds Taylor Co.	C	98.65	......	90.00	4.00	1–30	....	C	None
	Alsike Clover, Lot 5AA	Crawfordsville, Ind.	F	98.76	0.20	81.50	8.75	2–30	333	F	Yellow trefoil 108
8860	Reid, V. T., Salem	Crabbs Reynolds Taylor Co.	C	97.86	......	85.00	5.00	10–29	....	C	None
	Alsike Clover, Lot AS	Crawfordsville, Ind.	F	97.90	0.49	81.25	9.00	2–30	369	F	Buckhorn 54; common plantain 18; curled dock 54; red sorrel 18

9384	Rochester Cooperative Elevator Co., Rochester	Crabbs Reynolds Taylor Co.	C	98.65	......	90.00	4.00	1–30	....	C	None
	Alsike, Lot 5AA	Crawfordsville, Ind.	F	98.71	0.25	88.75	5.75	3–30	873	F	Common plantain 18; red sorrel 54; yellow trefoil 126
9388	See & Son, Macy	Crabbs Reynolds Taylor Co.	C	98.65	......	90.00	4.00	1–30	....	C	None
	Alsike, Lot 5AA	Crawfordsville, Ind.	F	98.75	0.20	85.75	7.25	3–30	405	F	Curled dock 18; red sorrel 36; yellow trefoil 126
9585	Beach & Simmers, Albany	Crawfordsville Seed Co.	C	99.00	......	92.00	5.00	12–29	....	C	None
	Alsike Clover, Lot 320	Crawfordsville, Ind.	F	99.28	0.24	91.25	2.75	5–30	684	F	Red sorrel 18; yellow trefoil 216
9064	Demoret Grain Co., Bath	Crawfordsville Seed Co.	C	99.00	......	92.00	5.00	12–29	....	C	None
	Alsike Clover, Lot 320	Crawfordsville, Ind.	F	99.60	0.15	94.25	2.50	2–30	684	F	Yellow trefoil 234
8793	Galveston Farmers Elev. Co., Galveston	Crawfordsville Seed Co.	C	98.00	......	92.00	5.00	12–29	....	C	None
	Alsike Clover, Lot 320	Crawfordsville, Ind.	F	98.99	0.24	87.75	1.75	1–30	603	F	Yellow trefoil 378
9413	Grant Co. Farm Bureau, Marion	Crawfordsville Seed Co.	C	99.00	......	92.00	5.00	12–29	....	C	None
	Alsike Clover, Lot 320	Crawfordsville, Ind.	F	99.18	0.05	92.50	2.00	4–30	387	F	Buckhorn 18; common plantain 18; red sorrel 18; yellow trefoil 108
9753	Hobbs Grain Co., Hobbs	Crawfordsville Seed Co.	C	99.00	......	92.00	5.00	2–30	....	C	None
	Alsike, Lot 322	Crawfordsville, Ind.	F	99.01	0.25	94.00	2.25	5–30	225	F	None
8749	Mooreland Grain Co., Mooreland	Crawfordsville Seed Co.	C	99.00	......	85.00	12.00	8–29	....	C	None
	Alsike Clover, Lot 320	Crawfordsville, Ind.	F	99.32	0.15	93.25	0 50	1–30	647	F	Yellow trefoil 432
9488	Newcastle Elev. Co., Newcastle	Crawfordsville Seed Co.	C	99.00	......	92.00	5.00	12–29	....	C	None
	Alsike, Lot 320	Crawfordsville, Ind.	F	99.26	0.10	90.50	4.00	4–30	828	F	Yellow trefoil 378
9668	Farmers Grain Co., New Carlisle	Dickinson Co., The Albert	C	98.25	......	82.00	11.00	2–30	....	C	Red sorrel 48
	Alsike Clover, Lot 21736	Chicago, Ill.	F	98.55	0.40	81.75	9.50	5–30	441	F	Curled dock 9; red sorrel 153; yellow trefoil 9
9672	Gotto-Mathias, Michigan City	Dickinson Co., The Albert	C	99.35	......	81.00	12.00	3–30	....	C	Red sorrel 256; yellow trefoil 480
	Alsike Clover, Lot 21760	Chicago, Ill.	F	98.84	0.58	81.50	14.75	5–30	1,665	F	Curled dock 18; red sorrel 378; yellow trefoil 144
9009	Hunger, C. G., Madison	Dickinson Co., The Albert	C	98 20	......	80.00	16.00	8–29	....	C	None
	Alsike Clover, Lot 21572	Chicago, Ill.	F	98.79	0.39	77.75	14 50	4–30	882	F	Common plantain 54; curled dock 36; red sorrel 54; yellow trefoil 288
60	North Side Feed Store, Mishawaka	Dickinson Co., The Albert	C	97.50	......	83.00	11.00	4–30	....	C	Red sorrel 240; yellow trefoil 3,100
	Alsike Clover, Lot 21845	Chicago, Ill.	F	97.93	0.05	85 75	6.50	7–30	2,412	F	Red sorrel 306; yellow trefoil 1,656
9784	Pritchard & Rafert, Pendleton	Dickinson Co., The Albert	C	97.60	......	85.00	9.00	2–30	....	C	None
	Alsike, Lot 21700	Chicago, Ill.	F	97 74	0.10	85.25	10.75	5–30	2,259	F	Common plantain 36; red sorrel 126; yellow trefoil 172
9121	Riggs & Son, W. S., Sullivan	Dickinson Co., The Albert	C	98.45	......	82 00	11.00	1–30	....	C	Buckhorn 48; red sorrel 128; yellow trefoil 250
	Alsike, Lot 21635	Chicago, Ill.	F	97.99	0 39	91.00	2.75	4–30	3,267	F	Buckhorn 54; curled dock 18; red sorrel 306; yellow trefoil 864

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*Not labeled.

†Certified by retailer.

C and F stands, respectively, for Claimed and Found.

[29] Removed from sale. Misbranded. All sold. Contains 6.10% Timothy with 81.5% Germination.

[30] Removed from sale. Misbranded. All sold.

[31] Removed from sale. Misbranded. Retagged.

[32] Removed from sale. Misbranded.

ALSIKE—Continued

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor	Purity, per cent	Inert Matter, per cent	Germination, per cent	Hard Seeds, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds	Number per Pound of each of the Noxious Weed Seeds Specified in the Law
9633	Roper & Brown, Hobart	Dickinson Co., The Albert C	98.15	......	87 00	6.00	2-30	....	C Yellow trefoil 5,040
	Alsike Clover, Lot 21745	Chicago, Ill. F	98.23	0 25	83.75	2.50	5-30	4,122	F Curled dock 72; yellow trefoil 3,150
9212	Rush Service Bureau, Rushville	Dickinson Co., The Albert C	99.00	......	80.00	12.00	11-29	....	C None
	Alsike, Lot 21596	Chicago, Ill. F	99.01	0.69	80.50	18 00	4-30	747	F Yellow trefoil 72
9117	Snapp, J. A., Oaktown	Dickinson Co., The Albert C	96.00	......	82.00	11.00	1-30	....	C Red sorrel 7,680
	Alsike Clover, Lot 21676	Chicago, Ill. F	94.91	0.49	79.00	13 00	3-30	13,455	F Common plantain 180; curled dock 162; dodder 18; red sorrel 9,000; yellow trefoil 270
8698	Spurgin, Archie B., Columbus	Dickinson Co., The Albert C	98.20	......	80.00	16 00	11-29	....	C None
	Alsike, Lot 21491	Chicago, Ill. F	98.97	0 49	78.50	12 50	12-29	666	F Red sorrel 18; yellow trefoil 198
9737	Galveston Farmers Elev. Co., Galveston	Foster-Kendall Co. C	98.61	......	85 00	10 00	1-30	....	C None
	Alsike Clover, Lot 102	Carmel, Ind. F	98.81	0.15	81.75	13 50	5-30	495	F Yellow trefoil 270
9541	Goodrich Bros., Eaton[35]	Goodrich Bros. C	94.20	......	92.00	0 00	12-29	....	C None
	Alsike, Lot 301	Winchester, Ind. F	94.78	0.35	87.50	6.00	5-30	7,551	F Buckhorn 18; common plantain 108; red sorrel 6,750
9587	Goodrich Bros., Farmland	Goodrich Bros. C	96.90	......	92.00	2.00	12-29	....	C Curled dock 450; red sorrel 675; yellow trefoil 90
	Alsike Clover, Lot 300	Winchester, Ind. F	97.08	0.34	89.75	5 75	5-30	1,224	F Buckhorn 18; red sorrel 306
9774	Goodrich Bros., Gaston	Goodrich Bros. C	94.70	.....	90 00	0 00	12-29	....	C Red sorrel 5,400
	Alsike, Lot 301	Winchester, Ind. F	95.29	0.25	90.50	3.00	5-30	5,130	F Bracted plantain 18; buckhorn 36; common plantain 108; dodder 18; red sorrel 4,500
9598	Goodrich Bros., Winchester	Goodrich Bros. C	94.70	......	92.00	2.00	12-29	....	C Red sorrel 5,400
	Alsike, Lot 300	Winchester, Ind. F	96.29	0.43	93.25	4.50	5-30	1,620	F Common plantain 72; curled dock 18; red sorrel 630
9402	Hinshaw Grain Co., Summitville	Goodrich Bros. C	96.90	......	92.00	6.00	1-30	....	C Red sorrel 675
	Alsike Clover, Lot 300	Winchester, Ind. F	97.33	0.15	93.50	4.75	4-30	1,458	F Buckhorn 36; common plantain 18; red sorrel 504
9380	Haldeman-Baum Co., Akron	Haldeman-Baum Co. C	94.95	......	89.00	10.50	1-30	....	C Curled dock 225; red sorrel 7,650
	Alsike, Lot 33604	Akron, Ind. F	96.80	23.00	91.25	6 50	4-30	3,375	F Red sorrel 3,375
9675	Holser & Co., B. I., Walkerton	Holser & Co., B. I. C	96.90	......	90.00	0 00	3-30	....	C Buckhorn 225; red sorrel 3,600; yellow trefoil 675
	Alsike Clover, Lot 34866	Walkerton, Ind. F	96.72	0.50	80.75	10.00	5-30	9,342	F Bracted plantain 72; buckhorn 198; Canada thistle 18; common plantain 36; red sorrel 8,325; yellow trefoil 18

9745	Armstrong-Landon Co., The, Kokomo	Hooton-Davis Seed Co.	C	99.30	......	77.00	18.00	8-29	....	C	None
	Alsike Clover, Lot A-148	Lebanon, Ind.	F	99.56	0.05	84.75	12.50	5-30	963	F	Yellow trefoil 288
9736	Bunker Hill Elev. Co., Bunker Hill	Hooton-Davis Seed Co.	C	99.30	......	77.00	18.00	8-29	....	C	None
	Alsike Clover, Lot A-148	Lebanon, Ind.	F	99.40	0.25	78.50	16.25	5-30	873	F	Curled dock 18; yellow trefoil 180
9506	Chance Bros., Connersville	Hooton-Davis Seed Co.	C	99.30	......	77.00	18.00	8-29	....	C	None
	Alsike Clover, Lot A-148	Lebanon, Ind.	F	99.65	0.05	85.75	12.50	4-30	5,121	F	Yellow trefoil 396
9409	Marion Hardware Co., Marion	Hooton-Davis Seed Co.	C	99.30	......	77.00	18.00	8-29	....	C	None
	Alsike, Lot A-148	Lebanon, Ind.	F	99.31	0.15	81.50	17.00	4-30	1,224	F	Yellow trefoil 324
8908	Shanklin Hardware Co., Frankfort	Hooton-Davis Seed Co.	C	99.28	......	78.00	17.00	8-29	....	C	None
	Alsike Clover, Lot A-146	Lebanon, Ind.	F	98.80	0.75	83.25	11.25	4-30	279	F	Buckhorn 18; common plantain 18; curled dock 18
9592	Thornburg, W. W., Farmland	Hooton-Davis Seed Co.	C	99.30	......	77.00	18.00	8-29	....	C	None
	Alsike Clover, Lot A-148	Lebanon, Ind.	F	99.00	0.20	83.25	11.25	5-30	1,286	F	Red sorrel 18; yellow trefoil 468
9007	Trow Co., W., Madison	Hooton-Davis Seed Co.	C	99.28	......	78.00	17.00	8-29	....	C	None
	Alsike Clover, Lot A-146	Lebanon, Ind.	F	99.21	0.34	83.50	10.50	2-30	343	F	Yellow trefoil 18
8983	Cass Co. Farm Bureau, Logansport	Indiana Farm Bureau Pur. Dept., Inc.	C	99.35	......	93.00	0.00	11-29	....	C	Yellow trefoil 180
	Alsike Clover, Lot K-440	Indianapolis, Ind.	F	99.42	0.10	85.00	6.75	4-30	1,962	F	Buckhorn 72; yellow trefoil 540
9490	Henry Co. Farm Bureau, Newcastle	Indiana Farm Bureau Pur. Dept., Inc.	C	99.45	......	87.00	5.00	11-29	....	C	None
	Alsike, Lot K-440	Indianapolis, Ind.	F	99.38	0.14	86.25	6.00	4-30	1,620	F	Buckhorn 54; yellow trefoil 666
9532	Indiana Dairy Marketing Ass'n., Muncie	Indiana Farm Bureau Pur. Dept., Inc.	C	99.45	......	87.00	5.00	11-29	....	C	None
	Alsike, Lot K-440	Indianapolis, Ind.	F	99.38	0.24	87.75	4.50	4-30	1,422	F	Buckhorn 72; yellow trefoil 900
9142	Purdue Agronomy Dept.[35]	Indiana Farm Bureau Pur. Dept., Inc.	C	99.45	......	87.00	5.00	11-29	....	C	None
	Alsike, Lot K-440	Indianapolis, Ind.	F	99.50	0.10	84.75	5.75	2-30	1,836	F	Buckhorn 36; common plantain 90; curled dock 36; red sorrel 18; yellow trefoil 756
9772	Jay Grain Co., Elwood	Indiana Seed Co.	C	99.15	......	77.00	18.00	10-29	....	C	None
	Alsike, Lot 295	Indianapolis, Ind.	F	98.25	1.12	80.50	14.25	5-30	369	F	Canada thistle 18; common plantain 36; mustard 72; yellow trefoil 18
9432	Kattman & Tilley, Brazil	Indiana Seed Co.	C	99.15	......	77.00	18.00	10-29	....	C	None
	Alsike Clover, Lot 295	Indianapolis, Ind.	F	98.71	0.60	78.50	16.25	3-30	279	F	Yellow trefoil 54
9093	Klingensmith, E. J., New Augusta	Indiana Seed Co.	C	99.15	......	77.00	18.00	11-29	....	C	None
	Alsike, Lot 295	Indianapolis, Ind.	F	98.87	0.66	74.75	15.50	3-30	423	F	Canada thistle 18; common plantain 36; curled dock 54; mustard 36; yellow trefoil 54
9054	Werst & Co., Peter, Brookville	Indiana Seed Co.	C	99.00	......	80.00	10.00	7-29	....	C	None
	Alsike Clover, Lot A	Indianapolis, Ind.	F	98.77	0.24	78.75	9.50	2-30	252	F	Curled dock 18; yellow trefoil 234
9537	Williamson & Co., J. H., Muncie	Indiana Seed Co.	C	99.50	......	72.00	24.00	10-29	....	C	None
	Alsike, Lot 127	Indianapolis, Ind.	F	99.40	0.30	68.25	24.50	4-30	486	F	Curled dock 36
9401	Naber & Co., Chas. F., Fairmount	Kellogg Seed Co., John L.	C	99.42	......	80.00	14.00	10-29	....	C	Curled dock 45
	Alsike, Lot A-74	Chicago, Ill.	F	99.75	0.15	77.50	18.75	4-30	441	F	Curled dock 36; yellow trefoil 180
9625	Fretz Feed Store, R. C., Waterloo	Kraus & Apfelbaum	C	98.95	......	88.00	7.00	2-30	....	C	None
	Alsike, Lot Nile	Fort Wayne, Ind.	F	98.36	0.75	82.75	12.75	5-30	....	F	None

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*Not labeled.
†Certified by retailer.
C and F stands, respectively, for Claimed and Found.

[33] Removed from sale. Misbranded. Retagged.
[35] Returned to Distributor.

ALSIKE—Continued

Laboratory No. S	Name and Address of Retailer from Whome Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor	Purity, per cent	Inert Matter, per cent	Germination, per cent	Hard Seeds, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds	Number per Pound of each of the Noxious Weed Seeds Specified in the Law
9620	Geneva Milling & Grain Co., Geneva	Kraus & Apfelbaum C	98.95	......	86.00	10.00	1–30	....	C Curled dock 225
	Alsike, Lot R-1	Fort Wayne, Ind. F	98.62	0.59	77.75	9.00	5–30	279	F Red sorrel 36; yellow trefoil 18
9011	Kraus & Apfelbaum, Auburn[36]	Kraus & Apfelbaum C	98.00	......	80.00	11.00	1–30	....	C None
	Alsike, Lot 3965	Fort Wayne, Ind. F	96.87	0.20	80.25	10.75	2–30	225	F None
8978	Kraus & Apfelbaum, Fort Wayne[37]	Kraus & Apfelbaum C	96.55	......	74.50	17.50	12–29	....	C None
	Alsike, Lot 3	Fort Wayne, Ind. F	96.51	0.69	76.50	18.00	2–30	1,314	F Common plantain 36; curled dock 18; red sorrel 1,116; yellow trefoil 144
9725	Phillips, J. C., Star City	Kraus & Apfelbaum C	98.75	......	80.00	10.00	3–30	....	C None
	Alsike Clover, Lot R-4	Fort Wayne, Ind. F	98.67	0.98	82.50	9.75	5–30	261	F Yellow trefoil 36
9729	Loughry Bros. Milling & Grain Co., Monticello[38]	Loughry Milling & Grain Co. C	97.00	......	84.00	9.00	2–30	....	C None
	Alsike Clover, Lot 1	Monticello, Ind. F	98.88	0.19	69.50	29.50	5–30	9,468	F Curled dock 18; red sorrel 7,875
9104	McCarty Seed Co., J. A., Terre Haute	McCarty Seed Co., J. A. C	97.55	......	88.00	9.00	11–29	....	C None
	Lucky Jim Alsike, Lot 1900	Evansville, Ind. F	97.17	0.10	77.25	11.00	3–30	2,349	F Common plantain 18; red sorrel 306
9535	Haines & Son, Eaton[39]	McCullough Seed Co., The J. Chas. C	98.60	......	81.00	14.00	11–29	....	C Curled dock 9
	Alsike Clover, Lot 3638	Cincinnati, Ohio F	97.06	0.19	83.25	15.00	4–30	18	F Curled dock 18
9558	Haines & Son, Eaton	McCullough Seed Co., The J. Chas C	96.00	......	84.00	9.00	11–29	....	C Buckhorn 900; common plantain 450; curled dock 225; red sorrel 225
	Alsike, Lot 3778	Cincinnati, Ohio F	94.83	1.29	78.25	16.75	5–30	5,292	F Buckhorn 990; common plantain 18; curled dock 126; red sorrel 90; yellow trefoil 18
9034	Jackson & Son, P. E., Lawrenceburg[41]	Mantheys Seed Store C	97.00	......	91.00	0.00	1–30	....	C None
	Alsike Clover	Cincinnati, Ohio F	85.74	0.79	74.00	15.25	2–30	22,671	F Common plantain 90; curled dock 198; dodder 108; red sorrel 4,725; yellow trefoil 12,825
9037	Doerflin, Chas. E., Cedar Grove[42]	Market Gardeners Seed Co. C	98.80	......	92.00	0.00	11–29	....	C Buckhorn 179; curled dock 179; red sorrel 451
	Alsike Clover, Lot 157	Cincinnati, Ohio F	96.47	0.50	86.25	7.50	2–30	5,094	F Buckhorn 144; canada thistle 18; common plantain 72; curled dock 18; red sorrel 1,332; yellow trefoil 360
9580	Lowell Grain & Hay Co., Lowell	Morris Grain & Seed Co. C	99.80	......	95.00	3.00	1–30	....	C None
	Alsike Clover, Lot 120	Morris, Ill. F	99.27	0.44	90.00	7.25	5–30	....	F None

9082	Nading Grain Co., Wm., Waldron	Nading Grain Co., Wm.	C	98.11	......	87.00	8.00	12–29	....	C	Curled dock 45; red sorrel 45
	Alsike Clover, Lot AX	Waldron, Ind.	F	97.68	0.10	88.00	3.75	3–30	270	F	Buckhorn 54; curled dock 36; red sorrel 152; yellow trefoil 18
9301	Nathan Grain Co., Topeka[43]	Nathan Grain Co.	C	94.20	......	......	......	......	....	C	Buckhorn 900; curled dock 450
	Alsike Clover	Fort Wayne, Ind.	F	94.59	0.05	85.25	12.25	3–30	36,801	F	Buckhorn 1,476; red sorrel 35,325
9275	Posey Seed & Feed Co., Mt. Vernon	Posey Seed & Feed Co.	C	97.50	......	88.00	9.00	11–29	....	C	None
	Alsike Clover, Lot 1866	Mt. Vernon, Ind.	F	97.41	0.20	83.75	11.50	3–30	1,566	F	Red sorrel 216
9276	Posey Seed & Feed Co., Mt. Vernon[44]	Posey Seed & Feed Co.	C	98.50	......	90.00	0.00	1–30	....	C	Curled dock 128; red sorrel 608; yellow trefoil 320
	Alsike Clover, Lot F-51	Mt. Vernon, Ind.	F	95.96	0.33	83.25	9.25	4–30	6,730	F	Chicory 18; curled dock 108; dodder 18; red sorrel 864; yellow trefoil 522
9133	Knox Co. Farm Bureau, Vincennes	Purcell Seed Co.	C	97.86	......	85.00	5.00	1–30	....	C	None
	Tru Val Alsike Clover, Lot 8098	Evansville, Ind.	F	98.39	0.47	85.50	13.00	3–30	369	F	Buckhorn 72; curled dock 54; yellow trefoil 18
9102	Lash Milling Co., Farmersburg	Purcell Seed Co.	C	97.46	......	92.50	5.00	12–29	....	C	Curled dock 675; red sorrel 225
	Tru Val Alsike Clover, Lot 8337	Evansville, Ind.	F	97.76	0.10	88.50	5.25	4–30	1,206	F	Buckhorn 36; red sorrel 270
9328	McCampbell, Ralph, French Lick	Ross Seed Co.	C	93.60	......	76.00	3.50	10–28	....	C	Curled dock 225; red sorrel 450; yellow trefoil 6,525
	"Troy" Alsike Clover, Lot 1000	Louisville, Ky.	F	95.58	0.35	70.25	2.00	3–30	6,642	F	Buckhorn 54; common plantain 36; curled dock 18; red sorrel 234; yellow trefoil 4,500
8861	Hayes & Dodds, Campbellsburg	Scott Seed Co.	C	98.60	......	82.00	12.00	12–29	....	C	None
	Alsike Clover, Lot 305	New Albany, Ind.	F	98.16	0.55	75.00	14.75	2–30	504	F	Common plantain 18; yellow trefoil 486
9257	Strock, Frank, Hudson	Strock, Frank	C	95.80	......	58.00	28.00	1–30	....	C	Curled dock 1,128; red sorrel 11,475
	Alsike Clover	Hudson, Ind.	F	96.26	0.61	68.00	22.50	4–30	16,686	F	Buckhorn 324; curled dock 126; red sorrel 15,525; yellow trefoil 36
9392	†Chavis Seed Co., Fowler[45]	Sunfield Seed Service	C	99.50	......	93.00	1.00	10–29	....	C	None
	Alsike Clover, Lot SSS	Chicago, Ill.	F	99.04	0.00	88.25	8.50	3–30	324	F	Buckhorn 18; curled dock 18; red sorrel 54; yellow trefoil 234
8961	Cooperative Elev. Co., Francesville[45]	Sunfield Seed Service	C	99.50	......	92.00	2.00	10–29	....	C	Buckhorn 30; curled dock 8; red sorrel 40
	Alsike Clover, Lot 11127	Chicago, Ill.	F	98.66	1.19	82.50	9.75	2–30	459	F	Buckhorn 18; curled dock 18; red sorrel 18; yellow trefoil 180
8943	Farmers Cooperative Co., Cicero[46]	Sunfield Seed Service	C	99.50	......	92.00	2.50	10–29	....	C	Buckhorn 30; curled dock 8; red sorrel 40

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*Not labeled.

†Certified by retailer.

C and F stands, respectively, for Claimed and Found.

[36] Retagged.

[37] Removed from sale. Misbranded. Retagged.

[38] Removed from sale. Misbranded.

[39] Removed from sale. Misbranded. All sold.

[41] Removed from sale. Misbranded. Retagged. Contains 6.51% White Clover with 73.5% Germination and 21.5% Hard Seeds.

[42] Removed from sale. Misbranded.

[43] Tag incomplete. Removed from sale. Misbranded. Retagged.

[44] Removed from sale. Misbranded. Retagged.

[45] Retagged.

[46] Removed from sale. Misbranded. Returned to Distributor.

ALSIKE—Continued

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor	Purity, per cent	Inert Matter, per cent	Germination, per cent	Hard Seeds, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds	Number per Pound of each of the Noxious Weed Seeds Specified in the Law
	Alsike Clover, Lot 11127	Chicago, Ill. F	98.10	0.05	84.50	10.50	2–30	639	F Buckhorn 108; Canada thislte 18; common plantain 126; red sorrel 18; yellow trefoil 144
8927	Farmers Elev. Co., Monticello[46]	Sunfield Seed Service C	99.50	......	93 00	1.00	10–29	....	C Buckhorn 30; curled dock 18; red sorrel 40
	Alsike Clover, Lot 11127	Chicago, Ill. F	98 42	0 20	78 00	15 25	2–30	....	F Buckhorn 126; curled dock 18; yellow trefoil 180
8907	Hillisburg Grain & Coal Co., Hillisburg[46]	Sunfield Seed Service C	99.50	......	93 00	0 00	10–29	....	C Buckhorn 30; corn cockle 8; red sorrel 40
	Alsike Clover, Lot 11127	Chicago, Ill. F	98.65	0.14	77.00	14.25	2–30	1,170	F Buckhorn 72; curled dock 18; red sorrel 18; yellow trefoil 162
9144	Logansport Elev. Co., Logansport[47]	Sunfield Seed Service C	99.50	......	93.00	1.00	10–29	....	C Buckhorn 30; corn cockle 8; red sorrel 40
	Alsike Clover, Lot 11127	Chicago, Ill. F	98.46	0.10	90.50	7.25	3–30	810	F Buckhorn 54; common plantain 180; red sorrel 18; yellow trefoil 108
9341	Sunshine Feed Store, Bedford[45]	Sunshine Feed Store C	98.50	......	85.00	8.00	1–30	....	C None
	Alsike, Lot 7	Fort Wayne, Ind. F	97.65	1.15	79.50	12.50	3–30	945	F Canada thistle 18; common plantain 54; red sorrel 36; yellow trefoil 162
9127	Sunshine Feed Store, Sullivan	Sunshine Feed Store C	98.05	......	85.00	8.00	3–30	....	C None
	Alsike Clover, Lot 7	Fort Wayne, Ind. F	97 87	0.89	86.00	11.25	3–30	648	F Yellow trefoil 198
9758	Tipton Co. Farm Bureau, Tipton	Tipton Co. Farm Bureau C	97.44	......	80.75	8.50	2–30	....	C Common plantain 225
	Alsike, Lot F. E. Brown	Tipton, Ind. F	98.37	1.19	84.50	7.00	5–30	702	F Buckhorn 36; common plantain 504; curled dock 144; yellow trefoil 18
9710	Peru Grain & Coal Co., Peru	Warren-Teed Seed Co. C	99.35	......	92.00	6.00	12–29	....	C None
	Alsike Clover, Lot 8214	Chicago, Ill. F	99.15	0.65	90.00	5.50	5–30	90	F Buckhorn 18; Canada thistle 18; common plantain 18; curled dock 18; yellow trefoil 18
9304	Christner Bros., Topeka	Wertheimer & Son C	98.05	......	90.00	0.00	1–30	....	C None
	Alsike Clover, Lot 9101	Ligonier, Ind. F	98.63	0.44	84.50	12.00	3–30	2,754	F Canada thistle 18; curled dock 36; red sorrel 18; yellow trefoil 432
9543	Haynes & Son, Eaton	Wertheimer & Son C	98.00	......	90.00	0.00	1–30	....	C None
	Alsike Clover (Super), Lot 9107	Ligonier, Ind. F	98.70	1.25	85.25	9.00	4–30	18	F Curled dock 18

9188	Wolcottville Elev. Co., Wolcottville	Wertheimer & Son	C	98.05	......	90.00	0.00	1-30	....	C	None
	Super Alsike Clover, Lot 9101	Ligonier, Ind	F	98.70	0.35	78.25	13.50	3-30	2,637	F	Red sorrel 72; yellow trefoil 540
9201	Wolfe Grain Co., Shipshewana	Wolfe Grain Co.	C	95.60	......	78.00	13.50	3-30	....	C	Buckhorn 225; common plantain 225; curled dock 900; red sorrel 15,750
	Alsike Clover	Shipshewana, Ind	F	95.69	0.94	81.25	14.75	4-30	11,160	F	Buckhorn 36; curled dock 774; red sorrel 8,550

*Not labeled.
†Certified by retailer.

C and F stands, respectively, for Claimed and Found.
‡Returned to Distributor.

JAPAN CLOVER

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, per cent	Inert Matter, per cent	Germination, per cent	Hard Seeds, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds		Number per Pound of each of the Noxious Weed Seeds Specified in the Law
9858	Eberts Grain Co., Scottsburg[48]	Chambers Seed Co.	C	95.00	......	90.00	......	1-30	......	C	None
	Korean Clover, Lot 1392	Louisville, Ky.	F	94.61	1.49	66.50	19.50	5-30	12,627	F	Bracted plantain 396; buckhorn 261; common plantain 1,260; dodder 2,070; horse nettle 90
9859	Eberts Grain Co., Scottsburg[48]	Chambers Seed Co.	C	98.00	......	90.00	......	1-30	......	C	None
	Japan Clover, Lot 1302	Louisville, Ky.	F	97.39	1.29	92.00	1.50	5-30	7,182	F	Bracted plantain 153; dodder 99
9958	Scottsburg Elev. Co., Scottsburg[48]	Chambers Seed Co.	C	98.00	......	90.00	......	2-30	......	C	None
	Japan Clover, Lot 1302	Louisville, Ky.	F	94.66	3.52	86.50	0.50	6-30	10,908	F	Bracted plantain 2,430; dodder 18
9430	Campbell Bros., Greencastle	Crabbs Reynolds Taylor Co.	C	96.69	......	90.00	......	1-30	......	C	None
	Japan Clover, Lot PH	Crawfordsville, Ind.	F	95.50	2.83	85.00	7.00	5-30	9,549	F	Bracted plantain 117; curled dock 9; dodder 63
9463	Overpeck Implement Co., H. M., Rockville	Crabbs Reynolds Taylor Co.	C	93.63	......	90.00	......	1-30	......	C	Bracted plantain 180
	Japan Clover, Lot PL	Crawfordsville, Ind.	F	96.57	1.91	91.00	2.50	5-30	4,860	F	Bracted plantain 153; dodder 27
9436	Marshall Cement & Grain Co., Greencastle	Dickinson Co., The Albert	C	97.56	......	77.00	17.00	1-30	......	C	Bracted plantain 1,270
	Japan Clover, Lot 20-1	Chicago, Ill.	F	97.90	0.73	92.50	4.50	5-30	4,257	F	Bracted plantain 1,440; dodder 9; red sorrel 18
9116	Griffin Hardware Co., Carlisle	Griffin Hardware Co.	C	96.00	......	85.00	......	12-29	......	C	Bracted plantain 150
	Japan Clover, Lot D-707	Carlisle, Ind.	F	96.88	2.39	90.00	6.50	3-30	2,394	F	Bracted plantain 144
8991	Bloomington Milling Co., Bloomington	Hardin, Hamilton & Lewman	C	90.00	......	85.00	......	12-29	......	C	Buckhorn 90
	Japan Clover	Louisville, Ky.	F	88.82	4.80	89.50	2.50	3-30	56,675	F	Bracted plantain 477; dodder 18
9439	Clay Co. Farm Bureau, Brazil	Indiana Farm Bureau Pur. Dept., Inc.	C	97.50	......	88.00	......	1-30	......	C	None
	Japan Clover, Lot Jap 1	Indianapolis, Ind.	F	97.27	0.55	84.00	11.00	5-30	3,960	F	Bracted plantain 261; dodder 9
9468	Parke Co. Farm Bureau, Rockville	Indiana Farm Bureau Pur. Dept., Inc.	C	97.50	......	88.00	......	1-30	......	C	None
	Common Japan Clover, Lot Jap 1	Indianapolis, Ind.	F	97.88	0.69	87.00	7.50	4-30	3,096	F	Bracted plantain 387; dodder 9
9101	Vigo Co. Farm Bureau, Terre Haute[49]	Indiana Farm Bureau Pur. Dept., Inc.	C	99.00	......	90.00	......	1-30	......	C	None
	Japan Clover, Lot Jap 1	Indianapolis, Ind.	F	97.16	1.19	83.50	6.50	3-30	4,257	F	Bracted plantain 1,170; curled dock 9; dodder 18
9307	Indiana State Highway Commission, Indianapolis	Kellogg Seed Co.	C	94.00	......	85.00	7.00	1-30	......	C	Yellow trefoil 75
	Japan Clover, Lot AR	Milwaukee, Wis.	F	98.53	1.29	85.50	6.00	3-30	684	F	Bracted plantain 144
8990	Calvin & Sons, Sadie, Nashville	Lewis Implement & Seed Co.	C	90.00	......	85.00	......	12-29	......	C	Buckhorn 20; common plantain 500
	Japan Clover	Louisville, Ky.	F	96.48	2.52	88.00	2.00	3-30	2,979	F	Dodder 9
9132	Knox Co. Farm Bureau, Vincennes[50]	McCarty Seed Co., J. A.	C	97.80	......	......	......	2-30	......	C	Bracted plantain 900
	Common Japan Clover, Lot 1909	Evansville, Ind.	F	97.65	1.00	88.00	8.50	3-30	4,851	F	Bracted plantain 72; dodder 9

9013	Bullock, F. L., Butlerville	McCullough Seed Co., The J. Chas.	C	93.34		80 00		2-28		C	None
	Japan Clover, Lot 3221	Cincinnati, Ohio	F	93.40	2.78	69 00	17.00	3-30	17,208	F	Dodder 18
9338	Easton, Elza D., Bedford[52]	Ohio Valley Seed Co.	C	96.00		90.00		12-29		C	Buckhorn 150
	Japan Clover, Lot D-707	Evansville, Ind.	F	94.93	4.21	76.00	13.50	4-30	5,535	F	Bracted plantain 261; dodder 54
9293	Link, Wm., Jr., Chrisney	Ohio Valley Seed Co.	C	96.00		85.00		1-30		C	Bracted plantain 160
	Japan Clover, Lot 707	Evansville, Ind.	F	97.37	1.58	79.50	20.50	3-30	3,078	F	Bracted plantain 261; dodder 18; wild garlic 9
9107	Pentecost & Craft, Terre Haute[53]	Pentecost & Craft	C	98.40		90 00		1-30		C	None
	Japan Clover, Lot Jap	Terre Haute, Ind.	F	92.96	2.75	84.50	4.00	3-30	20,682	F	Bracted plantain 558; common plantain 9; dodder 90; red sorrel 45
9873	Barr Grain Co., O. L., Bicknell	Purcell Seed Co.	C	93.75		90 00	5.00	2-30		C	Bracted plantain 450
	Tru Val Japan Clover, Lot 8506	Evansville, Ind.	F	96.35	2.43	82 00	7.00	6-30	4,527	F	Bracted plantain 9; dodder 18
9847	Pioneer Elev. Co., Worthington[54]	Purcell Seed Co.	C	93.63		90 00		1-30		C	Bracted plantain 180
	Tru Val Japan Clover, Lot 8419	Evansville, Ind.	F	90.92	4.18	92.00	3.00	5-30	8,028	F	Bracted plantain 288
9109	Quinlan Seed Store, Terre Haute[54]	Purcell Seed Co.	C	99.00		90.00		11-28		C	None
	"Bill" Japan Clover, Lot 7485	Evansville, Ind.	F	95.59	3.16	80.50	15.00	3-30	6,624	F	Bracted plantain 486; buckhorn 45; common plantain 9; dodder 144
9951	Bollinger, George, Henryville	Ross Seed Co.	C	97.00		94.00		2-30		C	None
	Japan Clover, Lot 1608	Louisville, Ky.	F	96.90	1.18	88.50	8.00	6-30	12,006	F	Bracted plantain 153; curled dock 9; dodder 54
8856	Hoosier Hardware Co., Paoli	Ross Seed Co.	C	95.27		27.50	59.50	12-29		C	Bracted plantain 150
	Japan Clover, Lot 1694	Louisville, Ky.	F	96.55	1.28	96.50	1.00	2-30	3,240	F	Bracted plantain 1,080
9004	Hunger, C. S., Madison[55]	Ross Seed Co.	C	95.84		31.50	53.00	12-29		C	Bracted plantain 180; red sorrel 180
	Japan Clover, Lot 1690	Louisville, Ky.	F	94.31	3.21	88.00	3.00	3-30	9,396	F	Bracted plantain 1,260; red sorrel 90; prickly lettuce 36
8896	Linkhart & Son, North Vernon	Ross Seed Co.,	C	95.27		27.50	59.50	12-29		C	Bracted plantain 150
	Japan Clover, Lot 1694	Louisville, Ky.	F	96.08	1.60	97.50	1.00	2-30	4,059	F	Bracted plantain 1,440; buckhorn 9
9003	Sample, John L., Madison[56]	Ross Seed Co.	C	97.36		85.00		1-30		C	Bracted plantain 450
	Japan Clover, Lot 1600	Louisville, Ky.	F	97.17	1.87	84.00	5 50	3-30	5,742	F	Bracted plantain 234; curled dock 9; dodder 9
9801	Spurgin, Archie B., Columbus[53]	Ross Seed Co.	C	95.00		27.50	59.50	12-29		C	None
	Japan Clover, Lot 1694	Louisville, Ky.	F	92.24	2.98	92.00	0 50	5-30	6,480	F	Bracted plantain 1,260; prickly lettuce 90
9435	Brown Hardware Co., Brazil[57]	Schultz, J. M.	C	98.40		85.00		1-30		C	None
	Reliable Japan Clover, Lot Jap	Dieterich, Ill.	F	92.45	2.24	76 00	7.50	4-30	23,463	F	Bracted plantain 36; dodder 18; wild carrot 9

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*Not labeled.

†Certified by retailer.

C and F stands, respectively, for Claimed and Found.

[48] Removed from sale. Misbranded. Returned to Distributor.

[49] Removed from sale. Misbranded. All sold.

[50] Tag incomplete. Retagged.

[52] Removed from sale. Misbranded. Returned to Distributor.

[53] Removed from sale. Misbranded. All sold.

[54] Removed from sale. Misbranded. Retagged.

[55] Removed from sale. Misbranded. Retagged.

[56] Retagged.

[57] Retagged.

JAPAN CLOVER—Continued

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor	Purity, per cent	Inert Matter, per cent	Germination, per cent	Hard Seeds, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds	Number per Pound of each of the Noxious Weed Seeds Specified in the Law
9460	Criss Bros., Lewis	Schultz Seed Co., The C	97.98	......	90.00	......	1-30	....	C Buckhorn 120
	Japan Clover, Lot 6829	Olney, Ill. F	98.67	0.83	93.00	1.50	4-30	1,287	F Bracted plantain 18; curled dock 9
9943	Greger, A. C., Brownstown[58]	Schultz Seed Co., The C	97.98	......	90.00	......	2-30	....	C None
	Japan Clover, Lot 6829	Olney, Ill. F	95.36	3.05	87.50	2.50	6-30	4,212	F Bracted plantain 162
8864	Hayes & Dodds, Campbellsburg	Scott Seed Co., C	96.00	......	92.00	......	12-29	....	C Common plantain 255
	Japan Clover, Lot 73	New Albany, Ind. F	97.52	1.14	86.50	6.50	2-30	7,938	F Bracted plantain 495; common plantain 9; dodder 18; red sorrel 36
9345	Ragsdale & Owen, Bedford	Scott Seed Co. C	96.00	......	75.00	25.00	12-29	....	C Bracted plantain 765; common plantain 225
	Japan Clover, Lot 73	New Albany, Ind. F	95.43	1.65	89.00	3.50	4-30	7,965	F Bracted plantain 603; buckhorn 9; curled dock 9; dodder 9; red sorrel 45
9001	Trow Co., W., Madison[57]	Scott Seed Co. C	96.00	......	90.00	......	12-29	....	C Bracted plantain 265; common plantain 255
	Japan Clover, Lot 73	New Albany, Ind. F	96.88	0.93	88.00	4.50	3-30	7,398	F Bracted plantain 1,080; dodder 45; red sorrel 54; wild garlic 9

*Not labeled.
†Certified by retailer.

C and F stands, respectively, for Claimed and Found.

[58] Removed from sale. Misbranded. Retagged.

RED CLOVER

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, per cent	Inert Matter, per cent	Germination, per cent	Hard Seeds, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds		Number per Pound of each of the Noxious Weed Seeds Specified in the Law
9855	Cooper & Cooper Hdwe., Odon	Arney, John	C	99.58	......	92.0	6.0	2–30	....	C	Buckhorn 7,200; common plantain 180
	Red Clover, Lot 48286	Odon, Ind. R. 3	F	99.22	0.36	79.5	15.5	5–30	1,845	F	Bracted plantain 36; buckhorn 1,260; common plantain 441; dodder 18
9597	Beach & Simmers, Albany	Beach & Simmers	C	98.37	......	89.0	9.0	1–30	....	C	None
	Mammoth Clover, Lot 1	Albany, Ind.	F	99.42	0.44	93.5	3.5	5–30	36	F	Dodder 27; wild carrot 9
9619	Berne Equity Exchange, Berne	Berne Equity Exchange	C	99.50	......	94.0	2.0	2–30	....	C	None
	Mammoth Clover, Lot 4	Berne, Ind.	F	99.28	0.30	86.0	7.0	5–30	630	F	Common plantain 279; curled dock 18; dodder 9; wild carrot 54
9617	Berne Milling Co., Berne[60]	Berne Milling Co.	C	99.00	......	95 0	0 0	2–30	....	C	None
	Medium Clover, Lot O	Berne, Ind.	F	97.75	1.87	78.0	4.5	5–30	801	F	Common plantain 162; curled dock 9
9659	Hillock, James L., Sheridan[61]	Berry Seed Co.	C	93.00	......	86.0	7 0	12–29	....	C	None
	Medium Clover, Lot 12695	Clarinda, Iowa	F	88.89	3.04	74.0	6.0	5–30	27,261	F	Buckhorn 18; Canada thistle 9; common plantain 9; curled dock 270; dodder 9; mustard 9; red sorrel 9; yellow trefoil 108
9445	Howell, Elmer, Shelbyville	Berry Seed Co.	C	99.50	......	94.0	0 0	1–	....	C	None
	Medium Red Clover, Lot 12204	Clarinda, Iowa	F	98.95	0.30	85.5	8.5	3–30	3,249	F	Buckhorn 9
9637	Brown Supply Co., Valparaiso[60]	Boone Grove Grain Co.	C	99.40	......	96.0	2.0	1–30	....	C	None
	Medium Clover	Boone Grove, Ind.	F	99.31	0.39	81.5	6.0	5–30	918	F	Buckhorn 9; curled dock 9
9797	Klingensmith, E. J., New Augusta[62]	Byers Seed Co.	C	99.25	......	80.0	......	12–28	....	C	None
	English Clover, Lot 2	Franklin, Ind.	F	96.21	0.46	80.5	5.0	5–30	3,159	F	Buckhorn 81; common plantain 1,620; curled dock 81; dodder 9; red sorrel 9; wild carrot 9
8613	Record & Son, L. N., Edinburg[63]	Byers Seed Co.	C	99.00	......	87 0	0 0	3–29	....	C	None
	English Clover, Lot Top Seed	Franklin, Ind.	F	97.32	2.06	83.0	3.0	10–29	1,242	F	Buckhorn 108; common plantain 36; curled dock 27; dodder 27; red sorrel 54

*Not labeled.

†Certified by retailer.

C and F stands, respectively, for Claimed and Found.

[60] Removed from sale. Misbranded. Retagged.

[61] Misbranded.

[62] Removed from sale. Misbranded. Used on own farm.

[63] Misbranded. Not tagged. Labels furnished. Refund $45.00. Sample secured from Henry Pruitt, Edinburg, Ind.

RED CLOVER—Continued

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, per cent	Inert Matter, per cent	Germination, per cent	Hard Seeds, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds		Number per Pound of each of the Noxious Weed Seeds Specified in the Law
9191	Campbell & Co., Kendallville	Campbell & Co.	C	99.05		89.0	10.0	2-30		C	Buckhorn 200
	Medium Red Clover, Lot 6A	Kendallville, Ind.	F	98.70	0.34	77.5	11.0	3-30	1,215	F	Buckhorn 378; common plantain 90; dodder 9; red sorrel 9; wild carrot 9
9865	Eberts Grain Co., Scottsburg	Chambers Seed Co.	C	99.00		95.0	0.0	2-30		C	None
	Red Clover, Lot 282	Louisville, Ky.	F	98.95	0.08	87.0	1.0	5-30	765	F	Buckhorn 9; curled dock 36; red sorrel 90
8868	Gienger & Co., John, Jeffersonville[64]	Chambers Seed Co.	C	96.00		90.0	5.0	1-30		C	Curled dock 45
	Red Clover, Lot 264	Louisville, Ky.	F	95.92	0.36	75.0	14.0	2-30	2,799	F	Curled dock 54; yellow trefoil 45
8872	Gienger & Co., John, Jeffersonville[65]	Chambers Seed Co.	C	98.00		95.0	5.0	1-30		C	Buckhorn 180; curled dock 90
	Red Clover, Lot 259	Louisville, Ky.	F	97.63	2.03	72.5	14.0	2-30	2,502	F	Common plantain 54; curled dock 9; dodder 369
9924	*Stephenson & Co., Leavenworth[66]	Chambers Seed Co.	C							C	
	Sapling Red Clover	Louisville, Ky.	F	98.65	0.56	85.0	5.5	4-30	306	F	Bracted plantain 9; buckhorn 36; common plantain 9; curled dock 27; dodder 36; red sorrel 99
9513	Green, Wm. R. & Pflum, Joseph, Jr., Connersville	Chance Bros.	C	99.80		90.0	0.0	10-29		C	None
	Medium Clover, Lot 2RA	Connersville, Ind.	F	99.90	0.00	90.0	8.0	4-30	207	F	Buckhorn 18; curled dock 9
8771	Armstrong-Landon Co., The, Kokomo	Crabbs Reynolds Taylor Co.	C	99.72		90.0	3.0	11-29		C	None
	Medium Clover, Lot 1RB	Crawfordsville, Ind.	F	99.82	0.12	84.5	6.5	2-30	126	F	Buckhorn 36
8995	Bloomington Milling Co., Bloomington	Crabbs Reynolds Taylor Co.	C	99.72		90.0	3.0	11-29		C	Curled dock 45
	Mammoth Clover, Lot MU	Crawfordsville, Ind.	F	99.46	0.34	92.5	2.0	4-30	297	F	Buckhorn 9; curled dock 90; red sorrel 18
8967	Budrow Hardware Co., Flora	Crabbs Reynolds Taylor Co.	C	99.20		90.0	5.0	1-30		C	Curled dock 288
	Medium Red Clover, Lot 8RA	Crawfordsville, Ind.	F	99.16	0.34	89.5	3.5	4-30	1,341	F	Buckhorn 9; curled dock 243; dodder 9
8968	Budrow Hardware Co., Flora	Crabbs Reynolds Taylor Co.	C	99.80		90.0	4.0	11-29		C	None
	Medium Red Clover, Lot 3RB	Crawfordsville, Ind.	F	99.74	0.08	91.5	4.0	2-30	486	F	Buckhorn 9; curled dock 18; red sorrel 9
8765	Chance Bros., Connersville	Crabbs Reynolds Taylor Co.	C	99.70		90.0	4.0	10-29		C	None
	Medium Clover, Lot 5RA	Crawfordsville, Ind.	F	99.86	0.04	91.5	5.5	1-30	198	F	Buckhorn 18
9512	Chance Bros., Connersville	Crabbs Reynolds Taylor Co.	C	98.77		84.0	3.0	1-30		C	Curled dock 54
	Mammoth Clover, Lot ME	Crawfordsville, Ind.	F	98.94	0.00	88.5	2.5	4-30	1,800	F	Buckhorn 9; curled dock 54; red sorrel 27

9832	Cordes Hardware Co., Seymour	Crabbs Reynolds Taylor Co.	C	99.58		90.0	5.0	2-30		C	None
	Medium Clover, Lot 2RD	Crawfordsville, Ind.	F	99.28	0.26	89.5	4.5	5-30	504	F	Buckhorn 27; curled dock 27
8893	Crabbs Reynolds Taylor Co., Lafayette	Crabbs Reynolds Taylor Co.	C	99.62		90.0	4.0	12-29		C	None
	Medium Red Clover, Lot 8RB	Crawfordsville, Ind.	F	99.41	0.24	92.0	2.5	2-30	837	F	Buckhorn 81; curled dock 18; red sorrel 18
9517	Farmers Cooperative Elev. Co., Sheridan	Crabbs Reynolds Taylor Co.	C	99.72		90.0	3.0	11-30		C	Curled dock 45
	Mammoth Clover, Lot MU	Crawfordsville, Ind.	F	99.52	0.26	94.5	2.0	4-30	342	F	Buckhorn 36; curled dock 36
9521	Farmers Cooperative Elev. Co., Sheridan	Crabbs Reynolds Taylor Co.	C	99.72		90.0	3.0	11-29		C	Curled dock 18
	Medium Clover, Lot 5RB	Crawfordsville, Ind.	F	99.54	0.14	91.0	6.5	4-30	1,008	F	Buckhorn 18
9645	Farmers Cooperative Elev. Co., Westville	Crabbs Reynolds Taylor Co.	C	99.58		90.0	5.0	2-30		C	None
	Medium Clover, Lot 2RD	Crawfordsville, Ind.	F	99.26	0.14	92.5	4.0	5-30	954	F	Buckhorn 18; curled dock 27; dodder 9
9717	Farmers Grain & Supply Co., Oak	Crabbs Reynolds Taylor Co.	C	99.72		90.0	3.0	11-29		C	Curled dock 45
	Mammoth Clover, Lot MU	Crawfordsville, Ind.	F	99.60	0.20	93.0	0.5	4-30	36	F	Buckhorn 9; curled dock 27
8913	Goodland Grain Co., Goodland	Crabbs Reynolds Taylor Co.	C	99.60		90.0	4.0	11-29		C	None
	Medium Clover, Lot 3RB	Crawfordsville, Ind.	F	99.69	0.08	88.5	3.0	2-30	477	F	Buckhorn 72; red sorrel 45
8756	Hunger, C. G., Madison	Crabbs Reynolds Taylor Co.	C	99.76		90.0	3.0	11-29		C	Curled dock 54
	Medium Clover, Lot 9RA	Crawfordsville, Ind.	F	99.70	0.14	89.5	7.5	1-30	270	F	Bracted plantain 9; buckhorn 18; curled dock 63
9043	Jones Bros., West Lebanon	Crabbs Reynolds Taylor Co.	C	99.80		90.0	4.0	11-29		C	None
	Medium Clover, Lot 3RB	Crawfordsville, Ind.	F	99.76	0.10	96.0	2.5	4-30	477	F	Curled dock 9; red sorrel 18
8757	Linkhart & Son, North Vernon	Crabbs Reynolds Taylor Co.	C	99.66		86.0	8.0	10-29		C	Curled dock 315
	Mammoth Clover, Lot MN	Crawfordsville, Ind.	F	99.42	0.24	92.5	2.0	1-30	567	F	Buckhorn 27; common plantain 36; curled dock 315; red sorrel 9
8759	Linkhart & Son, North Vernon	Crabbs Reynolds Taylor Co.	C	99.72		90.0	4.0	10-29		C	None
	Medium Clover, Lot 4RA	Crawfordsville, Ind.	F	99.92	0.08	92.0	5.0	1-30	9	F	Buckhorn 9
9559	Montmorenci Elev. Co., Montmorenci	Crabbs Reynolds Taylor Co.	C	99.58		90.0	5.0	2-30		C	None
	Medium Clover, Lot 2RD	Crawfordsville, Ind.	F	99.32	0.20	90.0	4.0	4-30	630	F	Buckhorn 270; curled dock 54; dodder 9
9110	Polson, E. I., Terre Haute	Crabbs Reynolds Taylor Co.	C	99.20		90.0	5.0	1-30		C	Curled dock 288
	Medium Clover, Lot 8RA	Crawfordsville, Ind.	F	99.25	0.24	93.0	3.5	4-30	1,269	F	Buckhorn 45; curled dock 414
9077	Rush-Shelby Grain Co., Manilla	Crabbs Reynolds Taylor Co.	C	99.62		90.0	4.0	12-29		C	None
	Medium Clover, Lot 8RB	Crawfordsville, Ind.	F	99.54	0.14	93.0	1.5	4-30	765	F	Buckhorn 63; curled dock 27; red sorrel 45
8752	Sample, John L., Madison	Crabbs Reynolds Taylor Co.	C	99.66		86.0	8.0	10-29		C	None
	Mammoth Clover, Lot MM	Crawfordsville, Ind.	F	99.46	0.20	89.5	4.5	1-30	432	F	Buckhorn 27; curled dock 306; red sorrel 9
8753	Sample, John L., Madison	Crabbs Reynolds Taylor Co.	C	99.70		90.0	4.0	10-29		C	None
	Medium Clover, Lot 5RA	Crawfordsville, Ind.	F	99.76	0.08	90.0	6.5	1-30	207	F	Buckhorn 27
9386	See & Son, Macy	Crabbs Reynolds Taylor Co.	C	99.72		90.0	3.0	11-29		C	Curled dock 45
	Mammoth Clover, Lot MV	Crawfordsville, Ind.	F	99.68	0.16	92.5	1.0	4-30	27	F	Buckhorn 27
9391	See & Son, Macy	Crabbs Reynolds Taylor Co.	C	99.72		90.0	3.0	11-29		C	Curled dock 18
	Medium Clover, Lot 5RB	Crawfordsville, Ind.	F	99.62	0.12	92.0	4.5	4-30	729	F	Buckhorn 9

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*Not labeled.
†Certified by retailer.
C and F stands, respectively, for Claimed and Found.

[64] Retagged.
[65] Removed from sale. Misbranded. Retagged.
[66] Returned to Distributor.

RED CLOVER—Continued

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, per cent	Inert Matter, per cent	Germination, per cent	Hard Seeds, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds		Number per Pound of each of the Noxious Weed Seeds Specified in the Law
9947	Shirley, O. C., Knightstown	Crabbs Reynolds Taylor Co.	C	99.14	......	82.0	15.0	1–30	....	C	Buckhorn 18; curled dock 18; red sorrel 9
	Medium Clover, Lot 7RC	Crawfordsville, Ind.	F	99.30	0.10	95.0	2.0	6–30	1,899	F	Buckhorn 9
9350	Thompson, W. P., Harrodsburg	Crabbs Reynolds Taylor Co.	C	99.72	......	90.0	3.0	11–29	....	C	Curled dock 18
	Medium Clover, Lot 5RB	Crawfordsville, Ind.	F	99.72	0.21	93.5	4.0	4–30	369	F	Buckhorn 9
8867	Thorn & Sons, L., New Albany	Crabbs Reynolds Taylor Co.	C	99.66	......	86.0	8.0	10–29	....	C	None
	Mammoth Clover, Lot MN	Crawfordsville, Ind.	F	99.47	0.22	88.5	2.5	2–30	558	F	Buckhorn 36; curled dock 324; dodder 9; red sorrel 9
9524	Weer, F. W., Anderson	Crabbs Reynolds Taylor Co.	C	99.74	......	93.5	5.0	1–30	....	C	None
	Medium Clover, Lot 5RC	Crawfordsville, Ind.	F	99.64	0.12	94.5	5.5	4–30	693	F	Buckhorn 45; dodder 18
8921	Weinkauf Grain Co., La Crosse	Crabbs Reynolds Taylor Co.	C	99.00	......	90.0	4.0	11–29	....	C	None
	Medium Clover, Lot 3RB	Crawfordsville, Ind.	F	99.76	0.10	87.0	3.5	2–30	504	F	Buckhorn 18; red sorrel 36
8704	Woods & Pritsch, Sheridan	Crabbs Reynolds Taylor Co.	C	99.70	......	90.0	4.0	10–29	....	C	None
	Medium Clover, Lot 5RA	Crawfordsville, Ind.	F	99.84	0.04	93.0	4.5	12–29	99	F	Buckhorn 9
9658	Woods & Pritsch, Sheridan[69]	Crabbs Reynolds Taylor Co.	C	99.70	......	90.0	7.0	10–29	....	C	None
	Medium Clover, Lot 5RA	Crawfordsville, Ind.	F	99.90	0.02	94.5	4.5	5–30	144	F	Buckhorn 54
9369	Wynn, Arlie S., Rochester	Crabbs Reynolds Taylor Co.	C	99.80	......	90.0	4.0	11–29	....	C	None
	Medium Clover, Lot 3RB	Crawfordsville, Ind.	F	99.56	0.20	97.5	1.5	4–30	738	F	Buckhorn 54; curled dock 18; red sorrel 36
8770	Armstrong-Landon Co., The, Kokomo	Crawfordsville Seed Co.	C	99.50	......	92.0	5.0	10–29	....	C	None
	Medium Clover, Lot 156	Crawfordsville, Ind.	F	99.70	0.18	90.0	1.5	2–30	189	F	Buckhorn 9
8772	Armstrong-Landon Co., The, Kokomo	Crawfordsville Seed Co.	C	99.00	......	85.0	13.0	11–29	....	C	None
	Medium Clover, Lot 162	Crawfordsville, Ind.	F	99.30	0.02	87.0	8.5	1–30	855	F	Dodder 27; yellow trefoil 198
9747	Armstrong-Landon Co., The, Kokomo	Crawfordsville Seed Co.	C	98.00	......	85.0	13.0	3–30	....	C	None
	Medium Clover, Lot 188	Crawfordsville, Ind.	F	98.24	0.02	84.0	10.0	5–30	270	F	None
8764	Chance Bros., Connersville	Crawfordsville Seed Co.	C	99.50	......	92.0	5.0	10–29	....	C	None
	Mammoth Clover, Lot 221	Crawfordsville, Ind.	F	99.74	0.10	94.5	0.0	1–30	99	F	Curled dock 9
9515	Chance Bros., Connersville	Crawfordsville Seed Co.	C	99.50	......	92.0	5.0	12–29	....	C	None
	Mammoth Clover, Lot 226	Crawfordsville, Ind.	F	99.92	0.00	93.5	0.5	4–30	126	F	Buckhorn 9; curled dock 27
8801	Crawfordsville Seed Co., Crawfordsville	Crawfordsville Seed Co.	C	99.50	......	92.0	5.0	12–29	....	C	None
	Medium Clover, Lot 166	Crawfordsville, Ind.	F	99.88	0.04	89.0	2.5	1–30	108	F	Common plantain 18
8802	Crawfordsville Seed Co., Crawfordsville	Crawfordsville Seed Co.	C	99.50	......	92.0	5.0	12–29	....	C	None
	Mammoth Clover, Lot 221	Crawfordsville, Ind.	F	99.88	0.08	93.5	2.5	1–30	18	F	Curled dock 9; red sorrel 9
8807	Crawfordsville Seed Co., Crawfordsville	Crawfordsville Seed Co.	C	99.00	......	85.0	13.0	12–29	....	C	None
	Medium Clover, Lot 162	Crawfordsville, Ind.	F	99.33	0.02	82.0	13.5	1–30	549	F	Curled dock 18; dodder 9; yellow trefoil 162

8810	Crawfordsville Seed Co., Crawfordsville	Crawfordsville Seed Co.	C	97.50	......	92.0	5.0	12-29	....	C	None
	Medium Clover, Lot 161	Crawfordsville, Ind.	F	99.84	0.08	96.0	1.0	1-30	18	F	Buckhorn 18
9059	Demoret Grain Co., Bath	Crawfordsville Seed Co.	C	99.00	......	85.0	13.0	12-29	....	C	None
	Medium Clover, Lot 162	Crawfordsville, Ind.	F	99.31	0.02	90.0	5.0	4-30	738	F	Yellow trefoil 198
9066	Demoret Grain Co., Bath	Crawfordsville Seed Co.	C	99.50	......	92.0	5.0	12-29	....	C	None
	Medium Red Clover, Lot 167	Crawfordsville, Ind.	F	99.47	0.35	90.0	2.5	4-30	90	F	None
9071	Demoret Grain Co., Bath	Crawfordsville Seed Co.	C	99.50	......	92.0	5.0	12-29	....	C	None
	Mammoth Clover, Lot 221	Crawfordsville, Ind.	F	99.92	0.00	92.5	1.5	4-30	36	F	Buckhorn 18; curled dock 18
8762	Farmers Cooperative Co., Centerville	Crawfordsville Seed Co.	C	99.50	......	85.0	13.0	11-29	....	C	None
	Medium Clover, Lot 157	Crawfordsville, Ind.	F	99.68	0.08	93.0	2.0	1-30	324	F	Curled dock 9; yellow trefoil 45
8655	Farmers Feed & Grain Co., Darlington	Crawfordsville Seed Co.	C	99.50	......	92.45	0.0	10-29	....	C	None
	Medium Red Clover, Lot 156	Crawfordsville, Ind.	F	92.92	0.00	90.0	2.0	11-29	360	F	None
8746	Farmers Grain & Supply Co., Modoc	Crawfordsville Seed Co.	C	99.50	......	92.0	5.0	10-29	....	C	None
	Medium Red Clover, Lot 156	Crawfordsville, Ind.	F	99.84	0.04	93.0	2.0	12-29	206	F	Buckhorn 18; curled dock 9; red sorrel 9
9469	Farmers Milling & Elev. Co., Veedersburg	Crawfordsville Seed Co.	C	99.50	......	92.0	5.0	2-30	....	C	None
	Medium Clover, Lot 181	Crawfordsville, Ind.	F	99.74	0.00	93.0	3.0	4-30	99	F	Buckhorn 9
8787	Galveston Farmers Elev. Co., Galveston	Crawfordsville Seed Co.	C	99.50	......	92.0	5.0	12-29	....	C	None
	Medium Clover, Lot 161	Crawfordsville, Ind.	F	92.82	0.06	94.0	2.0	2-30	99	F	Buckhorn 9
9741	Galveston Farmers Elev. Co., Galveston	Crawfordsville Seed Co.	C	99.50	......	92.0	5.0	12-29	....	C	None
	Medium Red Clover, Lot 161	Crawfordsville, Ind.	F	99.68	0.04	91.5	2.0	5-30	207	F	Curled dock 9; red sorrel 18
9415	Grant Co. Farm Bureau, Marion	Crawfordsville Seed Co.	C	99.50	......	92.0	5.0	2-30	....	C	None
	Medium Clover, Lot 181	Crawfordsville, Ind.	F	99.62	0.06	91.5	2.5	4-30	585	F	Buckhorn 18; yellow trefoil 27
9749	Kiefer Feed & Supply Co., Elwood	Crawfordsville Seed Co.	C	99.50	......	92.0	5.0	2-30	....	C	None
	Medium Clover, Lot 181	Crawfordsville, Ind.	F	99.74	0.02	99.5	1.0	5-30	90	F	None
9041	Lake & Reagan, Colfax	Crawfordsville Seed Co.	C	99.50	......	92.0	5.0	12-29	....	C	None
	Medium Clover, Lot 158	Crawfordsville, Ind.	F	99.84	0.02	88.0	0.0	4-30	90	F	None
9042	Lake & Reagan, Colfax	Crawfordsville Seed Co.	C	99.50	......	92.0	5.0	12-29	....	C	None
	Medium Clover, Lot 166	Crawfordsville, Ind.	F	99.82	0.08	90.0	1.0	4-30	....	F	None
8775	Morrison & Thompson, Kokomo[70]	Crawfordsville Seed Co.	C	98.00	......	85.0	13.0	12-29	....	C	None
	Medium Clover, Lot 164	Crawfordsville, Ind.	F	98.01	0.10	85.0	10.0	1-30	1,206	F	Dodder 27; yellow trefoil 189
9481	Newcastle Elevator, Newcastle	Crawfordsville Seed Co.	C	99.50	......	90.0	7.0	12-29	....	C	None
	Medium Clover, Lot 157	Crawfordsville, Ind.	F	99.84	0.06	95.0	1.0	4-30	198	F	Buckhorn 9; yellow trefoil 9
9075	Rush Shelby Grain Co., Manilla	Crawfordsville Seed Co.	C	99.50	......	92.0	5.0	12-29	....	C	None
	Medium Clover, Lot 158	Crawfordsville, Ind.	F	99.76	0.00	93.5	0.5	4-30	450	F	None
8794	Shirley, A. D., Walton	Crawfordsville Seed Co.	C	99.50	......	90.0	7.0	12-29	....	C	None
	Medium Clover, Lot 161	Crawfordsville, Ind.	F	99.86	0.08	91.5	2.0	2-30	....	F	None
8928	Weer, F. W., Anderson[71]	Crawfordsville Seed Co.	C	96.00	......	85.0	13.0	1-30	....	C	None
	Medium Clover, Lot 173	Crawfordsville, Ind.	F	95.94	0.06	88.0	5.5	2-30	3,537	F	Dodder 9; yellow trefoil 108
9145	Crowell Grain Co., Columbia City	Crowell Grain Co.	C	99.24	......	77.0	21.0	1-30	....	C	None
	Red Clover, Lot 33900	Columbia City, Ind.	F	98.68	0.42	84.0	9.0	4-30	2,889	F	Buckhorn 36; common plantain 63
9376	Deniston, Wm. H., Rochester	Deniston, Wm. H.	C	99.85	......	75.5	20.0	12-29	....	C	Buckhorn 90
	Medium Red Clover, Lot 32736	Rochester, Ind.	F	99.72	0.12	78.5	19.5	4-30	639	F	Buckhorn 18; common plantain 81

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*Not labeled.

†Certified by retailer.

C and F stands, respectively, for Claimed and Found.

[69] Sample secured from Mrs. Artie B. Williams.

[70] Returned to Distributor. Recleaned.

[71] Returned to Distributor.

RED CLOVER—Continued

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor	Purity, per cent	Inert Matter, per cent	Germination, per cent	Hard Seeds, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds	Number per Pound of each of the Noxious Weed Seeds Specified in the Law
9377	Deniston, Wm. H., Rochester	Deniston, Wm. H. C	99.43	......	85.0	0.0	11-29	....	C Bracted plantain 90; curled dock 300; red sorrel 300
	Mammoth Clover, Lot 32735	Rochester, Ind. F	99.14	0.60	86.5	7.0	4-30	1,026	F Bracted plantain 9; buckhorn 9; common plantain 27; curled dock 252; red sorrel 279
9383	Deniston, Wm. H., Rochester	Deniston, Wm. H. C	99.60	......	77.5	15.5	1-30	....	C Buckhorn 90; curled dock 180; red sorrel 360
	Mammoth Clover, Lot 48092	Rochester, Ind. F	98.88	0.04	85.0	11.5	4-30	189	F Common plantain 63; red sorrel 36
9810	Byers Seed Co., Franklin[72]	Dickinson Co., The Albert C	96.36	......	78.0	14.0	1-30	....	C None
	Red Clover, Lot 24124	Chicago, Ill. F	94.09	0.02	83.5	5.5	5-30	4,455	F Buckhorn 9; curled dock 9; wild carrot 9; yellow trefoil 18
8880	Cordes Hardware Co., Seymour	Dickinson Co., The Albert C	99.02	......	80.0	15.0	1-30	....	C None
	Medium Red Clover, Lot 24-56	Chicago, Ill. F	98.74	0.08	75.5	12.5	2-30	1,647	F Dodder 9; yellow trefoil 18
8881	Cordes Hardware Co., Seymour	Dickinson Co., The Albert C	99.42	......	90.0	6.0	1-30	....	C None
	Mammoth Red Clover, Lot 23641	Chicago, Ill. F	99.62	0.08	89.0	9.5	4-30	432	F Buckhorn 63; curled dock 45; dodder 9; red sorrel 45
9476	Hagerstown Grain Co., Hagerstown	Dickinson Co., The Albert C	99.34	......	91.0	4.0	2-30	....	C None
	Mammoth Red Clover, Lot 23650	Chicago, Ill. F	99.50	0.02	92.0	2.5	4-30	486	F Buckhorn 9; curled dock 9; red sorrel 18
9431	Kattman & Tilley, Brazil	Dickinson Co., The Albert C	97.54	......	64.0	34.0	10-28	....	C None
	Red Clover, Lot 24685	Chicago, Ill. F	97.58	0.35	84.5	10.5	4-30	4,761	F Curled dock 9; dodder 9; yellow trefoil 513
8911	Kiefer Feed & Supply Co., Elwood	Dickinson Co., The Albert C	99.42	......	82.0	11.0	11-29	....	C Curled dock 64; red sorrel 32
	Medium Clover, Lot 241530	Chicago, Ill. F	99.47	0.37	83.0	11.5	4-30	189	F Bracted plantain 45; buckhorn 27; curled dock 9; dodder 18
9644	Pinola Cooperative Co., LaPorte	Dickinson Co., The Albert C	99.42	......	92.0	4.0	2-30	....	C None
	P. T. Medium Red Clover, Lot 24128	Chicago, Ill. F	98.91	0.02	96.0	1.5	4-30	1,539	F Yellow trefoil 9
9789	Pritchard & Rafert, Pendleton	Dickinson Co., The Albert C	99.34	......	95.0	0.0	2-30	....	C None
	Medium Clover, Lot 24123	Chicago, Ill. F	99.72	0.02	94.0	5.5	5-30	783	F Buckhorn 18; common plantain 27; curled dock 9; dodder 9
9211	Rush Service Bureau, Rushville	Dickinson Co., The Albert C	99.00	......	81.0	14.0	11-29	....	C None
	Red Clover, Lot 241594	Chicago, Ill. F	98.83	0.12	89.0	9.0	4-30	81	F Curled dock 36; yellow trefoil 45
9215	Rush Service Bureau, Rushville	Dickinson Co., The Albert C	99.72	......	95.0	3.0	11-29	....	C None
	Mammoth Clover, Lot 23630	Chicago, Ill. F	99.90	0.02	92.5	2.5	4-30	207	F Curled dock 27
8693	Spurgin, Archie B., Columbus	Dickinson Co., The Albert C	99.64	......	84.0	10.0	11-29	....	C None
	Medium Red Clover, Lot 241485	Chicago, Ill. F	99.74	0.12	82.0	13.5	12-29	126	F Wild carrot 9; yellow trefoil 27

8697	Spurgin, Archie B., Columbus	Dickinson Co., The Albert	C	97.50	......	71.0	27.0	11–29	....	C	Curled dock 96
	Medium Red Clover, Lot 241482	Chicago, Ill.	F	97.78	0.30	79.5	14.0	12–29	756	F	Buckhorn 9; curled dock 54; yellow trefoil 153
9530	Weer, F. W., Anderson	Dickinson Co., The Albert	C	95.28	......	80.0	12.0	2–30	....	C	None
	Red Clover, Lot 24139	Chicago, Ill.	F	95.43	0.40	74 5	16 5	4–30	3,753	F	Curled dock 45; dodder 72; yellow trefoil 396
9542	Woodbury-Elliott Co., Muncie	Dickinson Co., The Albert	C	99.24	......	86.0	4.0	2–30	....	C	None
	Medium Red Clover, Lot 24135	Chicago, Ill.	F	99.40	0.08	88.0	6.5	4–30	567	F	Buckhorn 9; Canada thistle 9; curled dock 18; red sorrel 18; yellow trefoil 63
9290	Dilley & Son, Phillip, Huntingburg	Dilley & Son, Phillip	C	98.03	......	90.0	6.0	2–30	....	C	Buckhorn 6,210; dodder 90
	Red Clover, Lot 8795	Huntingburg, Ind.	F	97.53	0.18	92.0	4.0	4–30	8,127	F	Bracted plantain 9; buckhorn 8,010; dodder 18
9294	Dilley & Son, Phillip, Huntingburg	Dilley & Son, Phillip	C	98.51	......	90.0	6.0	1–30	....	C	Buckhorn 2,610; curled dock 90; dodder 90; red sorrel 90
	Mammoth Clover, Lot 8751	Huntingburg, Ind.	F	98.01	0.66	91.5	4.5	4–30	5,022	F	Bracted plantain 108; buckhorn 4,050; common plantain 36; curled dock 18; dodder 351; wild carrot 9
9217	Strain, A. F., Princeton	Dilley & Son, Phillip	C	96.79	......	89.0	9.0	12-28	....	C	Bracted plantain 80; buckhorn 3,420; curled dock 540; dodder 90
	Mammoth Red Clover, Lot D-2	Huntingburg, Ind.	F	98.25	0.55	86.0	3.0	4–30	4,482	F	Bracted plantain 63; buckhorn 3,600; common plantain 36; curled dock 153; dodder 45; red sorrel 225
9222	Strain, A. F., Princeton	Dilley & Son, Phillip	C	94.14	......	90.0	7.0	2–29	....	C	Buckhorn 19,260; curled dock 540
	Red Clover, Lot D-1	Huntingburg, Ind.	F	92 91	0.14	90.5	1.5	4–30	25,506	F	Bracted plantain 18; buckhorn 24,840; dodder 18
8996	Bloomington Milling Co., Bloomington	Dillon, Owen E.	C	98.73	......	......	......	12–29	....	C	None
	Red Clover, Lot 47749	Freedom, Ind.	F	98 08	0.48	83.0	12–0	2–30	8,442	F	Bracted plantain 18; buckhorn 2,610; common plantain 5,580; curled dock 117; red sorrel 27
9501	Farmers Cooperative Elev., Centerville	Farmers Cooperative Elev.	C	99 70	......	93 0	0 0	1–29	....	C	None
	Medium Red Clover, Lot 8316	Centerville, Ind.	F	99.08	0 76	87.5	0.5	4–30	252	F	Buckhorn 90; curled dock 18; red sorrel 18; wild carrot 36
9731	Farmers Elev. Co., Monticello[76]	Farmers Elev. Co.	C	98 00	......	93.0	0.0	......	....	C	Buckhorn 90
	Medium Clover, Lot 1	Monticello, Ind.	F	99 40	0 28	63.5	32.5	4- 30	1,062	F	Buckhorn 90; common plantain 144; curled dock 18
9648	Farmers Elev. Co., So. Whitley	Farmers Elev. Co.	C	99 00	......	80 0	10 0	3-30	....	C	Bracted plantain 100
	Mammoth Clover, Lot 3	South Whitley, Ind.	F	99.23	0 10	57 5	34.5	4–30	792	F	Buckhorn 126; common plantain 18; curled dock 36; red sorrel 612
9783	Fortville Grain Co., Fortville	Foster-Kendall Co.	C	99 56	......	84 0	12 0	1–30	....	C	None
	Medium Red Clover	Carmel, Ind.	F	99 05	0 43	87.5	9 5	5–30	639	F	Buckhorn 9

*Not labeled.

†Certified by retailer.

C and F stands, respectively, for Claimed and Found.

[72] Removed from sale. Misbranded. All sold.

[76] Removed from sale. Misbranded. Shipped out.

RED CLOVER—Continued

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured Kind, Brand and Lot No.	Name and Address of Distributor		Purity, per cent	Inert Matter, per cent	Germination, per cent	Hard Seeds, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds		Number per Pound of each of the Noxious Weed Seeds Specified in the Law
9656	Sheridan Milling Co., Sheridan	Foster-Kendall Co.	C	99.55		84.0	12.0	1-30		C	None
	Medium Red Clover, Lot 8704	Carmel, Ind.	F	99.60	0.34	84.5	11.5	4-30	99	F	Buckhorn 9
9661	Sheridan Milling Co., Sheridan	Foster-Kendall Co.	C	99.50		88.0	7.0	12-29		C	None
	Mammoth Red Clover, Lot Royal	Carmel, Ind.	F	99.94	0.02	86.5	11.0	5-30	180	F	Buckhorn 9; common plantain 72; curled dock 9
9052	McKay, Frank, Waldron[77]	Fox, Ozro	C							C	
	Big English Clover, Lot F	Blue Ridge, Ind.	F	96.60	0.80	79.0	8.5	2-30	2,718	F	Buckhorn 1,800; common plantain 18; curled dock 450
9701	Gelzleichter & Son, J., Huntington	Gelzleichter & Son, J.	C	98.90		82.5	7.5	2-30		C	None
	Red Clover	Huntington, Ind.	F	98.28	1.03	77.0	17.0	5-30	2,439	F	Buckhorn 9
9705	Gelzleichter & Son, J., Huntington[78]	Gelzleichter & Son, J.	C	97.65		79.5	19.0	2-30		C	Buckhorn 180; common plantain 270
	Medium Red Clover	Huntington, Ind.	F	93.41	0.42	87.5	6.0	5-30	23,283	F	Buckhorn 3,510; common plantain 684; curled dock 9
9876	Wyne, J. W., Huntington	Gelzleichter & Son, J.	C	98.90		82.5	7.5	2-30		C	None
	Red Clover	Huntington, Ind.	F	98.45		82.0	9.5	5-30	3,204	F	Buckhorn 9; common plantain 45
9050	McManus, Harry, Rushville[79]	Gillespie, David	C							C	
	Big English Clover, Lot A		F	96.43	0.65	89.5	5.5	2-30	11,925	F	Bracted plantain 1,260; buckhorn 378; common plantain 306; curled dock 18; dodder 7,290; red sorrel 36; wild carrot 117
9588	Goodrich Bros., Farmland	Goodrich Bros	C	99.34		88.0	6.0	11-29		C	Buckhorn 90
	Medium Clover, Lot 200	Winchester, Ind.	F	98.58	0.51	87.0	6.5	4-30	2,655	F	Bracted plantain 9; buckhorn 306; Canada thistle 9; common plantain 117; curled dock 45; mustard 9; red sorrel 45; wild carrot 45
9760	Goodrich Bros., Gaston	Goodrich Bros	C	99.25		94.0	0.0	12-29		C	Buckhorn 180
	Medium Clover, Lot 200	Winchester, Ind.	F	98.71	0.22	91.5	5.0	5-30	2,628	F	Buckhorn 261; common plantain 27; curled dock 9; dodder 18; mustard 18; red sorrel 18; wild carrot 27
9769	Goodrich Bros., Gaston[80]	Goodrich Bros	C	[illegible]9.25		92.0	0.0	12-29		C	None
	Mammoth Clover, Lot 103	Winchester, Ind.	F	98.94	0.16	81.0	8.5	5-30	1,602	F	Buckhorn 1,008; common plantain 225; curled dock 144; wild carrot 135

9596	Goodrich Bros., Winchester Medium Clover, Lot 200	Goodrich Bros.	C	99.30	......	84.0	7.0	12–29	....	C Buckhorn 90; curled dock 90; yellow trefoil 90
		Winchester, Ind.	F	99.05	0.28	89.5	2.5	5–30	1,935	F Buckhorn 378; common plantain 90; curled dock 27
9406	Hinshaw Grain Co., Summitville[81] Red Clover, Lot 200	Goodrich Bros.	C	99.30	......	92.0	2.0	1–30	....	C Buckhorn 90; yellow trefoil 90
		Winchester, Ind.	F	98.82	0.22	88.0	4.0	4–30	3,420	F Bracted plantain 9; buckhorn 171; common plantain 63; red sorrel 9; wild carrot 18
9935	Graves Implement Store, Tell City	Graves Implement Store	C	97.19	......	87.0	10.0	1–30	....	C Buckhorn 8,820; common plantain 270
	Red Clover, Lot 8693	Tell City, Ind.	F	96.79	0.28	84.0	10.5	6–30	10,746	F Buckhorn 10,170; common plantain 369; curled dock 9; dodder 18
9372	Haldeman-Baum Co., Akron Medium Clover, Lot 33603	Haldeman-Baum Co.	C	99.70	......	81.5	13.5	1–30	....	C Buckhorn 90; curled dock 90
		Akron, Ind.	F	99.66	0.16	82.5	10.0	4–30	459	F Buckhorn 126; common plantain 54; curled dock 9
9635	Jensen Bros., Valparaiso Red Clover, Lot 47155	Hartwig, Chas. W.	C	98.35	......	58.0	40.5	10–29	....	C Buckhorn 2,610; red sorrel 90
		Valparaiso, Ind.	F	97.46	1.37	69.5	22.5	5–30	6,570	F Buckhorn 2,070; common plantain 2,880
9849	*Applegate, Dr., Bloomfield Red Clover, Lot A-2	Haywood, Henry	C	......	......	......	......	......	....	C
		Bloomfield, Ind.	F	95.78	0.80	71.0	24.0	4–30	32,157	F Buckhorn 27; common plantain 32,130
9280	Heldt & Voelker Co., The, Evansville[82]	Heldt & Voelker Co., The	C	96.66	......	88.0	9.0	1–30	....	C Bracted plantain 90; buckhorn 9,720; common plantain 180; curled dock 180
	Red Clover, Lot 8672	Evansville, Ind.	F	94.76	0.12	95.0	1.5	4–30	18,828	F Bracted plantain 306; buckhorn 16,740; common plantain 72
9680	Holser & Co., B. I., Walkerton Medium Clover, Lot 34865	Holser & Co., B. I.	C	98.66	......	90.0	0.0	3–30	....	C Buckhorn 270
		Walkerton, Ind.	F	99.05	0.85	80.0	5.5	5–30	450	F Bracted plantain 18; buckhorn 153; red sorrel 9
9748	Armstrong-Landon Co., The, Kokomo Medium Red Clover, Lot M169	Hooton-Davis Seed Co.	C	99.80	......	94.0	4.0	1–30	....	C None
		Lebanon, Ind.	F	99.76	0.12	91.5	6.0	5–30	....	F None
8871	Crescent Mills, Crothersville Medium Red Clover, Lot M-165	Hooton-Davis Seed Co.	C	99.31	......	86.0	8.0	11–29	....	C None
		Lebanon, Ind.	F	99.16	0.28	88.0	8.0	2–30	1,422	F Buckhorn 9; yellow trefoil 63
8945	Farmers Cooperative Co., Cicero Medium Red Clover, Lot M-165	Hooton-Davis Seed Co.	C	99.31	......	86.0	8.0	11–29	....	C None
		Lebanon, Ind.	F	99.00	0.27	86.5	6.5	2–30	1,881	F Yellow trefoil 81
9822	Farmers Feed & Coal Co., Bloomington Medium Red Clover, Lot M-194	Hooton-Davis Seed Co.	C	98.50	......	85.0	4.0	11–29	....	C None
		Lebanon, Ind.	F	98.65	0.36	84.0	4.0	5–30	1,431	F Buckhorn 18; curled dock 45; wild carrot 18
9945	Glenwood Grain Co., Glenwood Medium Red Clover, Lot M-163	Hooton-Davis Seed Co.	C	99.38		88.0	4.0	1–30	....	C None
		Lebanon, Ind.	F	99.45	0.20	80.5	3.5	6–30	198	F Red sorrel 18

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*Not labeled.
†Certified by retailer.
C and F stands, respectively, for Claimed and Found.
[77] Returned and purchase price refunded.
[78] Removed from sale. Misbranded. Sold to Wholesaler.
[79] Returned and purchase price refunded.
[80] Removed from sale. Misbranded. Retagged.
[81] Retagged.
[82] Removed from sale. Misbranded. All sold.

RED CLOVER—Continued

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor	Purity, per cent	Inert Matter, per cent	Germination, per cent	Hard Seeds, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds	Number per Pound of each of the Noxious Weed Seeds Specified in the Law
9948	Glenwood Grain Co., Glenwood	Hooton-Davis Seed Co. C	98 54	......	85.0	4 0	11-29	......	C None
	Medium Red Clover, Lot M-194	Lebanon, Ind. F	98 53	0.50	85 5	3 5	6-30	1,809	F Buckhorn 27; common plantain 9; curled dock 36; dodder 9; yellow trefoil 18
8846	Hooton-Davis Seed Co., Lebanon[84]	Hooton-Davis Seed Co. C	99 54	......	84 0	7 0	11-29	......	C Buckhorn 27; common plantain 81
	Medium Red Clover, Lot M-168	Lebanon, Ind. F	99.70	0 18	85 5	6 0	1-30	198	F Dodder 9; yellow trefoil 9
8850	Hooton-Davis Seed Co., Lebanon[85]	Hooton-Davis Seed Co. C	99 00	......	79.0	13 5	10-29	......	C Common plantain 81; curled dock 18
	Medium Red Clover, Lot M-163	Lebanon, Ind. F	99 38	0.20	88 0	4 5	1-30	180	F None
9417	Marion Hardware Co., Marion	Hooton-Davis Seed Co. C	99.43	......	85.0	11.0	11-29	......	C None
	Medium Red Clover, Lot M-166	Lebanon, Ind. F	99.66	0.14	90.0	6.0	4-30	279	F Yellow trefoil 9
9060	Oneal, W. Sherman, Rushville	Hooton-Davis Seed Co. C	99 43	......	85 0	11 0	11-29	......	C None
	Red Clover, Lot 166	Lebanon, Ind. F	99.16	0.46	91.5	7 5	4-30	648	F Yellow trefoil 18
9825	Owen Farmers Supply Co., Spencer	Hooton-Davis Seed Co. C	99.50	......	91.0	6 0	11-29	......	C None
	Medium Red Clover, Lot M-167	Lebanon, Ind. F	99 62	0.16	86 0	6 0	5-30	198	F Wild carrot 9; yellow trefoil 9
9074	Rush County Mills, Rushville	Hooton-Davis Seed Co. C	99 31	......	86 0	8 0	11-29	......	C None
	Medium Red Clover, Lot M-165	Lebanon, Ind. F	99 14	0.20	87 0	9.0	4-30	1,962	F Buckhorn 9; yellow trefoil 63
9076	Rush County Mills, Rushville	Hooton-Davis Seed Co. C	99.24	......	89.0	6.0	11-29	......	C None
	Mammoth Clover, Lot E-162	Lebanon, Ind. F	99.69	0 10	94.0	1.0	4-30	54	F Buckhorn 18; curled dock 36
9601	Thornburg, W. W., Farmland	Hooton-Davis Seed Co. C	99.69	......	89.0	5.0	1-30	......	C None
	Medium Red Clover, Lot M-170	Lebanon, Ind. F	99.60	0.04	89.0	6.5	5-30	540	F None
9883	Trow Co., W., Madison	Hooton-Davis Seed Co. C	99.76	......	88.0	9.0	1-30	......	C None
	Medium Red Clover, Lot M-228	Lebanon, Ind. F	99.70	0.12	91.5	5.0	5-30	279	F Buckhorn 9
9612	Berne Grain & Hay Co., Berne[86]	Huntertown Grain Co. C	99.42	......	85 5	10 0	1-30	......	C None
	Medium Clover	Huntertown, Ind. F	99.67	0.19	90.0	9.5	5-30	1,926	F Common plantain 1,737; curled dock 9
9010	Huntertown Grain Co., Huntertown	Huntertown Grain Co. C	99.42	......	88.5	10.0	1-30	......	C Common plantain 2,430
	Medium Clover	Huntertown, Ind. F	98.92	0.40	82.0	12.0	2-30	3,510	F Common plantain 2,340
8982	Cass Co. Farm Bureau, Logansport	Indiana Farm Bureau Pur. Dept., Inc. C	99 50	......	86.0	7.0	12-29	......	C None
	Medium Red Clover, Lot RC-141	Indianapolis, Ind. F	99.92	0.04	87.5	1.0	4-30	144	F Buckhorn 27; curled dock 9; dodder 18
9355	Clinton Co. Farm Bureau, Frankfort	Indiana Farm Bureau Pur. Dept., Inc. C	99.70	......	87.0	6.0	12-29	......	C None
	Medium Red Clover, Lot RC-141	Indianapolis, Ind. F	99.80	0.04	91.5	0.5	4-30	207	F Buckhorn 9; curled dock 9; dodder 9
9356	Clinton Co. Farm Bureau, Frankfort	Indiana Farm Bureau Pur. Dept., Inc. C	99.40	......	82.0	10.0	12-29	......	C None
	Medium Red Clover, Lot RC-140	Indianapolis, Ind. F	98.70	0.02	86.5	12.0	4-30	810	F None

9489	Henry Co. Farm Bureau, Newcastle	Indiana Farm Bureau Pur. Dept., Inc.	C	99.50	......	81.0	12.0	2-30	....	C	None
	Medium Red Clover, Lot RC-142	Indianapolis, Ind.	F	99.34	0.46	90.0	8.5	4-30	18	F	Curled dock 18
9523	Indiana Dairy Marketing Ass'n., Muncie	Indiana Farm Bureau Pur. Dept., Inc.	C	99.50	......	84.0	12.0	2-30	....	C	None
	Medium Red Clover, Lot RC-142	Indianapolis, Ind.	F	99.58	0.26	78.0	17.5	4-30	90	F	None
8958	Indiana Farm Bureau Pur. Dept., Inc., Indianapolis[87]	Indiana Farm Bureau Pur. Dept., Inc.	C	99.50	......	86.0	7.0	12-29	....	C	None
	Medium Red Clover	Indianapolis, Ind.	F	99.76	0.04	87.5	0.5	2-30	297	F	Buckhorn 18; curled dock 9
9141	Purdue Agronomy Dept.	Indiana Farm Bureau Pur. Dept., Inc.	C	99.50	......	81.0	12.0	2-30	....	C	None
	Medium Red Clover, Lot RC-142	Indianapolis, Ind.	F	99.30	0.48	82.0	12.0	2-30	18	F	Curled dock 18
9292	Spencer Co. Farm Bureau, Chrisney	Indiana Farm Bureau Pur. Dept., Inc.	C	99.50	......	81.0	12.0	2-30	....	C	None
	Medium Red Clover, Lot RC-142	Indianapolis, Ind.	F	99.48	0.29	92.5	6.0	3-30	117	F	Buckhorn 9; curled dock 18
9119	Sullivan Co. Farm Bureau, Sullivan	Indiana Farm Bureau Pur. Dept., Inc.	C	99.30	......	87.0	5.0	1-30	....	C	None
	Mammoth Clover, Lot MC-240	Indianapolis, Ind.	F	99.70	0.20	94.0	4.5	4-30	162	F	Buckhorn 36; curled dock 27; dodder 9
9100	Vigo Co. Farm Bureau, Terre Haute	Indiana Farm Bureau Pur. Dept., Inc.	C	99.70	......	87.0	6.0	12-29	....	C	None
	Medium Red Clover, Lot RC-141	Indianapolis, Ind.	F	99.76	0.02	83.0	0.5	4-30	468	F	Buckhorn 9; curled dock 9
9820	Egnor, J. W., Spencer	Indiana Seed Co.	C	99.40	......	87.0	5.0	1-30	....	C	None
	Medium Clover, Lot R-61	Indianapolis, Ind.	F	99.18	0.28	81.5	6.0	5-30	1,377	F	Buckhorn 9; common plantain 9; curled dock 9
9798	Farmers Supply Co., Edinburg	Indiana Seed Co.	C	99.50	......	80.0	12.0	12-29	....	C	None
	Mammoth Clover, Lot A	Indianapolis, Ind	F	99.78	0.08	83.0	14.0	5-30	126	F	Buckhorn 99; curled dock 18; red sorrel 9
9941	Furry, V. H., Greenfield	Indiana Seed Co.	C	99.02	......	75.0	7.0	3-30	....	C	None
	Medium Clover, Lot R-265	Indianapolis, Ind	F	99.38	0.10	93.5	3.0	6-30	1,170	F	None
9762	Jay Grain Co., Elwood[88]	Indiana Seed Co.	C	99.35	......	80.0	10.0	1-30	....	C	None
	Medium Red Clover, Lot 1356	Indianapolis, Ind.	F	99.66	0.34	85.5	11.0	5-30	90	F	Buckhorn 63; common plantain 27
9767	Jay Grain Co., Elwood	Indiana Seed Co.	C	99.25	......	88.0	4.0	1-30	....	C	None
	Medium Red Clover, Lot 1359	Indianapolis, Ind	F	98.10	0.72	80.5	12.0	5-30	1,624	F	Yellow trefoil 9
9026	Krick & Son, A., Milan	Indiana Seed Co.	C	99.25	......	75.0	17.0	10-29	....	C	None
	Medium Clover, Lot 294	Indianapolis, Ind	F	99.16	0.54	88.5	5.5	2-30	306	F	Buckhorn 9; common plantain 27
9893	Sample, John L., Madison	Indiana Seed Co.	C	99.40	......	85.0	7.0	1-30	....	C	None
	Medium Clover, Lot R-61	Indianapolis, Ind.	F	99.13	0.22	89.0	3.0	4-30	1,359	F	Buckhorn 9
9534	Williamson & Co., J. H., Muncie	Indiana Seed Co.	C	99.50	......	82.0	10.0	1-30	....	C	None
	Medium Clover, Lot 393	Indianapolis, Ind.	F	99.18	0.52	91.0	4.0	4-30	495	F	Buckhorn 18; common plantain 90; yellow trefoil 27
9899	*Shafer, Chas., Petersburg	Jackson, Ezra	C	......	......	......	......	......	....	C	
	English Clover, Lot E-1	Petersburg, Ind.	F	90.20	2.11	85.0	4.5	4-30	46,161	F	Bracted plantain 3,870; buckhorn 28,530; common plantain 9,360; curled dock 99; red sorrel 1,260; wild carrot 72
9443	Kiefer Feed & Supply Co., Sharpsville	Kiefer Feed & Supply Co.	C	99.50	......	90.0	0.0	12-29	....	C	Bracted plantain 90; buckhorn 450; common plantain 180; curled dock 90

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*Not labeled.

Certified by retailer.

C and F stands, respectively, for Claimed and Found.

[84] Recleaned.

[85] Recleaned.

[86] Removed from sale. Misbranded. Destroyed in fire.

[87] Retagged.

[88] Sample secured from Harold Dobesberger, Elwood, Ind.

RED CLOVER—Continued

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor	Purity, per cent	Inert Matter, per cent	Germination, per cent	Hard Seeds, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds	Number per Pound of each of the Noxious Weed Seeds Specified in the Law
	Mammoth Clover, Lot 17-30	Sharpsville, Ind. F	99.20	0.12	90.0	5.0	4-30	2,043	F Bracted plantain 18; buckhorn 1,980; common plantain 9; curled dock 36
9278	Kindermann's Sons, Wm., Boonville[89]	Kindermann's Sons, Wm. C	99.14	......	86.5	12.0	1-30	....	C None
	Red Clover, Lot 16	Boonville, Ind. F	94.62	2.79	83.0	16.0	3-30	4,041	F Buckhorn 315; common plantain 1,530; curled dock 81; dodder 315
9533	Farmers Cooperative Co., Yorktown	Kraus, Sam C	99.78	......	90.0	7.0	12-29	....	C None
	Medium Clover, Lot K-1	Fort Wayne, Ind. F	99.76	0.06	88.0	8.0	4-30	45	F Buckhorn 27; curled dock 9; red sorrel 9
9591	Beach & Simmers, Albany	Kraus & Apfelbaum C	99.28	......	92.0	6.0	1-30	....	C None
	Medium Clover, Lot R	Fort Wayne, Ind. F	99.30	0.32	88.5	8.0	4-30	864	F Buckhorn 18; dodder 36
9623	Fretz Feed Store, R. C., Waterloo	Kraus & Apfelbaum C	99.28	......	92.0	6.0	2-30	....	C None
	Medium Clover, Lot R-3	Fort Wayne, Ind. F	99.42	0.22	90.5	4.5	5-30	576	F Buckhorn 9; common plantain 27
9613	Geneva Milling & Grain Co., Geneva	Kraus & Apfelbaum C	99.75	......	88.0	6.0	3-30	....	C None
	Medium Clover, Lot 77	Fort Wayne, Ind. F	99.22	0.32	89.5	6.0	5-30	297	F Buckhorn 18; curled dock 9
9615	Geneva Milling & Grain Co., Geneva	Kraus & Apfelbaum C	99.28	......	92.0	6.0	2-30	....	C None
	Medium Clover, Lot R-3	Fort Wayne, Ind. F	99.36	0.28	90.0	5.0	5-30	711	F Buckhorn 9; dodder 36; yellow trefoil 36
9012	Kraus & Apfelbaum, Auburn[90]	Kraus & Apfelbaum C	99.75	......	87.0	7.0	12-29	....	C None
	Medium Clover, Lot 35	Fort Wayne, Ind. F	99.48	0.06	89.0	5.0	2-30	747	F Buckhorn 207
8977	Kraus & Apfelbaum, Ft. Wayne	Kraus & Apfelbaum C	99.28	......	92.5	6.0	1-30	....	C None
	Medium Red Clover, Lot R	Fort Wayne, Ind. F	99.26	0.14	90.0	4.5	2-30	1,134	F Buckhorn 9; common plantain 36; dodder 9
8979	Kraus & Apfelbaum, Ft. Wayne	Kraus & Apfelbaum C	99.60	......	86.0	6.0	1-30	....	C None
	Mammoth Clover, Lot 643	Fort Wayne, Ind. F	99.20	0.32	89.0	7.5	2-30	1,044	F Curled dock 54
9496	Whelan, Omer G., Richmond	Kraus & Apfelbaum C	99.65	......	92.0	2.0	2-30	....	C None
	Medium Clover, Lot 71	Fort Wayne, Ind. F	99.24	0.28	87.5	6.0	4-30	801	F Buckhorn 9; common plantain 63; yellow trefoil 9
9114	Lash Milling Co., Farmersburg	Lash Milling Co. C	98.00	......	90.0	0.0	1-30	....	C Buckhorn 300
	Mammoth Clover, Lot 2	Farmersburg, Ind. F	99.74	0.14	88.5	3.5	3-30	378	F Bracted plantain 153; buckhorn 81; curled dock 99; red sorrel 45
9245	Leas, D. L., Waterloo	Leas, D. L. C	99.84	......	76.5	15.5	2-30	....	C None
	Mammoth Red Clover	Waterloo, Ind. F	99.76	0.22	81.5	14.5	4-30	36	F Common plantain 18; curled dock 18

9247	Leas, D. L., Waterloo	Leas, D. L.	C	99.62	......	77.0	14.5	2-30	....	C	Common plantain 90
	Medium Red Clover	Waterloo, Ind.	F	99.64	0.20	90.0	8.5	4-30	405	F	Buckhorn 45; common plantain 180
9346	Holmes Hardware Co., Mitchell[91]	Lewis Implement & Seed Co.	C	98.50	......	94.0	0.0	1-30	....	C	Buckhorn 20
	Red Clover	Louisville, Ky.	F	94.92	1.95	90.0	4.5	3-30	5,040	F	Bracted plantain 27; buckhorn 900; common plantain 549; curled dock 27; dodder 297; red sorrel 1,080
9732	Loughry Bros. Milling & Grain Co., Monticello[92]	Loughry Bros. Milling & Grain Co.	C	97.60	......	80.0	12.0	2-30	....	C	None
	Medium Clover, Lot 1	Monticello, Ind.	F	98.66	0.40	76.5	17.0	5-30	4,680	F	Bracted plantain 27; buckhorn 81; common plantain 1,260; curled dock 9; dodder 90; red sorrel 243
9035	Jackson & Son, P. E., Lawrenceburg[93]	Manthey's Seed Store	C	98.00	......	95.0	0.0	12-29	....	C	None
	Red Clover, Lot 1600	Cincinnati, Ohio	F	89.29	0.16	71.0	26.0	2-30	6,048	F	Curled dock 108; yellow trefoil 4,050
9711	Marburger Bros., Peru	Marburger Bros.,	C	98.80	......	87.0	5.0	1-30	....	C	None
	Medium Clover, Lot WM	Peru, Ind.	F	98.95	0.59	69.0	29.5	5-30	747	F	Buckhorn 9; common plantain 144; curled dock 9; wild carrot 45
9712	Marburger Bros., Peru	Marburger Bros.	C	99.00	......	86.0	7.0	2-30	....	C	None
	Mammoth Clover, Lot HH	Peru, Ind.	F	99.74	0.08	76.5	16.0	5-30	180	F	Buckhorn 9; common plantain 45; curled dock 81; dodder 18; red sorrel 27
9053	McKay, Frank, Waldron[94]	Martin, Earl	C	......	......	......	......	......	....	C	
	Little Red Clover, Lot M	Waldron, Ind.	F	88.51	1.88	77.5	13.0	2-30	27,063	F	Bracted plantain 9; common plantain 18; curled dock 9; dodder 117
8887	Mayer Grain Co., South Whitley	Mayer Grain Co.	C	99.25	......	86.0	8.0	12-29	....	C	None
	Medium Red Clover, Lot AA	South Whitley, Ind.	F	99.42	0.30	84.0	7.5	2-30	639	F	Buckhorn 9
9652	Mayer Grain Co., South Whitley	Mayer Grain Co.	C	99.00	......	86.0	8.0	12-29	....	C	None
	Mammoth Clover, Lot AA	South Whitley, Ind.	F	99.62	0.22	86.5	7.0	5-30	134	F	Bracted plantain 18; curled dock 27; dodder 18; red sorrel 81
9269	McCarty Seed Co., J. A., Evansville[95]	McCarty Seed Co., J. A.	C	99.09	......	......	......	......	....	C	Buckhorn 360; curled dock 90
	Lucky Jim Red Clover, Lot 1920	Evansville, Ind.	F	99.36	0.38	94.5	1.5	4-30	945	F	Buckhorn 900; common plantain 36; curled dock 9
9097	McCarty Seed Co., J. A., Terre Haute	McCarty Seed Co., J. A.	C	99.50	......	92.0	5.0	12-29	....	C	None
	Mammoth Clover, Lot 226	Terre Haute, Ind.	F	99.90	0.08	90.5	3.5	3-30	18	F	Curled dock 18
9915	Aurora Farmers Supply Co., Aurora[96]	McCullough Seed Co., J. Chas.	C	99.25	......	89.0	5.0	2-30	....	C	None
	Sapling Clover, Lot 4073	Cincinnati, Ohio	F	98.54	0.28	84.0	9.5	5-30	657	F	Bracted plantain 18; buckhorn 306; curled dock 54; red sorrel 9

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*Not labeled.

†Certified by retailer.

C and F stands, respectively, for Claimed and Found.

[89] Removed from sale. Misbranded. Retagged.

[90] Retagged.

[91] Removed from sale. Misbranded. All sold

[92] Removed from sale. Misbranded.

[93] Removed from sale. Misbranded. Retagged. Contains 8.25% Alfalfa with 52.0% Germination and 33.5% Hard Seeds.

[94] Returned and purchase price refunded.

[95] Tag incomplete.

[96] Retagged.

RED CLOVER—Continued

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, per cent	Inert Matter, per cent	Germination, per cent	Hard Seeds, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds		Number per Pound of each of the Noxious Weed Seeds Specified in the Law
9922	Aurora Farmers Supply Co., Aurora[96]	McCullough Seed Co., J. Chas.	C	99.25	....	88.0	9.0	2-30	....	C	None
	Domestic Clover, Lot 4074	Cincinnati, Ohio	F	98.87	0.26	87.0	2.5	6-30	639	F	Buckhorn 171; curled dock 171; dodder 9; red sorrel 72; yellow trefoil 36
9909	Gaudin, George, Vevay Domestic Clover, Lot 3973	McCullough Seed Co., J. Chas.	C	99.62	....	91.0	8.0	2-30	....	C	Curled dock 9
		Cincinnati, Ohio	F	98.94	0.94	80.5	4.0	5-30	360	F	None
9553	Haynes & Son, Eaton	McCullough Seed Co., J. Chas.	C	99.50	....	80.0	14.0	12-29	....	C	Buckhorn 90; common plantain 18; curled dock 90
	Domestic Clover, Lot 3858	Cincinnati, Ohio	F	99.37	0.20	92.5	3.5	4-30	702	F	Buckhorn 252; common plantain 18; curled dock 45; dodder 18; wild carrot 9
9031	Pieper & Smith, Dillsboro	McCullough Seed Co., J. Chas.	C	99.56	....	90.0	4.0	1-30	....	C	Buckhorn 180; red sorrel 18
	Domestic Clover, Lot 3875	Cincinnati, Ohio	F	99.60	0.20	76.0	19.0	4-30	306	F	Buckhorn 153; common plantain 54; curled dock 9;
9918	Sawdon, R. A., Aurora[98]	McCullough Seed Co., J. Chas.	C	99.62	....	91.0	8.0	2-30	....	C	None
	Mammoth Clover, Lot 3973	Cincinnati, Ohio	F	98.93	0.29	88.5	5.5	5-30	1,073	F	Bracted plantain 36; buckhorn 504; common plantain 36; curled dock 9; red sorrel 63
9024	Winters, C. W., Milan	McCullough Seed Co., J. Chas.	C	99.60	....	86.0	8.0	11-29	....	C	Bracted plantain 30; buckhorn 180; common plantain 27; curled dock 90
	Mammoth Clover, Lot 3700	Cincinnati, Ohio	F	99.36	0.16	88.5	7.0	4-30	567	F	Bracted plantain 72; buckhorn 198; common plantain 45; curled dock 234; dodder 18
9030	Winters, C. W., Milan	McCullough Seed Co., J. M.	C	99.00	....	80.0	10.0	1-29	....	C	Buckhorn 300; red sorrel 300
	Red Clover, Lot 6336	Cincinnati, Ohio	F	98.98	0.26	80.0	11.5	4-30	1,773	F	Buckhorn 360; common plantain 63; curled dock 72; red sorrel 243; wild carrot 45
9423	Miller Grain Co., Bainbridge[99]	Miller Grain Co.	C	98.85	....	....	....	2-30	....	C	Buckhorn 270; common plantain 1,890
	Medium Clover, Lot 48629	Bainbridge, Ind.	F	97.60	0.59	69.0	24.0	3-30	3,609	F	Buckhorn 189; common plantain 3,420
9429	Miller Grain Co., Bainbridge[99]	Miller Grain Co.	C	99.26	....	....	....	2-30	....	C	Curled dock 270
	Mammoth Clover, Lot 48631	Bainbridge, Ind.	F	99.40	0.14	85.0	9.5	3-30	792	F	Buckhorn 36; common plantain 324; curled dock 126; wild carrot 126

9272	Moll, J. J., Mount Vernon[100]	Moll, J. J.	C	99.50	......	95.0	0.0	1–	....	C	Buckhorn 90; curled dock 20
	Red Clover, Lot 1-A	Mount Vernon, Ind.	F	99.29	0.26	81.5	15.5	4-30	1,548	F	Buckhorn 1,350; common plantain 18
9707	Morrow Grain Co., The, Wabash	Morrow Grain Co., The	C	99.00	......	90 0	......	2-30	....	C	None
	Medium Clover, Lot Coate	Wabash, Ind.	F	99.66	0.18	83 5	12.5	5-30	477	F	Common plantain 27
9399	Naber & Co., Chas. F., Fairmount	Naber & Co., Chas. F.	C	98.32	......	87.0	6.0	11-29	....	C	Buckhorn 180; common plantain 540
	Big English Clover, Lot 47419	Fairmount, Ind.	F	98.80	0.54	87.0	7 0	3-30	1,818	F	Buckhorn 27; chicory 9; common plantain 990; curled dock 144; wild carrot 18
9079	Nading Grain Co., Wm., Waldron	Nading Grain Co., Wm.	C	99.70	......	90 0	4.0	12-29	....	C	None
	Medium Clover, Lot 1RC	Waldron, Ind.	F	99.47	0.35	94.5	3.5	2-30	540	F	None
9305	Nathan Grain Co., Topeka	Nathan Grain Co.	C	99 80	......	76 5	19 0	11-29	....	C	None
	Medium Clover	Fort Wayne, Ind.	F	99.98	0.02	88 5	10.5	3-30	18	F	Buckhorn 18
9300	Nathan Grain Co., Topeka	Nathan Grain Co.	C	99 76	......	72 5	11.0	11-29	....	C	Curled dock 90
	Mammoth Clover	Fort Wayne, Ind.	F	99.82	0.10	93.5	5.5	4-30	153	F	Common plantain 27; curled dock 36
9261	Nathan Grain Co., St. Joe	Nathan Grain Co.	C	99.50	......	86 0	13.5	1-30	....	C	None
	Medium Clover	St. Joe, Ind.	F	99.60	0.22	86 0	10 5	3-30	36	F	Common plantain 36
9486	Newcastle Elevator, Newcastle	Newcastle Elevator	C	98.84	......	89 0	7 0	2-30	....	C	Buckhorn 720; curled dock 90
	Mammoth Clover, Lot Wimmer	Newcastle, Ind.	F	99.03	0.77	88.5	8 5	4-30	261	F	Buckhorn 180; common plantain 27; curled dock 27; wild carrot 27
9045	Nixon & Van Deventer, Attica	Nixon & Van Deventer	C	98.45	......	71.0	22.5	1-30	....	C	Common plantain 900; curled dock 180; dodder 27
	Medium Clover, Lot M-30	Attica, Ind.	F	98 50	0.77	77 5	14 5	4-30	3,042	F	Bracted plantain 36; buckhorn 153; common plantain 45; curled dock 108
9933	Heck & Co., Henry, Cannelton	Ohio Valley Seed Co.	C	98.00	......	84 0	0.0	3-30	....	C	Buckhorn 3,150; curled dock 90; dodder 90
	Red Clover, Lot E-223	Evansville, Ind.	F	97.89	0 29	90 5	7.0	5-30	6,123	F	Bracted plantain 153; buckhorn 4,590; common plantain 189; curled dock 18; dodder 153
8586	Gibson Co. Shipping Ass'n., Princeton[101]	Purcell Seed Co.	C	99.58	......	95.0	......	1-29	....	C	Buckhorn 90; curled dock 180
	Red Clover, Lot 7468	Evansville, Ind.	F	99.58	0.16	93.5	2.0	8-29	801	F	Buckhorn 63; curled dock 27; dodder 72; red sorrel 9
9131	Knox Co. Farm Bureau, Vincennes	Purcell Seed Co.	C	99.74	......	92 0	5 0	12-29	....	C	Curled dock 90
	"Tru Val" Red Clover, Lot 8335	Evansville, Ind.	F	99.72	0 06	95 0	0.5	3-30	351	F	Buckhorn 72; dodder 9
9113	Lash Milling Co., Farmersburg	Purcell Seed Co.	C	99.74	......	92.0	5.0	12-29	....	C	Curled dock 90
	Red Clover, Lot 8335	Evansville, Ind.	F	99 76	0 12	95 5	0 0	3-30	324	F	Buckhorn 99; curled dock 45
9811	Records & Son, L. N., Edinburg	Records & Son, L. N.	C	99 00	......	85 0	5 0	2-30	....	C	Buckhorn 315; curled dock 250
	Mammoth Clover, Lot Hall	Edinburg, Ind.	F	99 24	0 32	80 5	10 0	5-30	1,431	F	Buckhorn 378; common plantain 396; curled dock 387

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*Not labeled.
†Certified by retailer.
C and F stands, respectively, for Claimed and Found.
[98] Removed from sale. Misbranded. All sold.
[99] Tag incomplete.
[100] Removed from sale. Misbranded. Retagged.
[101] Returned to Distributor.

RED CLOVER—Continued

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor	Purity, per cent	Inert Matter, per cent	Germination, per cent	Hard Seeds, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds	Number per Pound of each of the Noxious Weed Seeds Specified in the Law
9669	Rolling Prairie Lumber & Grain Co., Rolling Prairie	Rolling Prairie Lumber & Grain Co. C	97.58	......	77.5	11.5	2–30	....	C Buckhorn 7,110; common plantain 63; wild carrot 9
	Red Clover, Lot 8884	Rolling Prairie, Ind. F	96.47	0.89	80.5	12.0	5–30	12,987	F Bracted plantain 315; buckhorn 9,720; common plantain 2,430; red sorrel 9; wild carrot 243
9673	Rolling Prairie Lumber & Grain Co., Rolling Prairie	Rolling Prairie Lumber & Grain Co. C	98.59	......	83.0	15.0	1–30	....	C Buckhorn 2,250; wildcarrot 1,260
	Red Clover, Lot 47891	Rolling Prairie, Ind. F	97.74	0.40	71.5	22.5	5–30	8,253	F Buckhorn 6,210; common plantain 144; curled dock 9; wild carrot 1,890
9839	†Farmers Cooperative Elev. Co., Seymour	Ross Seed Co. C	99.60	......	85.0	8.0	11–29	....	C Red sorrel 270
	Sapling Clover, Lot 442	Louisville, Ky. F	99.76	0.04	82.5	7.5	5–30	153	F Curled dock 90; dodder 9; red sorrel 54
9327	McCampbell, Ralph, French Lick	Ross Seed Co. C	99.40	......	74.0	13.0	1–30	....	C Buckhorn 360
	May Bell Red Clover, Lot 586	Louisville, Ky. F	99.37	0.20	76.5	18.5	4–30	1,314	F Buckhorn 1,116; curled dock 18
9952	Scott & Son, W. L., Jeffersonville	Ross Seed Co. C	99.50	......	80.0	15.0	2–30	....	C None
	Sapling Clover, Lot 442	Louisville, Ky. F	99.52	0.06	84.0	8.0	6–30	441	F Curled dock 90; red sorrel 81
9955	Scott & Son, W. L., Jeffersonville	Ross Seed Co. C	99.40	......	74.0	13.0	1–30	....	C Buckhorn 360
	Red Clover, Lot 586	Louisville, Ky. F	98.86	0.70	74.0	14.5	6–30	1,206	F Buckhorn 1,080; curled dock 36
9000	Sample, John L., Madison[103]	Sample, John L. C	98.00	......	90.0	0.0	1–30	....	C Buckhorn 2,700
	Red Clover, Lot HOM	Madison, Ind. F	98.87	0.16	80.0	13.0	4–30	4,014	F Buckhorn 3,420; common plantain 18; curled dock 18; dodder 198
9225	Schultheis, A. M., Haubstadt	Schultheis, A. M. C	98.00	......	96.0	0.0	1–30	....	C Bracted plantain 250; buckhorn 500
	Medium Red Clover, Lot 13	Haubstadt, Ind. F	99.34	0.34	88.5	8.5	4–30	1,377	F Bracted plantain 45; buckhorn 855; common plantain 117
9228	Schultheis, A. M., Haubstadt	Schultheis, A. M. C	97.00	......	95.0	0.0	1–30	....	C Bracted plantain 360; buckhorn 490
	Mammoth Clover, Lot 11	Haubstadt, Ind. F	96.35	2.83	88.5	0.0	4–30	3,843	F Bracted plantain 9; buckhorn 2,880; common plantain 297; curled dock 477
9230	Schultheis, A. M., Haubstadt[104]	Schultheis, A. M. C	98.00	......	95.0	0.0	1–30	....	C Bracted plantain 320; buckhorn 1,000
	Medium Red Clover, Lot 7	Haubstadt, Ind. F	99.36	0.30	82.0	6.0	4–30	945	F Bracted plantain 36; buckhorn 900; wild carrot 9

9927	Becker & Son, J. H., Corydon	Scott Seed Co.	C	99 20	......	80.0	12.[illegible]	3-30	....	C	Buckhorn 225
	Red Clover, Lot 228	New Albany, Ind.	F	99.15	0.34	81.5	10.0	5-30	1,467	F	Bracted plantain 18; buckhorn 333; common plantain 387; curled dock 9; red sorrel 162; wild carrot 18
8857	Hayes & Dodds, Campbellsburg	Scott Seed Co.	C	99.50	......	85.0	10.0	12-29	....	C	Buckhorn 90; curled dock 135
	Mammoth Clover, Lot 417	New Albany, Ind.	F	99.59	0.12	81.5	10.0	2-30	441	F	Bracted plantain 9; buckhorn 54; common plantain 36; curled dock 72
9881	†North Madison Coal Co., N. Madison	Scott Seed Co.	C	97 00	......	80.0	12.0	1-30	....	C	Curled dock 90; mustard 90
	Red Clover, Lot 162	New Albany, Ind.	F	97.80	0.20	75.5	13.5	5-30	2,763	F	Curled dock 27; dodder 18; mustard 18; yellow trefoil 1,080
9834	Union Hardware Co., Seymour	Scott Seed Co.	C	99 00	......	80.0	14.0	1-30	....	C	None
	Mammoth Clover, Lot 416	New Albany, Ind.	F	98 21	0.30	86.0	4.0	5-30	1,827	F	Red sorrel 27
9608	Snapp Grain Co., Ridgeville	Snapp Grain Co.	C	97.84	......	96 0	2.0	1-30	....	C	Curled dock 180
	Mammoth Clover, Lot 2	Ridgeville, Ind.	F	98 20	0 74	76.0	11.0	5-30	540	F	Buckhorn 72; common plantain 99; curled dock 180; dodder 9
9611	Snapp Grain Co., Ridgeville	Snapp Grain Co.	C	99.56	......	95 0	5.0	1-30	....	C	Curled dock 360
	Mammoth Clover, Lot 1	Ridgeville, Ind.	F	98.85	0 36	88 5	9.0	5-30	1,926	F	Common plantain 27; curled dock 1,620; prickly lettuce 9
9565	Sowash, E. K., Crown Point[105]	Sowash, E. K.	C	99.58	......	83.0	11 0	12-29	....	C	Common plantain 2,070
	Red Clover, Lot H	Crown Point, Ind.	F	97 77	0.94	91.0	4 0	4-30	12,240	F	Common plantain 11,880
9251	Strock, Frank, Hudson	Strock, Frank	C	99 50	......	77.0	16 0	10-29	....	C	None
	Mammoth Clover, Lot Fifer	Hudson, Ind.	F	99 90	0.08	86.0	10 5	3-30	....	F	None
9253	Strock, Frank, Hudson	Strock, Frank	C	99 50	......	75 0	16 0	1-30	....	C	None
	Medium Clover, Lot 12	Hudson, Ind.	F	99.66	0.28	77.5	15 5	3-30	27	F	Buckhorn 18; common plantain 9
9255	Strock, Frank, Hudson	Strock, Frank	C	99.00	......	81.0	5 0	1-30	....	C	Buckhorn 270
	Medium Clover, Lot 9	Hudson, Ind.	F	99.52	0.22	90.5	6.0	4-30	576	F	Buckhorn 117; common plantain 9
9049	McManus, Harry, Rushville[106]	Sullivan, Leon	C	......	......	......	......	......	....	C	
	Big English Clover, Lot OO	Arlington, Ind.	F	89.52	0.66	74.0	15.5	2-30	2,862	F	Bracted plantain 9; buckhorn 396; common plantain 900; curled dock 675; dodder 27; wild carrot 45
9051	Talbert, Claude E., Shelbyville[107]	Sullivan, Leon	C	......	......	......	......	......	....	C	
	Big English Clover, Lot S	Arlington, Ind.	F	89 88	0 43	79 0	10.5	2-30	2,133	F	Buckhorn 306; common plantain 972; curled dock 396; wild carrot 9
8962	Cooperative Elevator Co., Francesville[108]	Sunfield Seed Service	C	99 50	......	94.0	0 0	10-29	....	C	Buckhorn 20; curled dock 8; mustard 8
	Medium Red Clover, Lot 12196	Chicago, Ill.	F	98.97	0.36	77.0	14.0	2-30	1,386	F	Buckhorn 36; common plantain 27; curled dock 18; dodder 36; yellow trefoil 9

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*Not labeled.

†Certified by retailer.

C and F stands, respectively, for Claimed and Found.

[103] Removed from sale. Misbranded. All sold.

[104] Removed from sale. Misbranded. Retagged.

[105] Removed from sale. Misbranded. Will reclean and retest.

[106] Returned and purchase price refunded. Contains 9.34% Timothy with 84.25% Germination.

[107] Returned and purchase price refunded. Contains 9.28% Timothy with 86.5% Germination.

[108] Removed from sale. Misbranded. Retagged.

RED CLOVER—Continued

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor	Purity, per cent	Inert Matter, per cent	Germination, per cent	Hard Seeds, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds	Number per Pound of each of the Noxious Weed Seeds Specified in the Law
8942	Farmers Cooperative Co., Cicero	Sunfield Seed Service C	99.75	......	94.0	0.0	10-29	....	C Buckhorn 8; curled dock 40; red sorrel 20
	Mammoth Clover, Lot 13077	Chicago, Ill. F	99.43	0.39	93.5	0.5	2-30	144	F Buckhorn 45; curled dock 63; red sorrel 36
8944	Farmers Cooperative Co., Cicero	Sunfield Seed Service C	99.50	......	94.0	0.0	10-29	....	C Buckhorn 20; curled dock 8; mustard 8
	Medium Red Clover, Lot 12196	Chicago, Ill. F	98.88	0.30	83.5	10.5	2-30	1,251	F Buckhorn 63; common plantain 54; curled dock 36; dodder 27; yellow trefoil 81
8926	Farmers Elevator Co., Monticello[109]	Sunfield Seed Service C	99.50	......	94.0	0.0	10-29	....	C Buckhorn 20; curled dock 8; mustard 8
	Medium Red Clover, Lot 12196	Chicago, Ill. F	97.92	0.68	76.5	12.0	2-30	1,557	F Buckhorn 126; common plantain 72; curled dock 36; dodder 9; red sorrel 9; yellow trefoil 45
9726	Farmers Grain & Supply Co., Oak.[108]	Sunfield Seed Service C	99.50	......	94.0	0.0	10-29	....	C Buckhorn 20; curled dock 8; mustard 8
	Medium Red Clover, Lot 12196	Chicago, Ill. F	98.79	0.46	80.0	9.5	5-30	270	F Buckhorn 36; common plantain 45; red sorrel 9
8898	Hillisburg Grain & Coal Co., Hillisburg[110]	Sunfield Seed Service C	99.75	......	94.0	0.0	10-29	....	C Buckhorn 8; corn cockle 40; red sorrel 20
	Mammoth Clover, Lot 13077	Chicago, Ill. F	99.72	0.18	92.5	2.5	2-30	63	F Buckhorn 9; curled dock 18; red sorrel 36
8904	Hillisburg Grain & Coal Co., Hillisburg[111]	Sunfield Seed Service C	99.50	......	94.0	0.0	10-29	....	C Buckhorn 20; curled dock 8; mustard 8
	Medium Red Clover, Lot 12196	Chicago, Ill. F	98.31	0.68	81.5	16.5	3-30	585	F Buckhorn 45; common plantain 27; wild carrot 9; yellow trefoil 54
9141	Logansport Elev. Co., Logansport[112]	Sunfield Seed Service C	....	......	94.0	0.0	10-29	....	C None
	Medium Red Clover, Lot 12196	Chicago, Ill. F	98.82	0.36	80.0	12.5	3-30	891	F Buckhorn 9; common plantain 126; curled dock 18; dodder 9; red sorrel 9; yellow trefoil 90
9735	Urmston Grain & Seed Co., Galveston[111]	Sunfield Seed Service C	99.50	......	94.0	0.0	10-29	....	C Buckhorn 20; curled dock 8; red sorrel 8
	Medium Red Clover, Lot 12199	Chicago, Ill. F	98.80	0.51	81.5	10.5	5-30	4,707	F Buckhorn 27; common plantain 54; curled dock 18; wild carrot 18

9742	Urmston Grain & Seed Co., Galveston	Sunfield Seed Service	C	99.75	......	94.0	0.0	10–29	....	C	Buckhorn 8; curled dock 40; red sorrel 20
	Mammoth Clover, Lot 13077	Chicago, Ill.	F	99.68	0.06	94.0	1.0	5–30	108	F	Buckhorn 18; curled dock 54; red sorrel 36
9122	Sunshine Feed Store, Sullivan	Sunshine Feed Store	C	99.28	......	87.0	9.0	1–30	....	C	None
	Medium Clover, Lot R	Fort Wayne, Ind.	F	99.20	0.20	93.0	3.0	3–30	1,449	F	Buckhorn 27; common plantain 279; dodder 63
9509	Shreiver, O. B., Connersville	Teweles Seed Co., L.	C	99.50	......	87.0	8.0	12–29	....	C	None
	Red Clover, Badger Brand	Milwaukee, Wis.	F	99.39	0.24	88.5	5 5	4–30	288	F	Red sorrel 9; yellow trefoil 9
9750	Tipton Milling Co., Tipton[113]	Tipton Milling Co.	C	99.50	......	90.0	0.0	1–30	....	C	None
	Mammoth Clover, Lot H	Tipton, Ind.	F	97.71	1.67	87.0	2.0	5–30	2,043	F	Buckhorn 9; common plantain 81; curled dock 432; wild carrot 81
9331	Victoria Mill & Elev. Co., Jasper[114]	Victoria Mill & Elev. Co.	C	98.40	......	97.0	0.0	2–30	....	C	Bracted plantain 180; buckhorn 720; chicory 270; curled dock 180
	Mammoth Clover, Lot 2	Jasper, Ind.	F	98.02	0.39	88.5	7.0	4 30	4,824	F	Bracted plantain 198; buckhorn 2,790; common plantain 270; curled dock 1,170; dodder 18; red sorrel 198
9335	Victoria Mill & Elev. Co., Jasper	Victoria Mill & Elev. Co.	C	98 27	......	96.0	0 0	2–30	....	C	Buckhorn 1,890; chicory 540
	Red Clover, Lot 1	Jasper, Ind.	F	98 64	0.04	92.5	5 0	4–30	4,590	F	Bracted plantain 9; buckhorn 4,320; common plantain 162; curled dock 9
9604	†Graft, C. V., Winchester	Warren-Teed Seed Co.	C	99 64	......	85.0	11.0	12–29	....	C	None
	Medium Red Clover, Lot R-160	Chicago, Ill.	F	99.50	0.06	79 0	11.5	5–30	495	F	Curled dock 9; yellow trefoil 36
8999	Sample, John L., Madison[115]	Warren-Teed Seed Co.	C	99.21	......	88.0	5 0	11–29	....	C	Curled dock 90
	Mammoth Clover, Lot M-93	Chicago, Ill.	F	98.44	0 34	86 5	3.0	2 30	2,628	F	Curled dock 54; red sorrel 144
9192	Christner Bros., Topeka[116]	Wertheimer & Son	C	93 78	......	90 0	0.0	1-30	....	C	None
	Super Medium Clover, Lot 8306	Ligonier, Ind.	F	92.08	0.23	79.5	15.0	3–30	3,636	F	Curled dock 72; yellow trefoil 1,134
9502	Whelan, Omer G., Richmond[117]	Whelan, Omer G.	C	99 78	......	88 0	12 0	3–30	....	C	Common plantain 720; curled dock 90
	Mammoth Clover, Lot Black	Richmond, Ind.	F	97 83	0.20	88 0	9.0	3–30	189	F	Bracted plantain 9; buckhorn 126; curled dock 9; dodder 9; wild carrot 36
9420	Wilson, John, Roachdale	Wilson, John	C	99.14	......	85 5	8.5	12–29	....	C	Buckhorn 90; curled dock 180
	Mammoth Clover, Lot 47628	Roachdale, Ind.	F	98.98	0.42	82.5	14.0	4–30	297	F	Buckhorn 45; curled dock 162
9202	Wolfe Grain Co., Shipshewana	Wolfe Grain Co.	C	99.21	......	83.5	6.5	......	....	C	Buckhorn 900; common plantain 450; prickly lettuce 90
	Medium Clover, Lot C	Shipshewana, Ind.	F	99.46	0.30	82.5	9.5	4–30	1,026	F	Bracted plantain 45; buckhorn 558; common plantain 117; red sorrel 108; wild carrot 18

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*Not labeled.

†Certified by retailer.

C and F stands, respectively, for Claimed and Found.

[109] Removed from sale. Misbranded. Returned to Distributor.

[110] Returned to Distributor.

[111] Removed from sale. Misbranded. Returned to Distributor.

[112] Tag incomplete. Misbranded. Returned to Distributor.

[113] Removed from sale. Misbranded. All sold.

[114] Sold to Wholesaler.

[115] Retagged.

[116] Contains 5.87% Sweet Clover with 68.0% Germination and 16.0% Hard Seeds.

[117] Removed from sale. Misbranded. Retagged.

RED CLOVER—Continued

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor	Purity, per cent	Inert Matter, per cent	Germination, per cent	Hard Seeds, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds	Number per Pound of each of the Noxious Weed Seeds Specified in the Law
9302	Wolfe Grain Co., Shipshewana	Wolfe Grain Co. C	97.39	......	88.0	6 5	3-30	....	C Buckhorn 90; curled dock 90; red sorrel 990
	Mammoth Clover	Shipshewana, Ind. F	97.40	0 22	82.5	13 0	4-30	576	F Buckhorn 18; red sorrel 468
9303	Wolfe Seed Co., Shipshewana	Wolfe Grain Co. C	99.66	......	84 5	7.5	2-30	......	C Bracted plantain 90
	Medium Clover, Lot "Y"	Shipshewana, Ind. F	99.74	0.14	80.0	16.5	4-30	396	F Bracted plantain 18; buckhorn 54; common plantain 126; red sorrel 18
9660	Woods & Pritsch, Sheridan	Woods & Pritsch C	90.00	......	90 0	......	......	....	C Buckhorn 2,000
	Medium Red Clover, Lot Dye	Sheridan, Ind. F	95.18	1.07	86.5	8.0	5-30	9,396	F Buckhorn 4,410; common plantain 1,620; curled dock 990; red sorrel 9; wild carrot 27

SWEET CLOVER

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, per cent	Inert Matter, per cent	Germination, per cent	Hard Seeds, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds		Number per Pound of each of the Noxious Weed Seeds Specified in the Law
9503	Farmers Grain Co., Pershing[118]	Ackerman Co., The	C	99.14		80.0	9.0	12-29		C	Curled dock 90
	Yellow Blossom Sweet Clover, Lot 1	Lima, O.	F	97.93	1.11	59.5	8.0	3-30	540	F	None
8890	Joy, Wm., South Whitley[119]	Berry Seed Co.	C	99.00		94.0		7-29		C	None
	Biennal W. B. Sweet Clover, Lot 14346	Clarinda, Iowa	F	98.34	0.24	61.0	9.0	2-30	4,797	F	Mustard 27
9193	Campbell & Co., Kendallville	Campbell & Co.	C	99.84		93.5	3.5	12-29		C	None
	Grundy Co. W. B. Sweet Clover, Lot S-132	Kendallville, Ind.	F	99.88	0.08	92.5	3.5	4-30	270	F	None
9864	Eberts Grain Co., Scottsburg	Chambers Seed Co.	C	99.00		90.0		1-30		C	None
	W. B. Sweet Clover, Lot 1151	Louisville, Ky.	F	99.54	0.14	87.0	3.0	5-30	1,098	F	Mustard 18
8862	Reid, V. T., Salem[120]	Chambers Seed Co.	C	98.00		90.0		6-29		C	None
	W. B. Sweet Clover, Lot 1146	Louisville, Ky.	F	99.30	0.44	66.5	10.5	2-30	1,035	F	Mustard 126; plantain 9
9928	*Stephenson & Co., Leavenworth[121]	Chambers Seed Co.	C							C	
	W. B. Sweet Clover	Louisville, Ky.	F	99.66	0.04	92.5	2.5	4-30	1,188	F	Canada thistle 9; mustard 9
9333	Victoria Mill & Elev. Co., Jasper[118]	Cover, U. J.	C	99.25		98.0	2.0	1-30		C	None
	W. B. Sweet Clover, Lot WS-63	Mount Gilead, Ohio	F	99.12	0.64	59.0	5.0	4-30	378	F	Canada thistle 18
9739	Bunker Hill Elev. Co., Bunker Hill	Crabbs Reynolds Taylor Co.	C	99.36		85.0		12-29		C	None
	W. B. Sweet Clover, Lot SC	Crawfordsville, Ind.	F	99.40	0.16	82.5	3.5	5-30	900	F	None
66	Burket Elev. Co., Burket	Crabbs Reynolds Taylor Co.	C	99.62		87.5	3.5	3-30		C	None
	W. B. Sweet Clover, Lot SU	Crawfordsville, Ind.	F	99.82	0.04	81.0	1.5	7-30	540	F	None
9450	Farmers Cooperative Elev. Co., Clay City	Crabbs Reynolds Taylor Co.	C	99.52		82.0	5.0	2-30		C	None
	W. B. Sweet Clover, Lot SL	Crawfordsville, Ind.	F	99.59	0.12	66.0	18.0	5-30	90	F	None
9414	Marion Hardware Co., Marion	Crabbs Reynolds Taylor Co.	C	99.36		85.0	7.0	12-29		C	None
	Y. B. Sweet Clover, Lot SC	Crawfordsville, Ind.	F	99.32	0.24	86.5	3.5	4-30	819	F	Mustard 9
9416	Marion Hardware Co., Marion	Crabbs Reynolds Taylor Co.	C	99.52		82.0	5.0	1-30		C	None
	W. B. Sweet Clover, Lot SL	Crawfordsville, Ind.	F	99.62	0.08	64.0	15.5	5-30	189	F	Mustard 9
9044	Nixon & Van Deventer, Attica	Crabbs Reynolds Taylor Co.	C	99.64		85.0		12-29		C	None
	W. B. Sweet Clover, Lot SL	Crawfordsville, Ind.	F	99.44	0.10	88.0	2.5	4-30	396	F	Canada thistle 9; mustard 27
9106	Quinlan Seed Store, Terre Haute	Crabbs Reynolds Taylor Co.	C	99.16		82.0		12-29		C	None
	W. B. Sweet Clover, Lot SG	Crawfordsville, Ind.	F	99.12	0.33	70.0	2.0	4-30	1,944	F	Mustard 54
9390	See & Son, Macy	Crabbs Reynolds Taylor Co.	C	99.64		85.0	4.0	12-29		C	None
	W. B. Sweet Clover, Lot SC	Crawfordsville, Ind.	F	99.82	0.06	89.5	1.0	4-30	396	F	Mustard 36
8919	Weinkauf Grain Co., La Crosse	Crabbs Reynolds Taylor Co.	C	99.64		85.0	4.0	12-29		C	None
	W. B. Sweet Clover, Lot S-1	Crawfordsville, Ind.	F	99.47	0.12	90.0	0.5	2-30	855	F	Mustard 45

*Not labeled.

†Certified by retailer.

C and F stands, respectively, for Claimed and Found.

[118] Removed from sale. Misbranded. All sold.

[119] Misbranded. Returned and other seed furnished.

[120] Removed from sale. Misbranded. Returned to Distributor.

[121] Returned to Distributor.

SWEET CLOVER—Continued

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, per cent	Inert Matter, per cent	Germination, per cent	Hard Seeds, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds		Number per Pound of each of the Noxious Weed Seeds Specified in the Law
9511	Chance Bros., Connersville[123]	Crawfordsville Seed Co.	C	99.00		85.0		2-30		C	None
	Y. B. Sweet Clover, Lot YB-588	Crawfordsville, Ind.	F	99.54	0.32	67.5	0.5	4-30	270	F	None
8804	Crawfordsville Seed Co., Crawfordsville[124]	Crawfordsville Seed Co.	C	99.00		92.0	5.0	12-29		C	None
	Y. B. Sweet Clover, Lot 588	Crawfordsville, Ind.	F	99.52	0.40	73.5	1.0	1-30	360	F	None
8809	Crawfordsville Seed Co., Crawfordsville[124]	Crawfordsville Seed Co.	C	99.50		92.0	5.0	12-29		C	None
	W. B. Sweet Clover, Lot 589	Crawfordsville, Ind.	F	99.80	0.16	75.5	1.0	1-30		F	None
8811	Crawfordsville Seed Co., Crawfordsville	Crawfordsville Seed Co.	C	99.50		92.0	5.0	12-29		C	None
	W. B. Sweet Clover, Lot 587	Crawfordsville, Ind.	F	99.90	0.08	89.0	3.0	1-30	18	F	Buckhorn 9; common plantain 9
8812	Crawfordsville Seed Co., Crawfordsville	Crawfordsville Seed Co.	C	99.50		92.0	5.0	12-29		C	None
	W. B. Sweet Clover, Lot 586	Crawfordsville, Ind.	F	99.92	0.04	93.5	3.5	1-30		F	None
9569	Farmers Grain Co., Rensselaer	Crawfordsville Seed Co.	C	99.50		92.0	5.0	12-29		C	None
	Grundy Co. W. B. Sweet Clover, Lot 586	Crawfordsville, Ind.	F	99.98	0.02	88.0	6.0	4-30		F	None
9411	Grant Co. Farm Bureau, Marion	Crawfordsville Seed Co.	C	99.50		92.0	5.0	12-29		C	None
	W. B. Sweet Clover, Lot 587	Crawfordsville, Ind.	F	99.92	0.04	88.0	4.0	4-30	90	F	None
8912	Morocco Grain Co., Morocco	Crawfordsville Seed Co.	C	99.50		92.0	5.0	1-29		C	None
	W. B. Sweet Clover, Lot 587	Crawfordsville, Ind.	F	99.86	0.14	88.5	5.0	4-30		F	None
9492	Newcastle Elevator, Newcastle	Crawfordsville Seed Co.	C	99.50		92.0	5.0	12-29		C	None
	Grundy Co. W. B. Sweet Clover, Lot 586	Crawfordsville, Ind.	F	99.92	0.06	87.0	7.0	4-30	90	F	None
9073	Rush Shelby Grain Co., Manilla	Crawfordsville Seed Co.	C	99.00		92.0	5.0	1-30		C	None
	Y. B. Sweet Clover, Lot 588	Crawfordsville, Ind.	F	99.68	0.18	75.0	0.5	2-30		F	None
9805	Throckmorton & Son, Ed., Franklin	Crawfordsville Seed Co.	C	99.00		92.0	5.0	1-30		C	None
	W. B. Sweet Clover, Lot 590	Crawfordsville, Ind.	F	99.56	0.12	80.5	1.5	5-30	1,080	F	None
9802	†Byers Seed Co., Franklin	Davenport Seed Co.	C	99.94		96.0		1-30		C	None
	Grundy Co. Dwarf Sweet Clover, Lot G. Co.	Davenport, Iowa	F	99.72	0.10	94.5	1.5	4-30	450	F	None
9574	Belshaw Farmers & Gleaners, Lowell[126]	Dickinson Co., The Albert	C	99.32		72.0	20.0	1-30		C	None
	W. B. Sweet Clover, Lot 25629	Chicago, Ill.	F	99.72	0.20	81.0	6.0	4-30		F	None
8879	Cordes Hardware Co., Seymour	Dickinson Co., The Albert	C	99.50		82.0	9.0	11-29		C	None
	W. B. Sweet Clover, Lot 25724	Chicago, Ill.	F	99.58	0.12	83.5	4.5	2-30	279	F	Mustard 9
9686	Farmers Cooperative Co., Knox	Dickinson Co., The Albert	C	99.28		90.0		11-29		C	None
	W. B. Sweet Clover, Lot 25525	Chicago, Ill.	F	99.64	0.10	77.0	1.5	6-30	810	F	None
9722	Farmers Grain & Supply Co., Oak	Dickinson Co., The Albert	C	99.00		73.0	18.0	4-29		C	None
	W. B. Sweet Clover, Lot 25454	Chicago, Ill.	F	99.56	0.22	75.0	0.0	4-30	486	F	Buckhorn 9; curled dock 9; mustard 36; yellow trefoil 72
9671	Gotto-Mathias, Michigan City	Dickinson Co., The Albert	C	99.60		73.0	11.0	2-30		C	None
	Y. B. Sweet Clover, Lot 25657	Chicago, Ill.	F	99.68	0.26	79.0	9.5	5-30	198	F	Curled dock 18

9123	Griffin Hardware, Carlisle	Dickinson Co., The Albert	C	99.06		86.0	5.0	3-29		C	None
	W. B. Sweet Clover, Lot 25545	Chicago, Ill.	F	99.67	0.08	85.0	5.0	4-30	288	F	Mustard 18
9006	Hunger, C. G., Madison	Dickinson Co., The Albert	C	99.92		88.0	6.0	9-29		C	None
	Y. B. Sweet Clover, Lot 25505	Chicago, Ill.	F	99.86	0.12	77.5	5.0	5-30	9	F	Curled dock 9
9575	Keilman, L., Dyer	Dickinson Co., The Albert	C	98.60		87.0	4.0	12-29		C	Mustard 32
	W. B. Sweet Clover, Lot 25669	Chicago, Ill.	F	99.36	0.06	79.5	1.5	5-30	1,800	F	None
9397	Naber & Co., Chas. F., Fairmount	Dickinson Co., The Albert	C	99.36		70.0	21.0	1-30		C	None
	Grundy Co. Sweet Clover, Lot 25595	Chicago, Ill.	F	99.80	0.04	92.5	0.5	4-30	342	F	Canada thistle 9; mustard 63
9398	Naber & Co., Chas. F., Fairmount	Dickinson Co., The Albert	C	99.00		88.0	6.0	11-29		C	None
	W. B. Sweet Clover, Lot 25547	Chicago, Ill.	F	99.25	0.14	80.5	7.5	4-30	1,107	F	Mustard 27
9646	Pinola Cooperative Co., LaPorte	Dickinson Co., The Albert	C	99.58		72.0	18.0	2-30		C	None
	W. B. Sweet Clover, Lot 25659	Chicago, Ill.	F	99.30	0.20	81.5	1.0	5-30	1,548	F	Canada thistle 9; mustard 9
9782	Pritchard & Rafert, Pendleton	Dickinson Co., The Albert	C	99.36		91.0		2-30		C	None
	Grundy Co. W. B. Sweet Clover, Lot 25595	Chicago, Ill.	F	99.46	0.14	87.5	0.5	5-30	486	F	Canada thistle 9; mustard 81; quack grass 27; red sorrel 9
9120	Riggs & Son, W. G., Sullivan	Dickinson Co., The Albert	C	99.14		90.0		11-29		C	None
	W. B. Sweet Clover, Lot 25546	Chicago, Ill.	F	99.46	0.08	87.5	4.5	4-30	729	F	Curled dock 9
9639	Roper & Brown, Hobart	Dickinson Co., The Albert	C	99.44		72.0	19.0	2-30		C	None
	W. B. Sweet Clover, Lot 25662	Chicago, Ill.	F	99.82	0.10	89.0	1.0	5-30	288	F	Mustard 9; yellow trefoil 9
9213	Rush Service Bureau, Rushville	Dickinson Co., The Albert	C	99.06		86.0	5.0	11-29		C	None
	W. B. Sweet Clover, Lot 25640	Chicago, Ill	F	99.39	0.08	86.0	4.5	4-30	918	F	Curled dock 9; red sorrel 9
9214	Rush Service Bureau, Rushville	Dickinson Co., The Albert	C	99.00		92.0		1-30		C	None
	W. B. Sweet Clover, Lot 25641	Chicago, Ill.	F	98.56	0.12	89.5	0.0	4-30	4,050	F	None
9734	Sommerfield & Swanson, LaPorte	Dickinson Co., The Albert	C	99.28		77.0		4-29		C	None
	W. B. Sweet Clover, Lot 25448-9	Chicago, Ill.	F	98.76	0.08	82.0	1.0	5-30	3,708	F	Buckhorn 9; mustard 9
8696	Spurgin, A. B., Columbus	Dickinson Co., The Albert	C	99.50		82.0	9.0	11-29		C	None
	W. B. Sweet Clover, Lot 25724	Chicago, Ill.	F	99.78	0.06	78.0	12.5	12-29	180	F	None
9185	Stiefel Grain Co., Albion	Dickinson Co., The Albert	C	99.14		90.0		11-29		C	None
	W. B. Sweet Clover, Lot 25546	Chicago, Ill.	F	99.48	0.12	86.0	3.0	4-30	747	F	Mustard 27
9677	Wolf, C. G., North Liberty	Dickinson Co., The Albert	C	98.60		87.0	4.0	12-29		C	None
	W. B. Sweet Clover, Lot 25669	Chicago, Ill.	F	99.03	0.06	82.5	4.0	6-30	2,529	F	Mustard 9
9538	Woodbury-Elliott Co., Muncie	Dickinson Co., The Albert	C	99.58		72.0	18.0	2-30		C	None
	W. B. Sweet Clover, Lot 25659	Chicago, Ill.	F	99.68	0.08	81.5	2.5	4-30	909	F	Mustard 9
9799	Byers Seed Co., Franklin	Foster-Kendall Co.	C	99.55		43.0	53.0	12-29		C	None
	W. B. Sweet Clover, Lot S-8723	Carmel, Ind	F	99.56	0.04	48.5	44.5	5-30		F	None
9662	Sheridan Milling Co., Sheridan	Foster-Kendall Co.	C	99.55		70.0	25.0	1-30		C	None
	W. B. Sweet Clover, Lot 8703	Carmel, Ind.	F	99.86	0.00	48.5	47.0	5-30	189	F	Canada thistle 9
9740	Bunker Hill Elev. Co., Bunker Hill[128]	Goodrich Bros.	C	99.00		80.0	8.0	12-29		C	None
	Y. B. Sweet Clover, Lot Lark	Winchester, Ind.	F	97.71	1.23	41.5	1.0	5-30	1,512	F	Common plantain 9; curled dock 324; mustard 9
9788	Fortville Grain Co., Fortville	Goodrich Bros.	C	99.60		90.0		12-29		C	None
	W. B. Sweet Clover, Lot Lark	Winchester, Ind.	F	99.80	0.10	90.0	2.0	5-30	18	F	Mustard 18

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*Not labeled.

†Certified by retailer.

C and F stands, respectively, for Claimed and Found.

[123] Removed from sale. Misbranded. All sold.

[124] Removed from sale. Misbranded.

[126] Sample secured from H. C. Hathaway.

[128] Removed from sale. Misbranded. Retagged.

SWEET CLOVER—Continued

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, per cent	Inert Matter, per cent	Germination, per cent	Hard Seeds, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds		Number per Pound of each of the Noxious Weed Seeds Specified in the Law
9539	Goodrich Bros., Eaton[128]	Goodrich Bros.	C	98.50	......	80 0	10 0	12-29	....	C	None
	Y. B. Sweet Clover	Winchester, Ind.	F	98.57	0.87	40.5	0.0	4-30	1,035	F	Curled dock 126; red sorrel 9
9545	Goodrich Bros., Eaton	Goodrich Bros.	C	99.00	......	90.0	......	1-30	....	C	
	W. B. Sweet Clover, Lot Lark	Winchester, Ind.	F	99.68	0.08	91.5	6.0	4-30	198	F	Canada thistle 9; dodder 9
9765	Goodrich Bros., Gaston	Goodrich Bros.	C	99.60	......	90.0	......	12-29	....	C	None
	W. B. Sweet Clover, Lot Gaston	Winchester, Ind.	F	99.84	0.04	91.5	5.5	5-30	288	F	Mustard 18
9771	Goodrich Bros., Gaston[128]	Goodrich Bros.	C	98.00	......	80.0	......	12-29	....	C	None
	Y. B. Sweet Clover, Lot Gaston	Winchester, Ind.	F	98.70	0.61	42.0	0 5	5-30	738	F	Buckhorn 45; Canada thistle 9; common plantain 45; curled dock 207; mustard 36; red sorrel 18; wild carrot 18
9599	Goodrich Bros., Winchester	Goodrich Bros.	C	99.00	......	80.0	15.0	12-29	....	C	None
	Y. B. Sweet Clover, Lot Lark	Winchester, Ind.	F	99 62	0.24	84.5	4.5	5-30	558	F	Canada thistle 9; mustard 9
9600	Goodrich Bros., Winchester	Goodrich Bros.	C	99.66	......	87.0	5.0	1-30	....	C	None
	W. B. Sweet Clover, Lot Lark	Winchester, Ind.	F	99.72	0.02	93.0	3.0	5-30	738	F	Canada thistle 9; mustard 9
9594	†Graft, C. V., Winchester	Goodrich Bros.	C	99.66	......	87.0	5.0	1-30	....	C	None
	W. B. Sweet Clover, Lot Lark	Winchester, Ind.	F	99.66	0.06	89.0	3.5	5-30	297	F	Mustard 27
9403	Hinshaw Grain Co., Summitville	Goodrich Bros.	C	99.66	......	87.0	5.0	1-30	....	C	None
	W. B. Sweet Clover, Lot Lark	Winchester, Ind.	F	99.66	0.12	89.0	3.5	4-30	540	F	None
9756	Kiefer Feed & Supply Co., Elwood	Goodrich Bros.	C	99.45	......	82.0	9.0	2-29	....	C	None
	Y. B. Sweet Clover, Lot 125K	Winchester, Ind.	F	99.21	0.43	80 0	4.5	5-30	1,332	F	Mustard 72
9779	McCordsville Grain Co., McCordsville[129]	Goodrich Bros.	C	99.00	......	82.0	8.0	12-29	....	C	None
	Y. B. Sweet Clover	Winchester, Ind.	F	98.84	0.60	48.5	0.5	5 30	....	F	None
9227	McCarty Hardware Co., Ft. Branch[130]	Heldt Co., The	C	99.09	......	83.0	13.0	2-29	....	C	None
	W. B. Sweet Clover, Lot 1715	Evansville, Ind.	F	99.29	0.57	52.0	5.0	4-30	378	F	Bracted plantain 9; mustard 9
9295	Wedeking & Co., C. W., Dale[130]	Heldt Co., The	C	99.06	......	85.0	......	2-30	....	C	None
	W. B. Sweet Clover, Lot 1923	Evansville, Ind.	F	99.32	0.48	44.5	0.5	4-30	900	F	None
9817	Campbell Bros., Greencastle	Hooton-Davis Seed Co.	C	99.50	......	87.0	8.0	2-30	....	C	None
	W. B. Sweet Clover, Lot W-195	Lebanon, Ind.	F	99.84	0.10	81.0	12.0	6-30	189	F	Curled dock 9
8900	Fair Grounds Elev. Co., Frankfort[131]	Hooton-Davis Seed Co.	C	99.50	......	90.0	3.0	......	....	C	None
	W. B. Sweet Clover, Lot W-178	Lebanon, Ind.	F	99.92	0.08	71.0	26.0	4-30	....	F	None
9944	Glenwood Grain Co., Glenwood	Hooton-Davis Seed Co.	C	99.50	......	70.0	......	2-30	....	C	None
	W. B. Sweet Clover, Lot W-197	Lebanon, Ind.	F	99.90	0.10	87.0	1.5	6-30	....	F	None
9714	Marburger Bros., Peru	Hooton-Davis Seed Co.	C	99.50	......	70.0	......	1-30	....	C	None
	W. B. Sweet Clover, Lot Parr	Lebanon, Ind.	F	99.64	0.26	74.0	6.5	5-30	369	F	Mustard 9

9418	Marion Hardware Co., Marion	Hooton-Davis Seed Co.	C	99.88	......	70.0	23.0	1-30	....	C	None
	W. B. Sweet Clover, Lot W-178	Lebanon, Ind.	F	99.84	0.16	69.5	29.0	4-30	....	F	None
9088	New Augusta Grain & Supply Co., New Augusta	Hooton-Davis Seed Co.	C	99.88	......	70.0	23.0	1-30	....	C	None
	W. B. Sweet Clover, Lot W-178	Lebanon, Ind.	F	99.78	0.20	75.5	23.0	4-30	....	F	None
8584	Urmston Grain & Seed Co., Camden[132]	Hooton-Davis Seed Co.	C	99.40	......	70.0	2.0	12-	....	C	None
	W. B. Sweet Clover, Lot W-103	Lebanon, Ind.	F	99.19	0.59	62.0	0.5	8-29	1,674	F	Buckhorn 9; Canada thistle 9; yellow trefoil 36
9433	Clay Co. Farm Bureau, Brazil	Indiana Farm Bureau Pur. Dept., Inc.	C	99.70	......	86.0	7.0	11-29	....	C	None
	W. B. Sweet Clover, Lot SC-340	Indianapolis, Ind.	F	99.79	0.19	84.5	8.0	4-30	90	F	None
9485	Henry Co. Farm Bureau, Newcastle	Indiana Farm Bureau Pur. Dept., Inc.	C	99.50	......	86.0	7.0	11-29	....	C	None
	Y. B. Sweet Clover, Lot YC-380	Indianapolis, Ind.	F	100.00	0.00	90.5	3.0	4-30	....	F	None
9487	Henry Co. Farm Bureau, Newcastle	Indiana Farm Bureau Pur. Dept., Inc.	C	99.70	......	86.0	7.0	11-29	....	C	None
	W. B. Sweet Clover, Lot SC-340	Indianapolis, Ind.	F	99.82	0.18	85.0	9.0	4-30	....	F	None
9522	Indiana Dairy Marketing Ass'n., Muncie	Indiana Farm Bureau Pur. Dept., Inc.	C	99.70	......	86.0	7.0	11-29	....	C	None
	W. B. Sweet Clover, Lot SC-340	Indianapolis, Ind.	F	99.84	0.14	85.5	8.0	4-30	90	F	None
9140	Purdue Agronomy Dept.	Indiana Farm Bureau Pur. Dept., Inc.	C	99.70	......	86.0	7.0	11-29	....	C	None
	W. B. Sweet Clover, Lot SC-340	Indianapolis, Ind.	F	99.92	0.08	79.5	8.0	2-30	....	F	None
9128	Sullivan Co. Farm Bureau, Sullivan	Indiana Farm Bureau Pur. Dept., Inc.	C	99.70	......	86.0	7.0	11-29	....	C	None
	W. B. Sweet Clover, Lot SC-340	Indianapolis, Ind.	F	99.86	0.12	84.0	8.5	4-30	....	F	None
9452	Center Point Grain Co., Center Point	Indiana Seed Co.	C	99.50	......	82.0	7.0	1-30	....	C	Mustard 180
	W. B. Sweet Clover, Lot 595	Indianapolis, Ind.	F	99.76	0.20	82.0	7.5	4-30	180	F	None
9510	Chance Bros., Connersville	Indiana Seed Co.	C	99.65	......	88.0	6.0	1-30	....	C	None
	W. B. Sweet Clover, Lot 1345	Indianapolis, Ind.	F	99.82	0.02	91.0	0.5	4-30	....	F	None
9061	Oneal, W. Sherman, Rushville	Indiana Seed Co.	C	99.50	......	80.0	10.0	6-29	....	C	None
	W. B. Sweet Clover, Lot 20880	Indianapolis, Ind.	F	99.34	0.60	73.0	1.5	2-30	270	F	None
9069	Oneal, W. Sherman, Rushville	Indiana Seed Co.	C	99.00	......	70.0	19.0	1-29	....	C	None
	Y. B. Sweet Clover, Lot 654	Indianapolis, Ind.	F	99.32	0.54	83.5	9.0	4-30	450	F	None
9526	Weer, F. W., Anderson	Indiana Seed Co.	C	99.15	......	88.0	6.0	1-30	....	C	None
	W. B. Sweet Clover, Lot 1345	Indianapolis, Ind.	F	99.88	0.12	94.0	1.0	4-30	....	F	None
9549	Williamson & Co., J. H., Muncie	Indiana Seed Co.	C	99.15	......	88.0	6.0	1-30	....	C	None
	W. B. Sweet Clover, Lot 1345	Indianapolis, Ind.	F	99.98	0.02	90.5	0.5	4-30	18	F	Mustard 18
9306	Indiana State Highway Commission, Indianapolis	Kellogg Seed Co.	C	99.40	......	89.0	2.0	11-29	....	C	None
	Y. B. Sweet Clover, Lot AB	Milwaukee, Wis.	F	99.66	0.20	82.5	1.0	3-30	459	F	Mustard 9
9134	Knox Co. Farm Bureau, Vincennes	Knox Co. Farm Bureau	C	99.88	......	79.5	5.5	1-30	....	C	None
	W. B. Sweet Clover, Lot 756	Vincennes, Ind.	F	99.94	0.06	75.5	14.5	4-30	....	F	None
9875	†Gelzleichter & Son, J., Huntington	Kraus, Sam	C	99.76	......	82.5	16.5	2-30	....	C	None
	W. B. Sweet Clover, Lot SK	Fort Wayne, Ind.	F	99.88	0.10	82.5	8.5	5-30	9	F	Mustard 9
9381	Haldeman-Baum Co., Akron	Kraus, Sam	C	99.76	......	82.5	16.5	2-30	....	C	None
	W. B. Sweet Clover, Lot Car 1	Fort Wayne, Ind.	F	99.37	0.16	81.5	10.5	4-30	180	F	None
8985	Kraus, Sam, Fort Wayne	Kraus, Sam	C	99.73	......	74.5	17.0	12-29	....	C	None
	Y. B. Sweet Clover	Fort Wayne, Ind.	F	99.33	0.63	71.0	19.5	2-30	27	F	Curled dock 27

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*Not labeled.

†Certified by retailer.

C and F stands, respectively, for Claimed and Found.

[129] Removed from sale. Misbranded. Retagged.

[130] Removed from sale. Misbranded. All sold.

[131] Removed from sale. Misbranded.

[132] Returned to Distributor.

SWEET CLOVER—Continued

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, per cent	Inert Matter, per cent	Germination, per cent	Hard Seeds, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds		Number per Pound of each of the Noxious Weed Seeds Specified in the Law
9262	Nathan Grain Co., St. Joe	Kraus, Sam	C	99.76		82.5	16.5	2-30		C	None
	W. B. Sweet Clover, Lot Car No. 1	Fort Wayne, Ind.	F	99.64	0.04	85.0	13.0	4-30	135	F	Mustard 45
9263	Nathan Grain Co., St. Joe	Kraus, Sam	C	99.73		74.5	17.5	12-29		C	None
	Y. B. Sweet Clover, Lot No. 1	Fort Wayne, Ind.	F	99.70	0.22	72.0	16.0	4-30	90	F	None
8975	Andrews Elevator, Andrews	Kraus & Apfelbaum	C	99.80		86.0	5.0	1-30		C	None
	W. B. Sweet Clover, Lot 1	Fort Wayne, Ind.	F	99.82	0.16	80.0	6.0	2-30	90	F	None
9590	Beach & Simmers, Albany	Kraus & Apfelbaum	C	99.50		82.0	9.0	2-30		C	None
	Y. B. Sweet Clover, Lot 1	Fort Wayne, Ind.	F	99.02	0.63	80.0	1.0	5-30	1,134	F	Canada thistle 9; mustard 36; quack grass 9
9593	Beach & Simmers, Albany	Kraus & Apfelbaum	C	99.50		87.0	5.0	2-30		C	None
	W. B. Sweet Clover, Lot 3	Fort Wayne, Ind.	F	99.36	0.20	87.0	4.5	5-30	639	F	Mustard 9
9366	Cook, E. N., Plymouth	Kraus & Apfelbaum	C	99.80		86.0	5.0	1-30		C	None
	W. B. Sweet Clover, Lot 1	Fort Wayne, Ind.	F	99.88	0.12	82.0	7.0	4-30		F	None
9647	Farmers Elev. Co., So. Whitley	Kraus & Apfelbaum	C	99.72		87.0	5.0	3-30		C	None
	W. B. Sweet Clover, Lot 6	Fort Wayne, Ind.	F	99.13	0.36	77.0	4.0	5-30	207	F	Mustard 27
9614	Geneva Milling & Grain Co., Geneva	Kraus & Apfelbaum	C	99.50		92.0	2.0	2-30		C	None
	Y. B. Sweet Clover, Lot 1	Fort Wayne, Ind.	F	99.37	0.43	74.5	2.5	5-30	747	F	Mustard 27
9699	Huntington Equity Ex. Co., Huntington	Kraus & Apfelbaum	C	99.50		87.0	5.0	2-30		C	None
	W. B. Sweet Clover, Lot 3	Fort Wayne, Ind.	F	99.31	0.02	79.0	8.0	5-30	288	F	Canada thistle 9; mustard 9
8980	Kraus & Apfelbaum, Fort Wayne	Krauf & Apfelbaum	C	99.50		86.0	5.0	1-30		C	None
	W. B. Sweet Clover, Lot 2	Fort Wayne, Ind.	F	99.54	0.30	73.5	7.5	2-30	306	F	Mustard 27; quack grass 9
9702	Morrow Grain Co., The, Wabash	Kraus & Apfelbaum	C	99.60		89.0	4.0	2-30		C	None
	W. B. Sweet Clover, Lot 5	Fort Wayne, Ind.	F	99.40	0.06	83.5	4.0	5-30	297	F	Mustard 27
9650	†Syler, Clay, North Manchester[133]	Kraus & Apfelbaum	C	99.50		86.0	5.0	1-30		C	None
	W. B. Sweet Clover, Lot 2	Fort Wayne, Ind.	F	99.23	0.51	68.0	11.5	5-30	207	F	Canada thistle 9; mustard 10
9723	Phillips, J. C., Star City	Kraus & Apfelbaum	C	99.50		90.0	2.0	3-30		C	None
	Grundy Co. Sweet Clover, Lot 1	Fort Wayne, Ind.	F	99.84	0.02	89.0	1.0	5-30	360	F	None
8763	Chance Bros., Connersville	McCullough Seed Co., J. Chas.	C	99.72		97.0		9-29		C	None
	White Scarified Sweet Clover, Lot 3685	Cincinnati, Ohio	F	99.80	0.20	93.0	1.0	1-30		F	None
9019	Hunter, Wm. M., Versailles[134]	McCullough Seed Co., J. Chas.	C	99.76		95.0		10-29		C	Mustard 9
	White Scarified Sweet Clover, Lot 3723	Cincinnati, Ohio	F	99.86	0.12	50.5	44.0	2-30	108	F	Mustard 18
8577	Jackson & Son, P. E., Lawrenceburg	McCullough Seed Co., J. Chas.	C	99.40		99.0		6-29		C	None
	White Scarified Sweet Clover, Lot 3153	Cincinnati, Ohio	F	99.54	0.06	91.5	1.0	8-29	1,647	F	Mustard 27
9025	Krick & Sons, A., Milan[135]	McCullough Seed Co., J. Chas.	C	99.70		92.0	2.0	11-29		C	Curled dock 180
	Yellow Scarified Sweet Clover, Lot 3714	Cincinnati, Ohio	F	98.91	0.65	71.0	9.5	2-30	1,206	F	Curled dock 180; yell

9072	Masters, Chas. L., Brookville[135]	McCullough Seed Co., J. Chas.	C	99.00	......	86.0	......	8-29	....	C	Buckhorn 90
	White Scarified Sweet Clover, Lot 3369	Cincinnati, Ohio	F	99.62	0.16	51.5	0.0	2-30	756	F	Buckhorn 18; curled dock 9; mustard 9
9494	Richmond Feed Milling Co., Richmond	McCullough Seed Co., J. Chas.	C	99.76	......	64.0	33.0	11-29	....	C	None
	White Scarified Sweet Clover, Lot 3723	Cincinnati, Ohio	F	99.96	0.02	51.0	43.0	3-30	126	F	Mustard 36
8754	Sample, John L., Madison	McCullough Seed Co., J. Chas.	C	99.72	......	8.0	88.0	12-29	....	C	None
	White Unhulled Sweet Clover, Lot 3685	Cincinnati, Ohio	F	99.25	0.63	6.5	80.5	1-30	180	F	Buckhorn 180
8876	Union Hardware Co., Seymour[135]	McCullough Seed Co., J. Chas.	C	99.50	......	88.0	2.0	11-29	....	C	None
	White Scarified Sweet Clover, Lot 3713	Cincinnati, Ohio	F	99.54	0.10	54.5	22.5	2-30	693	F	Mustard 63
8642	Wayne Co. Farm Bureau, Richmond[135]	McCullough Seed Co., J. Chas.	C	99.70	......	96.0	......	6-29	....	C	None
	W. B. Scarified Sweet Clover, Lot 3142	Cincinnati, Ohio	F	99.80	0.02	71.5	14.5	11-29	340	F	None
9056	Werst & Co., Peter, Brookville[136]	McCullough Seed Co., J. Chas.	C	99.70	......	88.0	2.0	11-29	....	C	Buckhorn 9
	White Scarified Sweet Clover, Lot 3713	Cincinnati, Ohio	F	99.66	0.24	78.0	1.0	2-30	36	F	Buckhorn 9; Canada thistle 9; mustard 9; red sorrel 9
9032	Jackson & Son, P. E., Lawrenceburg	Manthey's Seed Store	C	99.00	......	85.0	......	1-30	....	C	None
	White Sweet Clover	Cincinnati, Ohio	F	99.16	0.12	75.0	5.5	2-30	1,395	F	Mustard 45
9920	Jackson & Son, P. E., Lawrenceburg[137]	Market Gardeners Seed Co., The	C	98.80	......	90.0	......	1-30	....	C	None
	Yellow Sweet Clover, Lot 174	Cincinnati, Ohio	F	97.92	0.80	43.0	2.0	5-30	2,943	F	Buckhorn 63; Canada thistle 9; chicory 9; curled dock 36; mustard 27; red sorrel 18; yellow trefoil 171
9363	Cook, E. N., Plymouth	Mayer Grain Co.	C	99.00	......	88.0	8.0	1-29	....	C	None
	W. B. Sweet Clover, Lot A	South Whitley, Ind.	F	98.87	0.65	62.5	3.5	4-30	2,007	F	Canada thistle 27
62	Jordan & Baird, Kewanna	Mayer Grain Co.	C	99.00	......	85.0	7.0	3-30	......	C	None
	W. B. Sweet Clover, Lot A	South Whitley, Ind.	F	98.91	0.31	79.5	2.0	7-30	461	F	Mustard 36
9271	Moll, J. J., Mount Vernon[138]	Morris, E. H.	C						....	C	
	W. B. Sweet Clover, Lot WBS	Crossville, Ill.	F	99.12	0.20	84.5	2.0	3-30	1,287	F	Mustard 18; quack grass 9
8917	Lowell Grain & Hay Co., Lowell	Morris Grain & Seed Co.	C	99.64	......	95.0	......	12-29	....	C	None
	W. B. Sweet Clover, Lot 496	Morris, Ill.	F	99.38	0.06	86.5	3.0	3-30	207	F	Canada thistle 9; dodder 9; mustard 9
9577	Lowell Grain & Hay Co., Lowell[139]	Morris Grain & Seed Co.	C	99.00	......	95.0	......	12-29	....	C	None
	W. B. Sweet Clover, Lot 496	Morris, Ill.	F	99.17	0.69	78.0	1.5	4-30	90	F	None
9567	Morlan, Ernest L., Rensselaer[140]	Morris Grain & Seed Co.	C	99.96	......	95.0	......	12-29	......	C	None
	Grundy Co. Sweet Clover, Lot 27-B	Morris, Ill.	F	99.46	0.18	73.5	21.5	4-30	90	F	None
9570	Morlan, Ernest L., Rensselaer[137]	Morris Grain & Seed Co.	C	99.70	......	97.0	......	11-29	....	C	None
	W. B. Sweet Clover, Lot Mor Grain	Morris, Ill.	F	99.62	0.12	77.5	1.0	4-30	297	F	Mustard 27
9085	Nading Grain Co., Wm., Waldron	Nading Grain Co., Wm.	C	99.64	......	85.0	4.0	12-29	....	C	None
	W. B. Sweet Clover, Lot S1	Waldron, Ind.	F	99.36	0.24	93.5	1.5	3-30	288	F	Mustard 18
8837	Utterback, F. E., Washington[139]	Ohio Valley Seed Co.	C	98.65	......	90.0	.....	10-29	....	C	None
	Unhulled Sweet Clover, Lot D-698	Evansville, Ind.	F	97.59	1.70	9.5	72.5	1-30	1,440	F	Mustard 171; quack grass 279

*Not labeled.
†Certified by retailer.
C and F stands, respectively, for Claimed and Found.
[133] Retagged.
[134] Removed from sale Misbranded. Returned to Distributor.
[135] Removed from sale. Misbranded. Retagged.
[136] Retagged.
[137] Removed from sale. Misbranded Retagged.
[138] Not tagged. Labels furnished.
[139] Removed from sale. Misbranded. Returned to Distributor.
[140] Removed from sale. Misbranded.

SWEET CLOVER—Continued

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, per cent	Inert Matter, per cent	Germination, per cent	Hard Seeds, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds		Number per Pound of each of the Noxious Weed Seeds Specified in the Law
9334	Bohnert & Son, A. M., Jasper[137]	Purcell Seed Co.	C	99.14		90.0		8-29		C	Mustard 90
	Tru Val W. B. Sweet Clover, Lot 7851	Evansville, Ind.	F	98.45	0.70	71.5	0.5	3-30	4,023	F	Mustard 63
8585	Boonshot Hardware Co., Petersburg[139]	Purcell Seed Co.	C	95.00		85.0		3-29		C	Curled dock 90
	W. B. Sweet Clover, Lot 7758	Evansville, Ind.	F	95.48	0.59	29.0	5.0	8-29	2,007	F	Buckhorn 270; Canada thistle 27; curled dock 27; dodder 9; red sorrel 9; yellow trefoil 45
9130	Emison Hardware Co., Vincennes[141]	Purcell Seed Co.	C	99.42		90.0		7-29		C	Mustard 90
	"Tru Val" W. B. Sweet Clover, Lot 7851	Evansville, Ind.	F	99.02	0.66	79.0	0.0	3-30	1,647	F	Canada thistle 9; mustard 108
9871	Wheatland Elev., Wheatland	Purcell Seed Co.	C	99.44		91.0		2-30		C	None
	Tru Val W. B. Sweet Clover, Lot 8650	Evansville, Ind.	F	99.86	0.14	89.0	3.0	5-30		F	None
9837	†Farmers Cooperative Elev. Co., Seymour	Ross Seed Co.	C	99.60		90.0	3.0	2-30		C	None
	W. B. Sweet Clover, Lot 1524	Louisville, Ky.	F	99.74	0.10	85.5	5.0	5-30	666	F	Canada thistle 9; mustard 27
9099	Penetcost & Craft, Terre Haute	Schultz, J. M.	C	99.95		95.0		1-30		C	None
	Reliable Sweet Clover, Lot SW	Dieterich, Ill.	F	99.96	0.04	84.5	4.5	3-30		F	None
9910	Culbertson, Clyde L., Vevay	Scott Seed Co.	C	99.00		80.0	12.0	2-30		C	None
	W. B. Sweet Clover, Lot 67	New Albany, Ind.	F	99.45	0.35	79.0	2.0	5-30	549	F	Mustard 9
9905	Gibson Sons Co., Geo. B., Rising Sun[143]	Scott Seed Co.	C	98.00		80.0	10.0	1-30		C	None
	Y. B. Sweet Clover, Lot 63	New Albany, Ind.	F	99.05	0.49	47.5	0.0	5-30	1,926	F	Mustard 126
9942	Lucas, Henry, Brownstown	Scott Seed Co.	C	99.00		80.0	12.0	2-30		C	None
	W. B. Sweet Clover, Lot 67	New Albany, Ind.	F	99.56	0.30	80.0	1.5	6-30	450	F	None
9347	Ragsdale & Owen, Bedford	Scott Seed Co.	C	99.00		80.0		2-30		C	None
	W. B. Sweet Clover, Lot 67	New Albany, Ind.	F	99.46	0.46	83.0	2.0	4-30	180	F	None
9833	Union Hardware Co., Seymour	Scott Seed Co.	C	99.50		80.0	12.0	2-30		C	None
	W. B. Sweet Clover, Lot 67	New Albany, Ind.	F	99.74	0.10	78.0	4.5	5-30	360	F	None
8939	Farmers Cooperative Co., Cicero[144]	Sunfield Seed Service	C	99.50		94.0		11-29		C	Mustard 10
	W. B. Sweet Clover, Lot 14350	Chicago, Ill.	F	99.39	0.41	67.5	7.0	2-30	810	F	None
8923	Farmers Elev. Co., Monticello[145]	Sunfield Seed Service	C	99.75		94.0		11-29		C	None
	Y. B. Sweet Clover, Lot 14352	Chicago, Ill.	F	98.20	0.86	88.0	0.5	2-30	2,943	F	Mustard 54; quack grass 9
8925	Farmers Elev. Co., Monticello[145]	Sunfield Seed Service	C	99.50		94.0		10-29		C	None
	Grundy Co. W. B. Sweet Clover, Lot 14339	Chicago, Ill.	F	99.53	0.17	81.0	8.0	2-30	450	F	None
9394	†Chavis Seed Co., Fowler[144]	Sunfield Seed Service	C	99.50		94.0		11-29		C	Mustard 10
	W. B. Sweet Clover, Lot SSS	Chicago, Ill.	F	99.72	0.10	70.0	8.5	4-30	747	F	Mustard 27
8899	Hillisburg Grain & Coal Co., Hillisburg[146]	Sunfield Seed Service	C	99.50		94.0		10-29		C	None
	W. B. Sweet Clover, Lot 14339	Chicago, Ill.	F	99.56	0.12	87.5	5.5	2-30	270	F	None
8903	Hillisburg Grain & Coal Co., Hillisburg[146]	Sunfield Seed Service	C	99.75		93.0	1.0	11-29		C	None
	Y. B. Sweet Clover, Lot 14351	Chicago, Ill.	F	99.67	0.33	86.5	0.5	2-30		F	None

9339	Sunshine Feed Store, Bedford[147]	Sunshine Feed Store	C	99.50	......	86.0	5.0	1-30	....	C	None
	W. B. Sweet Clover, Lot 2	Fort Wayne, Ind.	F	99.36	0.40	72.5	8.0	4-30	288	F	Canada thistle 18
9118	Sunshine Feed Store, Sullivan	Sunshine Feed Store	C	99.80	......	86.0	5.0	1-30	....	C	None
	W. B. Sweet Clover, Lot 1	Fort Wayne, Ind.	F	99.80	0.10	83.5	7.0	3-30	90	F	None
9700	Bash & Co., C. E., Huntington[148]	Teweles Seed Co., L.	C	99.62	......	91.0	5.0	2-30	....	C	None
	Y. B. Sweet Clover, Lot Badger Brand	Milwaukee, Wis.	F	99.82	0.12	75.0	2.0	5-30	99	F	Curled dock 9
9698	Huntington Equity Exchange, Co., Huntington	Teweles Seed Co., L.	C	99.60	......	88.0	7.0	2-30	....	C	None
	W. B. Sweet Clover, Lot Badger Brand	Milwaukee, Wis.	F	99.39	0.49	78.0	3.5	5-30	180	F	None
9688	Kiest Milling Co., Knox	Teweles Seed Co., L.	C	99.60	......	88.0	7.0	2-30	....	C	None
	W. B. Sweet Clover, Lot Badger Brand	Milwaukee, Wis.	F	99.66	0.20	77.0	5.0	5-30	270	F	None
9499	Whelan, Omer G., Richmond	Teweles Seed Co., L.	C	99.65	......	91.0	5.0	12-29	....	C	None
	Y. B. Sweet Clover, Lot Badger Brand	Milwaukee, Wis.	F	99.64	0.16	79.5	4.0	4-30	594	F	Canada thistle 9; mustard 36; quack grass 9
9621	Berne Grain & Hay Co., Berne	Warren-Teed Seed Co.	C	99.76	......	87.0	10.0	2-30	....	C	None
	Y. B. Sweet Clover, Lot S-239	Chicago, Ill.	F	99.92	0.00	87.5	9.5	5-30	279	F	Mustard 9
67	Haldeman-Baum Co., Akron	Warren-Teed Seed Co.	C	99.68	......	85.0	6.0	3-30	....	C	None
	W. B. Sweet Clover, Lot 347	Chicago, Ill.	F	99.66	0.28	80.5	5.5	7-30	189	F	Mustard 9
9754	Kiefer Feed & Supply Co., Elwood[148]	Warren-Teed Seed Co.	C	98.31	......	86.5	4.5	1-30	....	C	None
	W. B. Sweet Clover, Lot S-164	Chicago, Ill.	F	99.25	0.41	72.0	1.5	5-30	450	F	Mustard 90
9761	Kiefer Feed & Supply Co., Elwood	Warren-Teed Seed Co.	C	99.84	......	93.5	3.5	12-29	....	C	None
	Grundy Co. Sweet Clover, Lot S-132	Chicago, Ill.	F	99.90	0.06	94.5	2.0	5-30	270	F	None
9766	Kiefer Feed & Supply Co., Elwood	Warren-Teed Seed Co.	C	99.76	......	87.0	10.0	2-30	....	C	None
	Y. B. Sweet Clover, Lot S-239	Chicago, Ill.	F	99.78	0.06	85.5	9.5	5-30	180	F	None
9636	McMahan Seed Co., Valparaiso	Warren-Teed Seed Co.	C	98.31	......	86.5	4.5	1-30	....	C	None
	W. B. Sweet Clover, Lot S-164	Chicago, Ill.	F	99.28	0.42	73.5	2.0	5-30	405	F	Mustard 45
9498	Whelan, Omer G., Richmond	Warren-Teed Seed Co.	C	99.76	......	87.0	10.0	2-30	....	C	None
	Y. B. Sweet Clover, Lot S-239	Chicago, Ill.	F	99.82	0.02	83.5	12.5	4-30	90	F	None
9520	Woods & Pritsch, Sheridan	Warren-Teed Seed Co.	C	98.31	......	86.5	4.5	1-30	....	C	None
	W. B. Sweet Clover, Lot S-164	Chicago, Ill.	F	99.11	0.59	77.5	0.5	4-30	261	F	Mustard 81
9370	Wynn, Arlie S., Rochester	Warren-Teed Seed Co.	C	99.84	......	89.5	6.0	12-29	....	C	None
	W. B. Sweet Clover, Lot S-59	Chicago, Ill.	F	99.74	0.26	86.5	7.5	3-30	....	F	None
9198	Christner Bros., Topeka[149]	Wertheimer & Sons, N.	C	99.88	......	90.0	......	1-	....	C	None
	Common Sweet Clover, Lot 9401	Ligonier, Ind.	F	99.96	0.04	62.5	29.0	3-30	18	F	Mustard 9; yellow trefoil 9
9199	Christner Bros., Topeka[149]	Wertheimer & Sons, N.	C	99.86	......	90.0	......	1-30	....	C	None
	Common Sweet Clover, Lot 9402	Ligonier, Ind.	F	99.78	0.06	66.0	24.5	3-30	468	F	Mustard 18
9552	Haynes & Son, Eaton	Wertheimer & Sons, N.	C	99.88	......	85.0	14.0	1-30	....	C	None
	W. B. Sweet Clover, Lot 9401	Ligonier, Ind.	F	99.82	0.18	56.5	41.0	4-30	....	F	None
63	Paxson, C. E., Elkhart[150]	Wertheimer & Sons, N.	C	99.66	......	90.0	......	2-30	....	C	None
	W. B. Sweet Clover, Lot 9403	Ligonier, Ind.	F	99.44	0.26	49.0	8.0	7-30	324	F	Common plantain 9; curled dock 216; mustard 9

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*Not labeled.

†Certified by retailer.

C and F stands, respectively, for Claimed and Found.

[141] Retagged.

[143] Removed from sale. Misbranded. All sold.

[144] Removed from sale. Misbranded. Retagged.

[145] Removed from sale. Misbranded. Returned to Distributor.

[146] Returned to Distributor.

[147] Returned to Distributor.

[148] Removed from sale. Misbranded. All sold.

[149] Removed from sale. Misbranded. Returned to Distributor.

[150] Removed from sale. Misbranded.

SWEET CLOVER—Continued

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, per cent	Inert Matter, per cent	Germination, per cent	Hard Seeds, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds		Number per Pound of each of the Noxious Weed Seeds Specified in the Law
8886	Syler & Syler, Nappanee[151]	Wertheimer & Sons, N	C	99.88	......	85.0	14.0	12-29	....	C	None
	W. B. Sweet Clover, Lot 9401	Ligonier, Ind.	F	99.90	0.10	60.5	27.0	2-30	....	F	None
9190	Wolcottville Elev. Co., Wolcottville[152]	Wertheimer & Sons, N	C	99.66	......	90.0	......	1-30	....	C	None
	W. B. Sweet Clover, Lot 9403	Ligonier, Ind.	F	99.40	0.34	58.0	8.0	4-30	261	F	Common plantain 9; curled dock 162

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*Not labeled.
†Certified by retailer.
C and F stands, respectively, for Claimed and Found.

[151] Retagged.
[152] Removed from sale. Misbranded. All sold.

WHITE CLOVER

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor	Purity, per cent	Inert Matter, per cent	Germination, per cent	Hard Seeds, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds	Number per Pound of each of the Noxious Weed Seeds Specified in the Law
9682	Farmers Cooperative Co., Knox	Dickinson & Co., The Albert C	98.24	......	81 00	11.00	1–30	....	C Red sorrel 224; yellow trefoil 448
	White Clover, Lot 26676	Chicago, Ill. F	98.80	0.29	90.50	4.00	5-30	657	F Buckhorn 36; mustard 18; red sorrel 234; yellow trefoil 144
55	Reece & Co., Wm., Mishawaka	Dickinson & Co., The Albert C	93.95	......	70.00	20.00	1–30	....	C Common plantain 160; red sorrel 1,440; yellow trefoil 2,400
	White Clover, Lot 26678	Chicago, Ill. F	93.81	0.44	68.00	22.25	7–30	6,894	F Buckhorn 18; common plantain 396; curled dock 54; red sorrel 1,818; yellow trefoil 1,008
9773	Goodrich Bros., Gaston[153]	Goodrich Bros. C	98.00	......	84.00	8.00	12–29	....	C None
	White Clover	Winchester, Ind. F	90 25	0.29	56.50	26.50	5-30	252	F Common plantain 108; curled dock 18; dodder 18; yellow trefoil 108
8648	Indiana Farm Bureau Pur. Dept., Inc., Indianapolis	Kellogg Seed Co. C	96.00	......	90.00	......	7–29	....	C None
	White Clover, Lot Rack	Milwaukee, Wis. F	99.80	0.15	89.00	7.25	11–29	450	F None
9582	Wadas Hardware Store, E. Chicago	Sholes & Co., H. A. C	96.30	......	88.00	5.00	7-29	....	C None
	Dutch Choice White Clover	Chicago, Ill. F	95.33	0.75	74.75	5.75	4–30	9,837	F Buckhorn 504; common plantain 18; red sorrel 6,300; yellow trefoil 90
9189	Wolcottville Elev. Co., Wolcottville[154]	Wertheimer & Sons, N. C	98.95	......	90 00	......	1–30	....	C None
	Dutch White Clover, Lot 9870	Ligonier, Ind. F	94.73	0.34	69.50	20.75	3–30	10,800	F Common plantain 1,350; red sorrel 1,125; yellow trefoil 5,625

*Not labeled.
†Certified by retailer.
C and F stands, respectively, for Claimed and Found.

[153] Misbranded. Sample secured from Claude North, Gaston, Ind. Contains 9.11% Alsike Clover with 37.0% Germination and 12.0% Hard Seeds.

[154] Removed from sale. Misbranded.

CORN

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, per cent	Inert Matter, per cent	Germination, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds		Number per Pound of each of the Noxious Weed Seeds Specified in the Law
9998	Ainsworth-Boone Co., Kentland	Ainsworth-Boone Co.	C	99.00	......	95.0	2–30	....	C	None
	Leaming Corn	Kentland, Ind.	F	99.99	0.01	94.0	6–30	....	F	None
9999	Ainsworth-Boone Co., Kentland	Ainsworth-Boone Co.	C	99.00	......	95.0	2–30	....	C	None
	Woodburn Yellow Dent Corn	Kentlend, Ind.	F	99.78	0.22	94.5	6–30	....	F	None
10000	Ainsworth-Boone Co., Kentland	Ainsworth-Boone Co.,	C	99.00	......	95.0	2–30	....	C	None
	Krug Corn	Kentland, Ind.	F	99.75	0.25	95.5	6–30	....	F	None
5	Ainsworth-Boone Co., Kentland	Ainsworth-Boone Co.	C	99.00	......	95.0	2–30	....	C	None
	Silver Mine Corn	Kentland, Ind.	F	99.99	0.01	90.0	6–30	....	F	None
17	Ainsworth-Boone Co., Kentland	Ainsworth-Boone Co.	C	99.00	......	90.0	2–30	....	C	None
	Early Reid's Yellow Dent Corn, Lot 1928	Kentland, Ind.	F	99.97	0.03	91.5	5–30	....	F	None
7	McCray, Warren, Kentland	Ainsworth-Boone Co.	C	99.00	......	95.0	2–30	....	C	None
	Woodburn Yellow Dent Corn	Kentland, Ind.	F	99.84	0.16	99.0	5–30	....	F	None
2	Mehaffey, Carl A., Williamsport	Ainsworth-Boone Co.	C	99.00	......	95.0	2–30	....	C	None
	Early Reid's Yellow Dent Corn, Lot 1929	Kentland, Ind.	F	99.85	0.15	95.0	6–30	....	F	None
3	Mehaffey, Carl A., Williamsport	Ainsworth-Boone Co.	C	99.00	......	95.0	2–30	....	C	None
	Medium Reid's Yellow Dent Corn	Kentland, Ind.	F	99.99	0.01	96.0	6–30	....	F	None
8	Cooperative Elev. Co., Winamac[155]	Ainsworth & Sons, W. T.	C	......	......	95.0	......	....	C	None
	Early Yellow Dent Corn	Mason City, Ill.	F	100.00	0.00	97.5	5–30	....	F	None
10	*Cooperative Elev. Co., Winamac	Ainsworth & Sons, W. T.	C	100.00	......	95.0	4–30	....	C	None
	Western Plowman Corn, Lot S-10	Mason City, Ill.	F	99.92	0.08	99.0	5–30	....	F	None
9946	†Glenwood Grain Co., Glenwood[155]	Ainsworth & Sons, W. T.	C	......	......	95.0	3–30	....	C	None
	Krug Corn, Lot B	Mason City, Ill.	F	100.00	0.00	99.5	6–30	....	F	None
9949	*†Glenwood Grain Co., Glenwood	Ainsworth & Sons, W. T.	C	......	......	95.0	3–30	....	C	None
	Reid's Yellow Dent Corn	Mason City, Ill.	F	99.45	0.55	94.5	4–30	....	F	None
9780	McCordsville Grain Co., McCordsville	Ainsworth & Sons, W. T.	C	100.00	......	95.0	1–30	....	C	None
	Krug Corn, Lot H-1043	Mason City, Ill.	F	99.99	0.01	99.5	5–30	....	F	None
9791	McCordsville Grain Co., McCordsville[155]	Ainsworth & Sons, W. T.	C	......	......	95.0	1–30	....	C	None
	Reid's Yellow Dent Corn, Order 1043	Mason City, Ill.	F	99.84	0.16	97.5	5–30	....	F	None
9977	Wolfram Grain Co., Brownsburg	Ainsworth & Sons, W. T.	C	99.00	......	95.0	3–30	....	C	None
	Reid's Yellow Dent Corn	Mason City, Ill.	F	99.99	0.01	96.0	6–30	....	F	None
9925	Becker & Sons, J. H., Corydon	Becker & Sons, J. H.	C	98.00	......	86.0	4–30	....	C	None
	90 Day Yellow Corn, Lot A	Corydon, Ind.	F	99.80	0.20	75.5	4–30	....	F	None
9931	Becker & Sons, J. H., Corydon	Becker & Sons, J. H.	C	98.00	......	93.0	4–30	....	C	None
	Woodburn Yellow Dent Corn, Lot B	Corydon, Ind.	F	99.99	0.01	93.0	4–30	....	F	None
9926	Bulleit & Sons, V. H., Corydon	Bulleit & Sons, V. H.	C	99.00	......	95.0	3–	....	C	None
	Reid's Yellow Dent Corn, Lot 1	Corydon, Ind.	F	100.00	0.00	89.5	5–30	....	F	None

9930	Bulleit & Sons, V. H., Corydon	Bulleit & Sons, V. H.	C	99.00	......	95 0	3-30	C	None
	Ensilage Corn, Lot 2	Corydon, Ind.	F	99.99	......	95 5	5-30	F	None
20	Sweet, Harry, Boswell	Chavis Seed Co.	C	99.50	......	95.0	1-30	C	None
	Western Plowman Seed Corn	Fowler, Ind.	F	99.99	0.01	90.0	6-30	F	None
21	Sweet, Harry, Boswell	Chavis Seed Co.	C	99.59	......	95 9	1-30	C	None
	Iowa Silver Mine Seed Corn	Fowler, Ind.	F	99.68	0.32	98.5	6-30	F	None
9959	Sellars Grain Co., Forest	Crabbs Reynolds Taylor Co.	C	100.00	......	98 0	3-30	C	None
	Reid's Yellow Dent Corn, Lot CD	Crawfordsville, Ind.	F	99 99	0.01	98.0	6-30	F	None
9960	Sellars Grain Co., Forest	Crabbs Reynolds Taylor Co.	C	100 00	......	97.0	3-30	C	None
	90 Day Yellow Dent Corn, Lot CE	Crawfordsville, Ind.	F	99 99	0.01	99 0	6-30	F	None
9963	Sellars Grain Co., Forest	Crabbs Reynolds Taylor Co.	C	100 00	......	98.0	3-30	C	None
	Woodburn Corn, Lot CA	Crawfordsville, Ind.	F	99.99	0.01	97.0	6-30	F	None
9987	Vermillion Co. Farmers Cooperative Ass'n., Dana	Crabbs Reynolds Taylor Co.	C	100 00	......	97 0	3-30	C	None
	Yellow Dent Clarage Corn, Lot CB	Crawfordsville, Ind.	F	99.99	0.01	95 0	6-30	F	None
9978	Wall, N. A., Pittsboro	Crabbs Reynolds Taylor Co.	C	100 00	......	98 0	3-30	C	None
	Woodburn Corn, Lot CA	Crawfordsville, Ind.	F	99.99	0.01	98.5	6-30	F	None
9848	Worthington Grain Co., Worthington	Crabbs Reynolds Taylor Co.	C	100 00	......	99 0	2-30	C	None
	Woodburn Yellow Dent Corn, Lot CA	Crawfordsville, Ind.	F	99.99	0 01	99 5	5-30	F	None
9986	Newport Grain Co., Newport	Dickinson Co., The Albert	C	99 50	......	90 0	3-30	C	None
	Reid's Yellow Dent Corn, Lot 07222	Chicago, Ill.	F	99 97	0.03	92.0	6-30	F	None
9961	Sellars Grain Co., Forest	Dickinson Co., The Albert	C	99.50	......	95 0	3-30	C	None
	Cold Resistant Golden Glow Corn	Chicago, Ill.	F	99.95	0 05	89.0	6-30	F	None
9962	Sellars Grain Co., Forest	Dickinson Co., The Albert	C	99 50	......	92 0	3-30	C	None
	Reid's Yellow Dent Corn, Lot 07222	Chicago, Ill.	F	99 98	0 02	92 0	6-30	F	None
16	Sowash, E. K., Crown Point	Dickinson Co., The Albert	C	99 50	......	93 0	3-30	C	None
	Minnesota No. 13 Corn, Lot 07247	Chicago, Ill.	F	99.54	0.46	88 0	6-30	F	None
9995	Blake, Paul, Lizton	Everitts Seed Store	C	99.00	......	94.0	3-30	C	None
	Johnson Co., White Corn, Lot 5	Indianapolis, Ind.	F	99 74	0.26	82 5	4-30	F	None
9992	Bloomfield Mill & Elev. Co., Bloomfield[156]	Everitts Seed Store	C	99.00	......	95.0	3-30	C	None
	90 Day Corn, Lot 9	Indianapolis, Ind.	F	99.68	0 32	67.5	4-30	F	None
9997	Bloomfield Mill & Elev. Co., Bloomfield[156]	Everitts Seed Store	C	99 00	......	95.0	3-30	C	None
	100 Day Yellow Dent Corn, Lot 9	Indianapolis, Ind.	F	99.57	0.43	72.5	4-30	F	None
46	*Coble, H. E., Brazil	Everitts Seed Store	C	......	......	......		C	
	Seed Corn	Indianapolis, Ind.	F	99.04	0 96	60.0	6-30	F	None
54	Dana Elevator Co., Dana[156]	Everitts Seed Store	C	100 00	......	96.0	4-30	C	None
	Leaming Yellow Dent Corn, Lot 9	Indianapolis, Ind.	F	99 02	0.98	75.0	6-30	F	None
9993	Everitts Seed Store, Indianapolis[157]	Everitts Seed Store	C	99.00	......	95.0	3-30	C	None
	90 Day Corn, Lot 9	Indianapolis, Ind.	F	99 22	0.78	79 0	4-30	F	None
9994	Everitts Seed Store, Indianapolis	Everitts Seed Store	C	99.00	......	96.0	3-30	C	None
	Leaming Corn, Lot 3	Indianapolis, Ind.	F	98.23	1.77	93.5	4-30	F	None
9996	Everitts Seed Store, Indianapolis	Everitts Seed Store	C	99.00	......	92.0	3-30	C	None
	Pride of the North Yellow Dent Corn, Lot 16	Indianapolis, Ind.	F	99.58	0.42	87 0	4-30	F	None

*Not labeled.
†Certified by retailer.
C and F stands, respectively, for Claimed and Found.

[155] Tag incomplete.
[156] Removed from sale. Misbranded. Returned to Distributor.
[157] Removed from sale. Misbranded. Used as chicken feed.

CORN—Continued

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, per cent	Inert Matter, per cent	Germination, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds		Number per Pound of each of the Noxious Weed Seeds Specified in the Law
18	Everitts Seed Store, Indianapolis	Everitts Seed Store	C	99.00		92.0	4–30		C	None
	Reid's Yellow Dent Corn, Lot 21A	Indianapolis, Ind.	F	99.83	0.17	90.5	5–30		F	None
9988	Gibson Co. Shipping Ass'n., Princeton[158]	Frank Bros. Seed Co.	C			95.0	3–30		C	None
	Shelled Silver Mine Corn	Carmi, Ill.	F	99.72	0.17	93.5	6–30		F	None
9989	Gibson Co. Shipping Ass'n., Princeton	Frank Bros. Seed Co.	C			95.0	3–30		C	None
	Shelled Reid's Yellow Dent Corn	Carmi, Ill.	F	99.29	0.71	87.0	6–30		F	None
9965	Franklin, W. F., Danville	Franklin, W. F.	C	99.00		90.0	3–30		C	None
	Yellow Dent Corn	Danville, Ind.	F	99.66	0.34	93.0	6–30		F	None
23	Allen, J. P., Farmersburg[159]	Funk Bros. Seed Co.	C	99.99		96.0	6–30		C	None
	Funk 329 New 100 Day Corn	Bloomington, Ill.	F	99.99	0.01	96.0	6–30		F	None
25	Allen, J. P., Farmersburg[159]	Funk Bros. Seed Co.	C	99.99		85.5	6–30		C	None
	Early Red Cob White Corn	Bloomington, Ill.	F	99.99	0.01	85.5	6–30		F	None
9907	†Gaudin, Geo., Vevay	Hall Seed Co.	C	98.00		95.0			C	None
	Iowa Silver Mine Seed Corn, Lot Co. 298	Louisville, Ky.	F	99.60	0.40	85.5	5–30		F	None
9803	Johnson Co. Seed Corn Ass'n., Franklin	Johnson Co. Seed Corn Ass'n	C	98.00		82.0	3–30		C	None
	Reid's Yellow Corn	Franklin, Ind.	F	99.92	0.08	82.0	5–30		F	None
9809	Johnson Co. Seed Corn Ass'n., Franklin	Johnson Co. Seed Corn Ass'n	C	98.00		92.0	3–30		C	None
	Reid's Yellow Corn	Franklin, Ind.	F	99.91	0.09	96.5	5–30		F	None
9812	Johnson Co. Seed Corn Ass'n., Franklin	Johnson Co. Seed Corn Ass'n	C	98.00		82.0	3–30		C	None
	Hybrid Cross Yellow Corn	Franklin, Ind.	F	99.66	0.34	89.5	5–30		F	None
9709	Jones Hardware Co., Peru	Jones Hardware Co.	C	100.00		99.0	3–30		C	None
	"Hybrid" Yellow Dent Corn	Peru, Ind.	F	99.80	0.20	98.0	5–30		F	None
9795	Klingensmith, E. J., New Augusta	Klingensmith, E. J.	C	99.00		94.0	4–30		C	None
	Yellow Corn, Lot Riley	New Augusta, Ind.	F	99.45	0.55	96.0	5–30		F	None
12	Lee and Overleese, Lebanon	Lee and Overleese	C	98.00		80.0	3–30		C	None
	Corn	Lebanon, Ind.	F	99.99	0.01	75.5	5–30		F	None
13	Lee and Overleese, Lebanon	Lee and Overleese	C	98.00		90.0	3–30		C	None
	Riley Yellow Dent Corn	Lebanon, Ind.	F	99.96	0.04	86.5	5–30		F	None
14	Lee and Overleese, Lebanon[160]	Lee and Overleese	C	98.00		90.0	3–		C	None
	Iowa Hybrid Corn	Lebanon, Ind.	F	99.98	0.02	74.5	5–30		F	None
1	Littlejohn, W. D., Kentland	Littlejohn, W. D.	C	97.00		93.0	3–30		C	None
	Leaming Mixture Corn	Kentland, Ind.	F	99.94	0.06	95.5	6–30		F	None
4	Littlejohn, W. D., Kentland	Littleiohn, W. D.	C	99.00		95.0	3–30		C	None
	Reid's Yellow Dent Corn	Kentland, Ind.	F	99.63	0.37	95.0	6–30		F	None
9902	Gaudin, Geo., Vevay	McCullough Seed Co., J. Chas.	C	98.00		92.0	2–30		C	None
	Woodburn Yellow Dent Corn, Lot 3985	Cincinnati, Ohio	F	100.00	0.00	82.0	5–30		F	None

22	Boswell Grain Co., Boswell	Noble Bros.	C	99.00		97.0	4-30		C	None
	Improved Reid's Yellow Dent Corn, Lot 3	Gibson City, Ill.	F	99.66	0.34	95.0	5-30		F	None
40	Worthington Grain Co., Worthington	Ohio Valley Seed Co.	C	97.00		90.0	5-30		C	None
	Reid's Yellow Dent Corn, Lot E-362	Evansville, Ind.	F	99.99	0.01	85.5	6-30		F	None
9979	Tucker, Carl & Roberts, O. G., Jamestown	Olds Seed Co., L. L.	C	99.80		98.0			C	None
	Reid's Yellow Dent Corn, Lot 12628	Madison, Wis.	F	99.91	0.09	95.5	6-30		F	None
9980	Doty Hdwe. Co., L. V., Brownsburg[161]	O. & M. Seed Co.	C						C	
	Leaming Corn	Green Springs, Ohio	F	100.00	0.00	93.0	4-30		F	None
9983	Doty Hdwe. Co., L. V., Brownsburg[161]	O. & M. Seed Co.	C						C	
	Mixed Seed Corn	Green Springs, Ohio	F	99.52	0.48	94.0	4-30		F	None
9632	†Fretz Feed Store, R. C., Waterloo	Outland & Graves	C	98.00		90 0	12-29		C	None
	Early Yellow Dent Corn	Antwerp, Ohio	F	99.99	0.01	92.0	5-30		F	None
36	Scarlett, Elmer, West Baden	Scott Seed Co.	C	98.00		90.0	3-30		C	None
	Boone Co. White Corn	New Albany, Ind.	F	99.34	0.66	95 0	6-30		F	None
9800	Stainbrook, Geo. W., Franklin	Stainbrook, Geo. W.	C	95.00		90.0	2-30		C	None
	Johnson Co. White Corn	Franklin, Ind.	F	99 87	0.13	96.5	5-30		F	None
9804	Stainbrook, Geo. W., Franklin	Stainbrook, Geo. W.	C	95 00		90.0	3-30		C	None
	Reid's Yellow Corn	Franklin, Ind.	F	99.97	0.03	92.5	5-30		F	None
9981	Jamestown Hdwe. Co., Jamestown	Sutton Co., Inc., The G. D.	C	99.00		97 0	2-30		C	None
	Superior Reid's Yellow Dent Corn, Lot 6177	Mason City, Ill.	F	99.99	0.01	95.0	6-30		F	None
9982	Jamestown Hdwe. Co., Jamestown	Sutton Co., Inc., The G. D.	C	99.00		97.0	2-30		C	None
	Western Plowman Corn, Lot 6177	Mason City, Ill.	F	99.92	0.08	97.5	6-30		F	None
9985	Jamestown Hdwe. Co., Jamestown	Sutton Co., Inc., The G. D.	C	99.00		97.0	3-30		C	None
	Hybrid No. 76 Corn, Lot 6653	Mason City, Ill.	F	99.99	0.01	98.0	6-30		F	None
9966	†*Rakestraw, H. E., Oakford	Sutton Co., Inc., The G. D.	C			97.0	4-30		C	None
	Hybrid 76 Corn	Mason City, Ill.	F	99.80	0.20	99.0	4-30		F	None
9967	†*Rakestraw, H. E., Oakford	Sutton Co., Inc., The G. D.	C			97.0	4-		C	None
	Utility Type Reid Corn	Mason City, Ill.	F	99.97	0.03	98.5	4-30		F	None
9969	†*Rakestraw, H. E., Oakford	Sutton Co., Inc., The G. D.	C			97.0	4-30		C	None
	Krug Corn	Mason City, Ill.	F	99.99	0.01	99.0	4-30		F	None
6	Ainsworth-Boone Co., Kentland	Teweles Seed Co., L.	C	100.00		96.0	2-30		C	None
	Golden Glow Seed Corn, Lot Badger	Milwaukee, Wis.	F	99.98	0 02	95 0	6-30		F	None

*Not labeled.

†Certified by retailer.

C and F stands, respectively, for Claimed and Found.

[158] Tag incomplete.

[159] Not tagged. Labels furnished.

[160] Removed from sale. Misbranded.

[161] Not tagged. Labels furnished.

COWPEAS

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, per cent	Inert Matter, per cent	Germination, per cent	Hard Seeds, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds		Number per Pound of each of the Noxious Weed Seeds Specified in the Law
9991	Gibson Co. Shipping Ass'n., Princeton[162]	Gibson Co. Shipping Ass'n.	C	90.00	......	96.0	......	2-30	......	C	None
	Mixed Peas, Lot 9	Princeton, Ind.	F	95.28	4.72	78.5	0.00	6-30	......	F	None
9934	Dauby & Sons, Joe, Tell City	Heldt Co., The	C	96.37	......	75.0	......	12-29	......	C	None
	Mixed Cowpeas, Lot 1876	Evansville, Ind.	F	98.00	2.00	73.5	0.00	4-30	......	F	None
9911	Victoria Mill & Elev., Jasper[163]	Victoria Mill & Elevator	C	96.00	......	85.0	......	4-30	......	C	None
	Whips Cowpeas, Lot C-25	Jasper, Ind.	F	96.34	3.51	66.0	0.00	4-30	4	F	None

[162] Removed from sale. Misbranded. All sold.
[163] Removed from sale. Misbranded. Retagged.

*Not labeled.
†Certified by retailer.
C and F stands, respectively, for Claimed and Found.

MILLET

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor	Purity, per cent	Inert Matter, per cent	Germination, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds	Number per Pound of each of the Noxious Weed Seeds Specified in the Law
33	North Judson Milling Co., North Judson	Crabbs Reynolds Taylor Co. C	99.23	......	85.0	4-30	....	C None
	German Millet, Lot LE	Crawfordsville, Ind. F	99.29	0.34	95.5	6-30	1,350	F None
35	North Judson Milling Co., North Judson	Crabbs Reynolds Taylor Co. C	99.28	......	90.0	4-30	....	C None
	Hungarian Millet, Lot LD	Crawfordsville, Ind. F	98.91	0.20	91.5	6-30	3,330	F None
48	Rinehart, Benj. I., Ora[163a]	Dickinson Co., The Albert C	99.22	......	90.0	10-29	....	C None
	Hungarian Millet, Lot 47101	Chicago, Ill. F	99.18	0.23	96.0	6-30	2,070	F None
49	Rinehart, Benj. I., Ora	Dickinson Co., The Albert C	96.70	......	81.0	11-29	....	C None
	Japanese Millet, Lot 4497	Chicago, Ill. F	96.61	0.20	84.5	6-30	5,130	F None
50	Rinehart, Benj. I., Ora[164]	Dickinson Co., The Albert C	99.74	......	83.0	2-30	....	C None
	Siberian Millet, Lot 0451	Chicago, Ill. F	99.08	0.40	70.0	6-30	2,250	F None
9279	Kindermann's Sons, Wm., Boonville	Ohio Valley Seed Co. C	98.00	......	85.0	11-29	....	C None
	German Millet, Lot D-644	Evansville, Ind. F	98.80	0.54	93.0	4-30	4,590	F None
38	Bloomfield Mill & Elevator, Bloomfield	Schultz Seed Co. C	99.21	......	90.0	1-30	....	C None
	German Millet, Lot 7313	Olney, Ill. F	99.12	0.44	86.5	6-30	1,980	F None

*Not labeled.
†Certified by retailer.
C and F stands, respectively, for Claimed and Found.

[163a] Sample secured from Albert Chudzisky, Knox, Ind.
[164] Removed from sale. Misbranded. Used as feed for own chicks.

OATS

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, per cent	Inert Matter, per cent	Germination, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds		Number per Pound of each of the Noxious Weed Seeds Specified in the Law
9322	Boonville Elev. Co., Boonville[165]	Boonville Elev. Co.	C	98.00	......	96.0	2–30	....	C	None
	Red Oats, Lot 2	Boonville, Ind.	F	98.22	1.24	70.5	4–30	72	F	Curled dock 9
9320	Boonville Milling Co., Boonville[165]	Boonville Milling Co.	C	98.00	......	96.0	2–30	....	C	None
	Red Oats, Lot 2	Boonville, Ind.	F	96.81	1.65	64.5	4–30	18	F	None
9818	Campbell Bros., Greencastle[166]	Campbell Bros.	C	95.00	......	75.0	3–30	....	C	None
	White Oats, Lot O-10	Greencastle, Ind.	F	98.31	1.23	53.0	5–30	189	F	Common plantain 45; curled dock 9; red sorrel 9
9828	Egnor, J. W., Spencer	Egnor, J. W.	C	85.00	......	85.0	3–30	....	C	None
	North Oats, Lot J-1	Spencer, Ind.	F	99.18	0.24	93.5	5–30	9	F	None
9285	Heldt & Voelker Co., Evansville	Heldt & Voelker Co.	C	99.36	......	90.0	2–30	....	C	None
	Rec. White Seed Oats, Lot 1920	Evansville, Ind.	F	98.70	0.45	92.5	4–30	9	F	None

*Not labeled.
†Certified by retailer.
C and F stands, respectively, for Claimed and Found.

[165] Removed from sale. Misbranded. All sold.

[166] Removed from sale. Misbranded. Sold as ground oats.

ORCHARD GRASS

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, per cent	Inert Matter, per cent	Germination, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds		Number per Pound of each of the Noxious Weed Seeds Specified in the Law
9336	Holmes Hardware Co., Mitchell[167]	Chambers Seed Co.	C	80.00	......	80.0	1-30	....	C	Curled dock 180; red sorrel 180
	Orchard Grass, Lot 783	Louisville, Ky.	F	69.50	26.72	80.5	4-30	10,800	F	Curled dock 225; red sorrel 3,825
9954	Scottsburg Elevator, Scottsburg[168]	Chambers Seed Co.	C	85.00	......	80.0	1-30	....	C	Curled dock 180; red sorrel 180
	Orchard Grass, Lot 782	Louisville, Ky.	F	70.41	28.21	82.5	6-30	4,275	F	Curled dock 900; red sorrel 1,575; wild garlic or wild onion 225
9027	Krick & Son, A., Milan	McCullough Seed Co., J. Chas.	C	83.83	......	84.0	11-29	....	C	Curled dock 450; oxeye daisy 225
	Orchard Grass, Lot 3469	Cincinnati, Ohio	F	84.84	14.43	85.0	4-30	1,575	F	Curled dock 450; oxeye daisy 225
9329	Burton & Son, A., French Lick[168]	Purcell Seed Co.	C	83.24	......	80.0	1-30	....	C	Curled dock 900; oxeye daisy 1,800; red sorrel 450
	Judge Orchard Grass, Lot 5421	Evansville, Ind.	F	88.38	8.54	58.0	5-30	11,925	F	Curled dock 900; oxeye daisy 3,825; red sorrel 2,475
9919	Sawdon, R. A., Aurora	Scott Seed Co.	C	85.00	......	80.0	11-29	....	C	Curled dock 225
	Orchard Grass, Lot 532	New Albany, Ind.	F	86.34	13.26	75.0	6-30	540	F	Curled dock 90
9008	Trow Co., W., Madison	Scott Seed Co.	C	85.00	......	80.0	11-29	....	C	Curled dock 225
	Orchard Grass, Lot 532	New Albany, Ind.	F	86.40	13.50	82.0	4-30	152	F	Curled dock 114; red sorrel 38

*Not labeled.
†Certified by retailer.
C and F stands, respectively, for Claimed and Found.

[167] Removed from sale. Misbranded. All sold.

[168] Removed from sale. Misbranded. Returned to Distributor.

RAPE

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, per cent	Inert Matter, per cent	Germination, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds		Number per Pound of each of the Noxious Weed Seeds Specified in the Law
9751	Hobbs Grain Co., Hobbs	Crawfordsville Seed Co.	C	99.00	......	90.0	2-30	....	C	None
	D. E. Rape, Lot 1016	Crawfordsville, Ind.	F	99.54	0.27	80.0	5-30	45	F	Mustard 45
9375	Haldeman-Baum Co., Akron	Kraus, Sam	C	99.97	......	94.0	12-29	....	C	None
	D. E. Rape, Lot 95202	Fort Wayne, Ind.	F	99.82	0.16	97.0	4-30	45	F	None
9473	Wayne Co. Farm Bureau, Richmond	McCullough Seed Co., J. Chas.	C	99.60	......	85.0	2-30	....	C	None
	Dwarf Essex Rape, Lot 3765	Cincinnati, Ohio	F	99.95	0.04	85.0	4-30	....	F	None
9684	Kiest Milling Co., Knox	Teweles Seed Co., L.	C	99.80	......	97.0	1-30	....	C	None
	Dwarf Essex Rape Seed, Lot 247	Milwaukee, Wis.	F	99.89	0.04	96.5	5-30	135	F	None

C and F stands, respectively, for Claimed and Found.

*Not labeled.
†Certified by retailer.

RED TOP

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, per cent	Inert Matter, per cent	Germination, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds		Number per Pound of each of the Noxious Weed Seeds Specified in the Law
9407	Marion Hardware Co., Marion Red Top, Lot DO	Crabbs Reynolds Taylor Co. Crawfordsville, Ind.	C	89.49	......	85.00	12–29	....	C	Common plantain 90
			F	87.08	12.15	93.25	4–30	37,350	F	Common plantain 1,350; oxeye daisy 450; white top 450
8883	†Gotto-Mathias Co., Michigan City Red Top, Lot 30262	Dickinson Co., The Albert Chicago, Ill.	C	92.60	......	90.00	9–29	....	C	Buckhorn 60; common plantain 1,510
			F	93.54	5 80	94.75	4–30	29,291	F	Buckhorn 41; common plantain 1,350
9821	Bloomington Milling Co., Bloomington[169] Red Top, Lot 338	Hardin, Hamilton & Lewman Louisville, Ky.	C	92.50	......	93.00	3–30	....	C	None
			F	87.49	12 03	87 75	5–30	32,850	F	Common plantain 1,350; white top 450
8839	Huebner Hardware Co., John, Loogootee[170] Red Top, Lot 1833	Heldt Co., The Evansville, Ind.	C	87.04	......	92.00	9–29	....	C	Common plantain 9,900
			F	86.75	10.96	90 50	1–30	122,850	F	Common plantain 25,200; white top 3,600
8645	Wedeking Co., C. W., Dale Thelco Red Top, Lot 185-B	Heldt Co., The Evansville, Ind.	C	92 03	......	91.00	10-29	....	C	Common plantain 900
			F	91.22	7 56	93.50	11–29	58,050	F	Common plantain 7,200; white top 450
9794	Klingensmith, E. J., New Augusta Red Top, Lot 30396	Indiana Seed Co. Indianapolis, Ind.	C	90.00	......	90 00	2-30	....	C	Common plantain 900
			F	88 55	10.69	84 75	5–30	40,050	F	Common plantain 450
8612	Mazur Seed Co., Indianapolis[171] Red Top, Lot 17024	Indiana Seed Co. Indianapolis, Ind.	C	94.00	......	90 00	4–29	....	C	None
			F	93.35	6 45	86.75	11–29	8,550	F	Common plantain 450; white top 450
8625	†Mazur Seed Co., Indianapolis[172] Red Top, Lot 17020	Indiana Seed Co. Indianapolis, Ind.	C	94.00	......	90 00	4–29	....	C	None
			F	94.45	5.35	87 75	10–29	9,000	F	Common plantain 450; white top 450
8824	Pioneer Elevator Co., Worthington Red Top, Lot 30244	Indiana Seed Co. Indianapolis, Ind.	C	90.00	......	90 00	9-29	....	C	Buckhorn 48; common plantain 135
			F	89.05	10.14	82.50	1–30	30,600	F	Common plantain 450
8647	Indiana Farm Bureau Pur. Dept., Inc., Indianapolis[173] Fancy Red Top, Lot Tary	Kellogg Seed Co. Milwaukee, Wis.	C	96 00	......	90.00	8–29	....	C	Oxeye daisy 32
			F	95 66	3.49	91.25	11–29	13,050	F	Buckhorn 450; common plantain 900; white top 900

*Not labeled.

†Certified by retailer.

C and F stands, respectively, for Claimed and Found.

[169] Removed from sale. Misbranded. Returned to Distributor.

[170] Removed from sale. Misbranded. Retagged.

[171] Misbranded. Sample secured from Indianapolis Park Department.

[172] Misbranded. Sample secured from Indianapolis Municipal Air Port.

[173] Removed from sale. Misbranded.

RED TOP—Continued

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor	Purity, per cent	Inert Matter, per cent	Germination, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds	Number per Pound of each of the Noxious Weed Seeds Specified in the Law
9309	Indiana State Highway Commission, Indianapolis	Kellogg Seed Co. C	94.00	......	88.00	10-29	....	C White top 1,350
	Red Top, Lot Holt	Milwaukee, Wis. F	93.01	6.52	93.25	3-30	15,525	F White top 675
8702	Eberts Grain Co., Scottsburg[174]	Lewis Implement & Seed Co. C	91.00	......	91.00	8-29	....	C None
	Fancy Red Top	Louisville, Ky. F	82.15	13.34	76 25	12-29	22,050	F Red sorrel 900; white top 1,350
9297	Spencer Co. Farm Bureau, Chrisney	McCarty Seed Co., J. A. C	96.11	......	95 00	1-30	....	C None
	Lucky Jim Red Top, Lot 1908	Evansville, Ind. F	96.81	2.99	84 75	3-30	2,250	F None
8760	Linkhart & Son, North Vernon	McCullough Seed Co., J. Chas. C	88.25	......	90 00	9-29	....	C Common plantain 2,250
	Fancy Red Top, Lot 3633	Cincinnati, Ohio F	89.02	10.40	92.25	1-30	34,650	F Common plantain 450; oxeye daisy 450
8836	Reynolds Brooks Hdwe. Co., Loogootee[175]	McCullough Seed Co., J. Chas. C	92.00	......	90 00	8-29	....	C None
	Fancy Red Top, Lot 3585	Cincinnati, Ohio F	92.03	6 97	83.00	1-30	24,300	F Common plantain 4,950; red sorrel 450
8840	Reynolds Brooks Hdwe. Co., Loogootee	McCullough Seed Co., J. Chas. C	88.25	......	90.00	8-29	....	C Common plantain 5,400
	Fancy Red Top, Lot 3572	Cincinnati, Ohio F	87.70	10.25	88.00	1-30	53,100	F Common plantain 6,300; white top 900
9842	Board of Trade Feed Store, Linton[176]	Ohio Valley Seed Co. C	90.00	......	90.00	1-30	....	C Buckhorn 450; common plantain 2,025; red sorrel 900; white top 1,350
	Red Top, Lot E-148	Evansville, Ind. F	83.79	15.91	74.75	5-30	14,400	F White top 900
9936	Heck & Co., Henry, Cannelton[177]	Ohio Valley Seed Co. C	90.00	......	90.00	3-30	....	C Buckhorn 450; common plantain 900; red sorrel 900; white top 1,350
	Red Top, Lot E-239	Evansville, Ind. F	85.63	13.70	87.00	6-30	46,391	F Buckhorn 41; common plantain 900; white top 1,800
8855	Hoosier Hardware Co., Paoli[178]	Ohio Valley Seed Co. C	85.00	......	85.00	10-29	....	C Buckhorn 250; common plantain 1,350; red sorrel 450; white top 900
	Red Top, Lot D-665	Evansville, Ind. F	50.66	24.67	85.75	2-30	80,550	F Buckhorn 450; common plantain 14,850; red sorel 900; white top 20,700
9296	Link, Wm. Jr., Chrisney	Ohio Valley Seed Co. C	90.00	......	90.00	1-30	....	C Buckhorn 900; common plantain 2,050; red sorrel 450
	Red Top, Lot 841-A	Evansville, Ind. F	88.62	11.09	94.75	4-30	19,432	F Buckhorn 41; common plantain 41
8838	Utterback, F. E., Washington[179]	Ohio Valley Seed Co. C	92.00	......	90 00	10-29	....	C Buckhorn 225; common plantain 1,350; red sorrel 450

	Red Top, Lot D-638	Evansville, Ind.	F	89.68	9.38	92.00	1-30	59,850	F	Common plantain 3,150
9218	Gibson Co. Shipping Ass'n., Princeton[175]	Purcell Seed Co.	C	93.00		91.00	12-29		C	None
	"Tru Val" Fancy Red Top, Lot 7986	Evansville, Ind.	F	93.31	6.12	89.25	3-30	13,500	F	Common plantain 1,350; white top 2,250
9808	Spurgin, Archie B., Columbus[177]	Ross Seed Co.	C	97.51		94.00	9-29		C	None
	"Dan" Red Top, Lot 623	Louisville, Ky.	F	93.14	6.37	81.00	4-30	19,800	F	Oxeye daisy 450
9283	*Boonville Implement Co., Boonville	Schultz Seed Co., J. M.	C	92.44		92.00			C	Common plantain 900; oxeye daisy 900
	Red Top, Lot 51	Dieterich, Ill.	F	92.56	5.72	88.25	3-30	15,300	F	Oxeye daisy 3,150; white top 1,800
9291	Reutepohler Hardware Co., Huntingburg[178]	Schultz Seed Co.	C	94.00		90.00	9-29		C	None
	Red Top, Lot 6718	Olney, Ill.	F	91.42	8.18	91.75	3-30	25,650	F	Common plantain 900
9908	Culbertson, Clyde, Vevay	Scott Seed Co.	C	91.00		90.00	9-29		C	Common plantain 450; white top 450
	Red Top, Lot 453	New Albany, Ind.	F	89.80	9.82	82.75	6-30	27,900	F	Common plantain 450; white top 1,350
8859	Hayes & Dodds, Campbellsburg	Scott Seed Co.	C	91.00		90.00	9-29		C	Common plantain 450; white top 450
	Red Top, Lot 453	New Albany, Ind.	F	89.69	9.82	85.00	2-30	27,675	F	Common plantain 225; white top 1,350
9938	Moore & Kemple Hdwe. Co., Lafayette	Vaughn Seed Store	C	95.60		91.00	10-29		C	None
	Red Top, Lot 2000F	Chicago, Ill.	F	95.27	4.44	87.25	6-30	7,650	F	None
9940	Sperb Hdwe Co., John, Lafayette	Vaughn Seed Store	C	93.43		85.00	12-29		C	None
	Red Top, Lot 2000-D	Chicago, Ill.	F	92.73	6.51	83.50	6-30	21,600	F	None

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*Not labeled.

†Certified by retailer.

C and F stands, respectively, for Claimed and Found.

[174] Removed from sale. Misbranded. Returned to Distributor.

[175] Removed from sale. Misbranded. Retagged.

[176] Removed from sale. Misbranded. Returned to Distributor.

[177] Removed from sale. Misbranded. All sold.

[178] Removed from sale. Misbranded. All sold. Contains 20.36% Timothy with 83.25% Germination.

[179] Part used on own farm. Part returned to Distributor.

SOY BEANS

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, per cent	Inert Matter, per cent	Germination, per cent	Hard Seeds, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds		Number per Pound of each of the Noxious Weed Seeds Specified in the Law
9872	Barr Grain Co., O. L., Bicknell	Barr Grain Co., O. L.	C	99.00	......	90.0	......	3-30	....	C	None
	Dunfield Soy Beans, Lot 200	Bicknell, Ind.	F	99.45	0.32	84.0	0.0	4-30	4	F	None
9663	*Bowers, Ova, Sheridan	Bowers, Ova	C	......	......	......	......	......	....	C	
	Dunfield Soy Beans	Sheridan, Ind.	F	99.35	0.65	97.0	0.0	4-30	....	F	None
9814	Campbell Bros., Greencastle	Campbell Bros.	C	98.00	......	85.0	......	3-30	....	C	None
	Hollybrook Soy Beans, Lot A-10	Greencastle, Ind.	F	99.43	0.56	99.0	0.0	5-30	8	F	None
9976	Cass Co. Farm Bureau Cooperative Ass'n., Logansport	Cass Co. Farm Bureau Cooperative Ass'n.	C	95.00	......	90.0	......	4-30	....	C	None
	Manchu Soy Beans, Lot A-100	Logansport, Ind.	F	96.23	3.73	89.5	0.0	6-30	....	F	None
9393	Chavis Seed Co., Fowler	Chavis Seed Co.	C	95.00	......	90.0	......	1-30	....	C	None
	Manchu Soy Beans, Lot CS	Fowler, Ind.	F	96.45	3.47	82.5	4.5	4-30	12	F	None
9964	Clayton Milling Co., Clayton	Clayton Milling Co.	C	90.00	......	80.0	......	4-30	....	C	None
	Manchu Soy Beans, Lot CJ	Clayton, Ind.	F	98.24	1.76	86.5	0.0	4-30	....	F	None
52	Cooperative Elevator Co., Winamac	Cooperative Elevator Co.	C	99.00	......	90.0	......	6-30	....	C	None
	Dunfield Soy Beans	Winamac, Ind.	F	98.49	1.51	91.5	0.0	6-30	....	F	None
9971	Ross Seed Store, Noblesville	Crabbs Reynolds Taylor Co.	C	99.60	......	90.0	......	3-30	....	C	None
	Dunfield Soy Beans, Lot BC	Crawfordsville, Ind.	F	99.37	0.63	95.0	0.0	6-30	....	F	None
9972	Ross Seed Store, Noblesville	Crabbs Reynolds Taylor Co.	C	99.33	......	85.0	......	3-30	....	C	None
	Manchu Soy Beans, Lot BE	Crawfordsville, Ind.	F	98.88	1.08	86.5	0.0	6-30	....	F	None
47	San Pierre Grain & Supply Co., San Pierre	Crabbs Reynolds Taylor Co.	C	99.40	......	90.0	......	3-30	....	C	None
	Illini Soy Beans, Lot BL	Crawfordsville, Ind.	F	99.03	0.50	79.5	0.0	6-30	....	F	None
9551	Knecht Milling Co., Hartford City	Crawfordsville Seed Co.	C	99.00	......	92.0	......	2-30	....	C	None
	Illini Soy Beans, Lot I-2	Crawfordsville, Ind.	F	99.56	0.44	85.5	0.0	5-30	....	F	None
9382	Wynn, Arlie S., Rochester	Dickinson Co., The Albert	C	99.50	......	92.0	......	12-29	....	C	None
	Manchu Soy Beans, Lot 84185	Chicago, Ill.	F	99.30	0.70	87.5	1.0	4-30	....	F	None
9973	Farmers Cooperative Co., Cicero	Farmers Cooperative Co.	C	99.00	......	95.0	......	3-30	....	C	None
	Manchu Soy Beans	Cicero, Ind.	F	98.95	0.78	86.0	0.0	6-30	....	F	None
9990	Gibson Co. Shipping Ass'n., Princeton	Gibson Co. Shipping Ass'n	C	90.00	......	96.0	......	2-30	....	C	None
	Hollybrook Soy Beans, Lot 8	Princeton, Ind.	F	97.36	0.93	92.0	0.0	6-30	188	F	None
42	Springer, W. D., Kennard	Goodrich Bros.	C	99.00	......	90.0	......	4-30	....	C	None
	Dunfield Soy Beans, Lot Y	Winchester, Ind.	F	99.44	0.56	89.0	0.0	6-30	....	F	None
39	Sunshine Feed Store, Bloomfield	Hassler, Paul	C	98.00	......	96.0	......	5-30	....	C	None
	Manchu Soy Beans, Lot 1	Newberry, Ind.	F	98.97	0.87	99.0	0.0	6-30	16	F	None
9937	Dauby & Sons, Joe, Tell City	Heldt Co., The	C	99.67	......	99.0	......	1-30	....	C	None
	Black Soy Beans, Lot 1907	Evansville, Ind.	F	99.46	0.35	96.5	0.0	6-30	4	F	None

9287	Heldt & Voelker Co., Evansville	Heldt & Voelker Co.	C	98.87	......	97.0	......	12-29	....	C	None
	Black Soy Beans, Lot 8669	Evansville, Ind.	F	99.53	0.30	98.0	1.0	4-30	16	F	None
9323	Heldt & Voelker Co., Evansville	Heldt & Voelker Co.	C	99.45	......	98.0	......	11-29	....	C	None
	Black Soy Beans, Lot 8269	Evansville, Ind.	F	99.08	0.92	96.5	0.0	3-30	....	F	None
43	*Henry Co. Farm Bureau Cooperative Ass'n, Newcastle	Henry Co. Farm Bureau Cooperative Ass'n.	C	......	......	85.0	......	5-30	....	C	None
	Soy Beans	Newcastle, Ind.	F	99.21	0.78	81.0	0.0	6-30	8	F	None
44	Swindell, Horace, Newcastle	Henry Co. Farm Bureau Cooperative Ass'n.	C	99.00	......	90.0	......	3-30	....	C	None
	Dunfield Soy Beans	Newcastle, Ind.	F	99.89	0.08	93.5	0.0	6-30	....	F	None
9348	*Jackson, Will, Bedford[180]	Hill, D. B.	C	......	......	......	......	......	....	C	
	Manchu Soy Beans, Lot SB	Sparksville, Ind.	F	92.63	6.91	87.0	0.5	3-30	64	F	None
9796	†New Augusta Grain & Supply Co., New Augusta[181]	Hooton-Davis Seed Co.	C	98.00	......	90.0	......	3-30	....	C	None
	Manchu Soy Beans	Lebanon, Ind.	F	99.71	0.29	95.5	0.0	4-30	....	F	None
9775	Kiefer Feed & Supply Co., Elwood[182]	Kiefer Feed & Supply Co.	C	97.00	......	90.0	......	2-30	....	C	None
	Manchu Soy Beans, Lot 11	Elwood, Ind.	F	84.51	14.12	92.0	0.0	5-30	....	F	None
9776	Kiefer Feed & Supply Co., Elwood[182]	Kiefer Feed & Supply Co.	C	94.50	......	89.0	......	2-30	....	C	None
	Dunfield Soy Beans, Lot 10	Elwood, Ind.	F	85.46	14.35	81.5	0.0	5-30	....	F	None
9831	Kouts Elevator, Kouts	Kouts Elevator	C	95.00	......	90.0	......	3-30	....	C	None
	Dunfield Soy Beans, Lot Brooder	Kouts, Ind.	F	95.74	4.26	91.5	0.0	5-30	....	F	None
9605	Beach & Simmers, Albany	Kraus, Sam	C	99.65	......	98.0	......	12-29	....	C	None
	Manchu Soy Beans, Lot SK	Fort Wayne, Ind.	F	99.43	0.57	87.5	0.5	5-30	....	F	None
61	Protsman & Son, G. L., Plymouth[183]	Kraus, Sam	C	99.60	......	98.0	......	1-30	....	C	None
	Manchu Soy Beans, Lot 2	Fort Wayne, Ind.	F	98.37	1.63	84.5	0.0	7-30	....	F	None
9689	†Starke Co. Farm Bureau Cooperative Ass'n, Knox	Lucas, C. E.	C	98.00	......	92.0	......	2-30	....	C	None
	Manchu Soy Beans, Lot S-12	Knox, Ind.	F	99.03	0.97	99.0	0.0	4-30	....	F	None
24	Allen, J. P., Farmersburg	McCarty Seed Co., J. A.	C	98.00	......	98.0	......	4-30	....	C	None
	Virginia Soy Beans, Lot 1892	Evansville, Ind.	F	99.49	0.49	95.0	0.0	6-30	4	F	None
26	Allen, J. P., Farmersburg[184]	McCarty Seed Co., J. A.	C	98.00	......	96.0	......	4-30	....	C	None
	Virginia Soy Beans, Lot 1930	Evansville, Ind.	F	98.24	0.19	84.0	3.0	6-30	....	F	None
9888	Hunger, C. G., Madison	McCullough Seed Co., J. Chas.	C	99.94	......	95.0	......	12-29	....	C	None
	Northern Holly Brook Soy Beans, Lot 3825	Cincinnati, Ohio	F	99.87	0.08	96.5	0.0	5-30	4	F	None
9889	Hunger, C. G., Madison	McCullough Seed Co., J. Chas.	C	99.81	......	96.0	......	11-29	....	C	None
	Black Wilson Soy Beans, Lot 3789	Cincinnati, Ohio	F	99.61	0.34	94.0	0.5	5-30	4	F	None
9877	Trow Co., W., Madison	McCullough Seed Co., J. Chas.	C	99.25	......	91.0	......	2-30	....	C	None
	Virginia Brown Soy Beans, Lot 3809	Cincinnati, Ohio	F	99.47	0.51	93.0	0.0	5-30	....	F	None
9879	Trow Co., W., Madison	McCullough Seed Co., J. Chas.	C	97.25	......	90.0	......	2-30	....	C	None
	Illini Soy Beans, Lot 3758	Cincinnati, Ohio	F	99.18	0.78	91.5	0.0	5-30	8	F	None
9880	Trow Co., W., Madison	McCullough Seed Co., J. Chas.	C	99.94	......	94.0	......	2-30	....	C	None
	Holly Brook Soy Beans, Lot 3825	Cincinnati, Ohio	F	99.88	0.12	94.0	0.0	5-30	....	F	None
9884	Trow Co., W., Madison	McCullough Seed Co., J. Chas.	C	98.40	......	94.0	......	2-30	....	C	None
	Black Ebony Soy Beans, Lot 3746	Cincinnati, Ohio	F	97.43	2.48	90.0	0.0	5-30	4	F	None

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*Not labeled.

†Certified by retailer.

C and F stands, respectively, for Claimed and Found.

[180] Sample secured from Will Jackson, Bedford, Ind.

[181] Not tagged. Labels furnished.

[182] Removed from sale. Misbranded. Recleaned.

[183] Removed from sale. Misbranded. Retagged.

[184] Removed from sale. Misbranded. Returned to Distributor.

SOY BEANS—Continued

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, per cent	Inert Matter, per cent	Germination, per cent	Hard Seeds, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds		Number per Pound of each of the Noxious Weed Seeds Specified in the Law
9885	Trow Co., W., Madison	McCullough Seed Co., J. Chas.	C	98.40	......	93.0	......	2-30	......	C	None
	Manchu Soy Beans, Lot 3724	Cincinnati, Ohio	F	98.72	1.28	94.0	0.0	5-30	......	F	None
9886	Trow Co., W., Madison	McCullough Seed Co., J. Chas.	C	99.23	......	93.0	......	2-30	......	C	None
	Black Wilson Soy Beans, Lot 3808	Cincinnati, Ohio	F	99.91	0.09	96.0	0.0	5-30	......	F	None
9474	Wayne Co. Farm Bureau, Richmond	McCullough Seed Co., J. Chas.	C	99.81	......	96.0	......	2-30	......	C	None
	Dunfield Soy Beans, Lot 3920	Cincinnati, Ohio	F	99.63	0.37	94.5	0.0	4-30	......	F	None
9861	†Eberts Grain Co., Scottsburg	Mangelsdorff Co., Ed.	C	98.00	......	91.0	......	12-29	......	C	None
	Black Wilson Soy Beans	St. Louis, Mo.	F	98.68	1.15	79.5	0.0	5-30	16	F	None
9862	†Eberts Grain Co., Scottsburg	Mangelsdorff Co., Ed.	C	98.00	......	95.0	......	12-29	......	C	None
	Illini Soy Beans	St. Louis, Mo.	F	98.65	1.30	96.5	0.0	5-30	4	F	None
9863	†Eberts Grain Co., Scottsburg	Mangelsdorff Co., Ed.	C	98.00	......	93.0	......	12-29	......	C	None
	Manchu Soy Beans, Lot 1	St. Louis, Mo.	F	98.69	1.31	91.5	0.0	5-30	......	F	None
9867	†Eberts Grain Co., Scottsburg	Mangelsdorff Co., Ed.	C	98.00	......	92.0	......	12-29	......	C	None
	Virginia Brown Soy Beans	St. Louis, Mo.	F	99.19	0.83	92.5	0.0	5-30	......	F	None
31	Mitchell, Paul, Battle Ground	Mitchell, Paul	C	99.00	......	95.0	......	5-30	......	C	None
	Dunfield Soy Beans	Battle Ground, Ind.	F	97.93	2.06	91.0	0.0	6-30	4	F	None
32	Mitchell, Paul, Battle Ground[185]	Mitchell, Paul	C	99.00	......	95.0	......	5-30	......	C	None
	Manchu Soy Beans	Battle Ground, Ind.	F	97.22	2.52	85.0	0.5	6-30	......	F	None
9258	†Steuben Grain Co., Pleasant Lake	Ostrander, W. A.	C	95.00	......	90.0	......	12-29	......	C	None
	Dunfield Soy Beans	Lafayette, Ind.	F	99.26	0.69	96.5	0.0	4-30	12	F	None
9259	†Steuben Grain Co., Pleasant Lake	Ostrander, W. A.	C	95.00	......	90.0	......	12-29	......	C	None
	Manchu Soy Beans	Lafayette, Ind.	F	99.15	0.85	91.0	0.0	4-30	......	F	None
9571	Sowash, E. K., Crown Point[186]	Plant Seed Co.	C	98.65	......	92.0	......	1-30	......	C	None
	Virginia Soy Beans, Lot B	St. Louis, Mo.	F	97.64	1.61	80.5	0.0	4-30	84	F	None
9461	Criss Bros., Lewis	Quinlan Seed Store	C	97.00	......	90.0	......	12-29	......	C	None
	Manchu Soy Beans, Lot Soy	Terre Haute, Ind.	F	99.29	0.71	95.0	0.0	4-30	......	F	None
9894	Sample, John L., Madison	Sample, John L.	C	98.00	......	90.0	......	2-30	......	C	None
	Dunfield Soy Beans, Lot Son	Madison, Ind.	F	99.31	0.69	88.0	0.0	5-30	......	F	None
19	Worthington Grain Co., Worthington[185]	Schultz Seed Co., J. M.	C	99.00	......	86.0	......	1-30	......	C	None
	Virginia Soy Beans	Dieterich, Ill.	F	99.93	0.07	72.0	0.0	5-30	......	F	None
28	Record & Son, L. N., Edinburg	Schultz Seed Co.	C	99.00	......	94.0	......	2-30	......	C	None
	Manchu Soy Beans, Lot 6474	Olney, Ill.	F	98.43	1.48	91.5	0.0	6-30	......	F	None
9953	Gienger & Co., J., Jeffersonville	Scott Seed Co.	C	98.00	......	90.0	......	2-30	......	C	None
	Virginia Brown Soy Beans, Lot 696	New Albany, Ind.	F	98.69	1.23	80.5	0.0	6-30	32	F	None
9957	Gienger & Co., J., Jeffersonville	Scott Seed Co.	C	98.00	......	90.0	......	2–	......	C	None
	Wilson Soy Beans, Lot 697	New Albany, Ind.	F	99.09	0.78	77.5	1.5	6-30	20	F	None

37	Scarlett, Elmer, West Baden	Scott Seed Co.	C	98.00		90.0		2–		C	None
	Manchu Soy Beans, Lot 704	New Albany, Ind.	F	99.28	0.72	92.5	0.0	6–30		F	None
45	Springer, W. D., Kennard	Springer, W. D.	C	98.00		90.0		4–30		C	None
	Mixed Soy Beans, Lot Ray	Kennard, Ind.	F	98.83	1.17	83.5	0.0	6–30		F	None
9813	Spurgin, Archie B., Columbus	Spurgin, Archie B.	C	99.90		90.0		1–30		C	None
	Black Wilson Soy Beans, Lot Cooper	Columbus, Ind.	F	99.96	0.00	97.0	0.0	5–30	4	F	None
9681	Hamlet Cooperative Farm Shipping Ass'n, Hamlet	Starke Co. Farm Bureau	C	98.00		98.0				C	None
	Manchu Soy Beans, Lot S-20	Knox, Ind.	F	97.78	2.22	95.5	0.0	4–30		F	None
9651	Syler, Clay, North Manchester	Syler, Clay	C	98.00		91.0		2–30		C	None
	Manchu Soy Beans	North Manchester, Ind.	F	99.31	0.69	92.5	0.5	5–30		F	None
29	†Decatur Co. Cooperative Co., Greensburg	Turner, C. C.	C	98.00		95.0		2–30		C	None
	Illini Soy Beans, Lot I	Arthur, Ill.	F	98.46	1.52	95.0	0.5	6–30	4	F	None
30	†Decatur Co. Cooperative Co., Greensburg	Turner, C. C.	C	98.00		95.0		2–30		C	None
	Manchu Soy Beans, Lot T	Arthur, Ill.	F	99.05	0.95	93.5	0.0	6–30		F	None
9912	Victoria Mill & Elevator, Jasper	Victoria Mill & Elevator	C	98.00		96.0		4–30		C	None
	Holly Brook Soy Beans, Lot HB	Jasper, Ind.	F	99.33	0.59	98.5	1.0	4–30	8	F	None
9913	Victoria Mill & Elevator, Jasper	Victoria Mill & Elevator	C	98.00		95.0		4–30		C	None
	Manchu Soy Beans, Lot MC	Jasper, Ind.	F	99.78	0.16	96.5	1.0	4–30	4	F	None
53	San Pierre Grain & Supply Co., San Pierre	Warren-Teed Seed Co.	C	99.00		96.0		2–30		C	None
	Manchu Soy Beans, Lot Y-261	Chicago, Ill.	F	99.48	0.52	94.5	0.0	6–30		F	None
64	Syler & Syler, Nappanee	Wolf Seed Co.	C	99.00		96.0		3–30		C	None
	Manchu Soy Beans, Lot 7268	Fort Wayne, Ind.	F	99.90	0.10	88.0	0.0	7–30		F	None
9846	Travis, S. A., Linton	Worthington Grain Co.	C	99.79		91.0		1–30		C	None
	Dunfield Soy Beans, Lot D	Worthington, Ind.	F	99.99	0.01	88.5	0.0	5–30		F	None
9897	Wyatt Seed & Feed Store, Petersburg	Wyatt Seed & Feed Store	C	99.62		98.0		2–27		C	None
	Certified Holly Brook Soy Beans, Lot C-0	Petersburg, Ind.	F	99.37	0.63	91.5	3.5	5–30		F	None
9901	Wyatt Seed & Feed Store, Petersburg	Wyatt Seed & Feed Store	C	97.00		91.0		2–30		C	None
	Holly Brook Soy Beans, Lot S-10	Petersburg, Ind.	F	95.73	3.67	84.5	0.5	5–30	60	F	None

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*Not labeled.

†Certified by retailer.

C and F stands, respectively, for Claimed and Found.

[185] Removed from sale. Misbranded. All sold.

[186] Retagged.

SUDAN GRASS

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.*	Name and Address of Distributor		Purity, per cent	Inert Matter, per cent	Germination, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds		Number per Pound of each of the Noxious Weed Seeds Specified in the Law
34	North Judson Milling Co., North Judson	Crabbs Reynolds Taylor Co.	C	97.63	......	85.0	4-30	....	C	None
	Sudan Grass, Lot JB	Crawfordsville, Ind.	F	97.29	2.23	72.0	6-30	144	F	None
8833	†Gotto-Mathias Co., Michigan City	Dickinson Co., The Albert	C	96.34	......	85.0	5-28	....	C	None
	Sudan Grass, Lot 098591	Chicago, Ill.	F	98.60	1.40	82.5	1-30	54	F	None
9891	Sample, John L., Madison	McCullough Seed Co., J. Chas.	C	98.35	......	93.0	2-30	....	C	None
	Sudan Grass Seed, Lot 3795	Cincinnati, Ohio	F	99.10	0.79	93.0	5-30	36	F	None

C and F stands, respectively, for Claimed and Found.

*Not labeled.
†Certified by retailer.

TIMOTHY

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, per cent	Inert Matter, per cent	Germination, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds		Number per Pound of each of the Noxious Weed Seeds Specified in the Law
9923	Stephenson & Co., Leavenworth[188]	Chambers Seed Co.	C	......	......	......	......	....	C	
	Timothy	Louisville, Ky.	F	96.78	1.49	85.75	4–30	8,055	F	Bracted plantain 36; buckhorn 558; common plantain 486; red sorrel 5,175
9815	Cloverdale Hdwe. & Lbr. Co., Cloverdale	Cloverdale Hardware & Lumber Co.	C	98.50	......	85.00	3–30	....	C	Common plantain 200; curled dock 18
	Timothy, Lot JRR	Cloverdale, Ind.	F	99.40	0.05	95.50	5–30	3,618	F	Common plantain 3,375; curled dock 18
9974	†Mayer Grain Co., Denver	Courteen Seed Co.	C	99.50	......	92.00	3–30	....	C	None
	Timothy, Lot AA	Milwaukee, Wis.	F	99.16	0.39	83.25	4–30	1,134	F	Common plantain 234
8966	Budrow Hdwe. Co., Flora	Crabbs Reynolds Taylor Co.	C	99.10	......	90.00	10–29	....	C	Buckhorn 180; common plantain 747
	Timothy, Lot 8TA	Crawfordsville, Ind.	F	99.02	0.73	89.50	4–30	1,512	F	Buckhorn 198; common plantain 738; oxeye daisy 54; red sorrel 72
8816	Cloverdale Hdwe. & Lbr. Co., Cloverdale	Crabbs Reynolds Taylor Co.	C	99.65	......	90.00	9–29	....	C	None
	Timothy, Lot 4TA	Crawfordsville, Ind.	F	99.71	0.19	91.50	1–30	72	F	Bracted plantain 18; common plantain 36; red sorrel 18
9694	Cooperative Elevator Co., Winamac	Crabbs Reynolds Taylor Co.	C	99.80	......	90.00	10–29	....	C	None
	Timothy, Lot 5TB	Crawfordsville, Ind.	F	99.90	0.05	90.25	5–30	....	F	None
9642	Farmers Cooperative Co., Westville	Crabbs Reynolds Taylor Co.	C	99.80	......	90.00	10–29	....	C	None
	Timothy, Lot 5TB	Crawfordsville, Ind.	F	99.90	0.10	86.50	5–30	18	F	Buckhorn 18
9708	Jones Hdwe. Co., Peru[189]	Crabbs Reynolds Taylor Co.	C	99.60	......	92.00	2–30	....	C	None
	Timothy, Lot 2TD	Crawfordsville, Ind.	F	99.46	0.24	92.75	5–30	900	F	Bracted plantain 18; buckhorn 36; common plantain 594; curled dock 18; red sorrel 234
9048	Nixon & Vandeventer, Attica	Crabbs Reynolds Taylor Co.	C	99.65	......	90.00	9–29	....	C	None
	Timothy, Lot 4TA	Crawfordsville, Ind.	F	99.80	0.05	92.00	4–30	72	F	Common plantain 18; red sorrel 54
9028	Osgood Grain Co., Osgood	Crabbs Reynolds Taylor Co.	C	99.60	......	90.00	10–29	....	C	Common plantain 36
	Timothy, Lot 3TB	Crawfordsville, Ind.	F	99.70	0.20	90.75	4–30	351	F	Buckhorn 108; common plantain 18
9002	Sample, John L., Madison	Crabbs Reynolds Taylor Co.	C	99.65	......	88.00	9–29	....	C	Common plantain 261
	Timothy, Lot TW	Crawfordsville, Ind.	F	99.70	0.20	93.00	4–30	576	F	Buckhorn 72; common plantain 504

*Not labeled.
†Certified by retailer.
C and F stands, respectively, for Claimed and Found.

[188] Returned to Distributor.

[189] Removed from sale. Misbranded. All sold.

TIMOTHY—Continued

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, per cent	Inert Matter, per cent	Germination, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds		Number per Pound of each of the Noxious Weed Seeds Specified in the Law
9387	See & Son, Macy	Crabbs Reynolds Taylor Co.	C	99.80	......	90.00	10–29	....	C	None
	Timothy, Lot 5TB	Crawfordsville, Ind.	F	99.75	0.15	95.00	4–30	540	F	Bracted plantain 18; buckhorn 54; common plantain 18
8654	Shirley, O. C., Knightstown	Crabbs Reynolds Taylor Co.	C	99.01	......	90.00	9–29	....	C	None
	Timothy, Lot 2TA	Crawfordsville, Ind.	F	99.60	0.15	92.25	11–29	576	F	Common plantain 126
9459	Swinehart Hdwe. Co., Clinton	Crabbs Reynolds Taylor Co.	C	99.80	......	90.00	10–29	....	C	None
	Timothy, Lot 5TB	Crawfordsville, Ind.	F	99.70	0.20	91.25	4–30	72	F	Buckhorn 72
8788	Walton Elevator Co., Walton	Crabbs Reynolds Taylor Co.	C	99.60	......	88.00	8–29	....	C	Common plantain 225
	Timothy, Lot TT	Crawfordsville, Ind.	F	99.55	0.35	92.25	1–30	522	F	Buckhorn 36; common plantain 414; red sorrel 72
8920	Weinkauf Grain Co., LaCrosse	Crabbs Reynolds Taylor Co.	C	99.10	......	90.00	10–29	....	C	Buckhorn 180; common plantain 747
	Timothy, Lot 8TA	Crawfordsville, Ind.	F	99.15	0.50	87.25	4–30	1,656	F	Buckhorn 288; common plantain 774; red sorrel 144
8706	Woods & Pritsch, Sheridan	Crabbs Reynolds Taylor Co.	C	99.61	......	90.00	9–29	....	C	None
	Timothy, Lot 2TA	Crawfordsville, Ind.	F	99.61	0.19	92.75	12–29	108	F	Common plantain 90; red sorrel 18
9065	Demoret Grain Co., Bath	Crawfordsville Seed Co.	C	99.65	......	94.00	9–29	....	C	None
	Timothy, Lot 69379	Crawfordsville, Ind.	F	99.80	0.10	91.50	3–30	351	F	Common plantain 36; red sorrel 90
8778	Shirley, A. D., Walton	Crawfordsville Seed Co.	C	99.65	......	94.00	9–29	....	C	None
	Timothy, Lot 69379	Crawfordsville, Ind.	F	99.70	0.15	90.50	1–30	801	F	Common plantain 36; red sorrel 90
8875	Cordes Hardware Co., Seymour	Dickinson Co., The Albert	C	99.65	......	94.00	11–29	....	C	None
	Timothy, Lot 69674	Chicago, Ill.	F	99.50	0.15	90.50	3–30	297	F	Buckhorn 18; common plantain 54
58	Culver City Grain & Coal Co., Culver	Dickinson Co., The Albert	C	99.65	......	93.00	1–29	....	C	None
	Timothy, Lot 68919	Chicago, Ill.	F	99.85	0.05	88.25	7–30	567	F	Buckhorn 18; common plantain 108; red sorrel 216
9016	Eckert & Son, John, Osgood	Dickinson Co., The Albert	C	99.65	......	94.00	9–29	....	C	Common plantain 112
	Timothy, Lot 69543	Chicago, Ill.	F	99.90	0.05	88.75	2–30	90	F	Buckhorn 36; common plantain 18; curled dock 36
8882	†Gotto-Mathias Co., Michigan City	Dickinson Co., The Albert	C	99.65	......	94.00	9–29	....	C	Common plantain 112
	Timothy, Lot 69543	Chicago, Ill.	F	99.80	0.05	88.25	4–30	279	F	Common plantain 54
9479	Hagerstown Grain Co., Hagerstown	Dickinson Co., The Albert	C	99.36	......	90.00	2–30	....	C	None
	Timothy, Lot 067539	Chicago, Ill.	F	99.02	0.39	82.50	4–30	4.743	F	Red sorrel 18
8997	Hunger, C. G., Madison	Dickinson Co., The Albert	C	99.65	......	94.00	9–29	....	C	None
	Timothy, Lot 69543	Chicago, Ill.	F	99.35	0.20	91.00	4–30	990	F	Common plantain 72; red sorrel 18
9568	Morrow Dept. Store, Hebron	Dickinson Co., The Albert	C	99.65	......	92.00	12–29	....	C	None
	Timothy, Lot 69766	Chicago, Ill.	F	99.65	0.15	92.00	5–30	702	F	Common plantain 252

8841	Reynolds Brooks Hdwe. Co., Loogootee	Dickinson Co., The Albert	C	99.60	......	93.00	9–29	....	C	None
	Timothy, Lot 69380	Chicago, Ill.	F	99.65	0.15	90.75	1–30	351	F	Common plantain 36; curled dock 18; red sorrel 72
8699	Spurgin, Archie B., Columbus	Dickinson Co., The Albert	C	99.65	......	94.00	11–29	....	C	None
	Timothy, Lot 69674	Chicago, Ill.	F	99.60	0.20	89.50	12–29	747	F	Common plantain 54; red sorrel 18
9536	†Woodbury-Elliott Co., Muncie	Dickinson Co., The Albert	C	99.65	......	92.00	12–29	....	C	None
	Timothy, Lot 69766	Chicago, Ill.	F	99.70	0.15	91.00	5–30	576	F	Common plantain 90; red sorrel 36
9562	Evans & Hedworth, Remington	Evans & Hedworth	C	99.42	......	91.75	10–29	....	C	Common plantain 225
	Timothy, Lot 47094	Remington, Ind.	F	99.20	0.25	93.50	5–30	2,565	F	Common plantain 72; curled dock 18
9721	Farmers Cooperative Co., Royal Center[191]	Farmers Cooperative Co.	C	99.65	......	94.00	8–29	....	C	Common plantain 112
	Timothy, Lot 69543	Royal Center, Ind.	F	99.70	0.25	82.00	5–30	126	F	Common plantain 126
9405	Florea, O. W., Fairmount	Farmers Equity Exchange	C	98.98	......	88.00	1–30	....	C	None
	Timothy, Lot T	Van Buren, Ind.	F	99.06	0.35	76.75	4–30	432	F	Common plantain 414; curled dock 18
9518	Farmers Cooperative Elev. Co., Sheridan[191]	Foster-Kendall Co.	C	99.60	......	90.00	1–30	....	C	None
	Timothy, Lot Pine Tree	Carmel, Ind.	F	99.75	0.15	63.00	4–30	531	F	Buckhorn 18; common plantain 234; red sorrel 54
9618	Geneva Equity Exchange, Geneva	Geneva Equity Exchange	C	97.00	......	95.00	1–30	....	C	Common plantain 2,500
	Timothy	Geneva, Ind.	F	98.06	0.44	96.25	5–30	7,533	F	Common plantain 7,200; curled dock 72; red sorrel 36
9786	Fortville Grain Co., Fortville	Goodrich Bros.	C	99.40	......	90.00	12–29	....	C	None
	Timothy, Lot Lark	Winchester, Ind.	F	99.71	0.10	94.75	4–30	261	F	Oxeye daisy 36
9544	Goodrich Bros., Eaton	Goodrich Bros.	C	99.60	......	94.00	1–30	....	C	None
	Timothy, Lot Lark 401	Winchester, Ind.	F	99.65	0.20	85.50	5–30	162	F	Buckhorn 9; common plantain 27; red sorrel 36
9595	Goodrich Bros., Winchester	Goodrich Bros.	C	99.75	.....	92.00	1–30	....	C	None
	Timothy, Lot 400	Winchester, Ind.	F	99.81	0.05	91.25	5–30	72	F	Common plantain 54; red sorrel 18
8750	Maxwell Grain Co., Maxwell	Goodrich Bros.	C	99.50	......	90.00	9–29	....	C	None
	Timothy	Winchester, Ind.	F	99.61	0.10	98.25	1–30	297	F	Common plantain 54; red sorrel 18
9666	Gotto-Mathias Co., Michigan City	Gotto-Mathias Co.	C	99.30	......	90.00	2–30	....	C	None
	Timothy, Lot 067-539	Michigan City, Ind.	F	99.30	0.10	86.50	5–30	4,275	F	None
9665	Heitschmidt, A. C., Michigan City	Heitschmidt, A. C.	C	99.65	......	92.00	12–29	....	C	None
	Timothy, Lot 79766	Michigan City, Ind.	F	99.71	0.14	88.00	5–30	387	F	Common plantain 162
9223	Strain, A. F., Princeton[192]	Heldt Co., The	C	99.59	......	......	8–29	....	C	Red sorrel 450
	Thelco Timothy, Lot 1824	Evansville, Ind.	F	99.42	0.34	69.25	3–30	1,260	F	Buckhorn 18; common plantain 18; oxeye daisy 162; red sorrel 162
8627	Wyatt Elevator Co., Petersburg	Heldt Co., The	C	99.69	......	94.00	9–29	....	C	Common plantain 225
	"Thelco" Timothy, Lot 1839	Evansville, Ind.	F	99.71	0.14	85.00	10–29	567	F	Common plantain 234; curled dock 54; red sorrel 54
8832	Hjelm, John W., Chesterton[193]	Hjelm, John W.	C	99.65	......	94.00	9–29	....	C	Common plantain 112
	Timothy, Lot 69543	Chesterton, Ind.	F	99.86	0.09	92.75	1–30	90	F	Common plantain 72; red sorrel 18

*Not labeled.
†Certified by retailer.
C and F stands, respectively, for Claimed and Found.

[191] Removed from sale. Misbranded. All sold.

[192] Tag incomplete. Retagged.

[193] Not tagged. Labels furnished.

TIMOTHY—Continued

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor	Purity, per cent	Inert Matter, per cent	Germination, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds	Number per Pound of each of the Noxious Weed Seeds Specified in the Law
9676	Holser & Co., B. I., Walkerton[194]	Holser & Co., B. I. C	93.05	......	90.00	3-30	....	C Buckhorn 1,125; common plantain 2,700; red sorrel 900
	Timothy, Lot 34869	Walkerton, Ind. F	89.04	0.20	91.75	5-30	6,498	F Buckhorn 2,034; Canada thistle 72; common plantain 2,178; curled dock 36; red sorrel 720; wild carrot 108
9678	Holser & Co., B. I., Walkerton	Holser & Co., B. I. C	99.45	......	85.00	3-30	....	C Buckhorn 225; red sorrel 1,125
	Timothy, Lot 34868	Walkerton, Ind. F	99.36	0.20	91.25	5-30	3,357	F Buckhorn 450; Canada thistle 36; red sorrel 2,196
9679	Holser & Co., B. I., Walkerton	Holser & Co., B. I. C	98.10	......	90.00	3-30	....	C Canada thistle 225; common plantain 900; red sorrel 6,525
	Timothy, Lot 34867	Walkerton, Ind. F	98.45	0.78	89.75	5-30	4,491	F Canada thistle 54; common plantain 1,944; curled dock 18; red sorrel 2,475
9447	Hoosier Grain & Supply Co., Van Buren[195]	Hoosier Grain & Supply Co. C	99.51	......	89.25	12-29	....	C None
	Timothy	Bluffton, Ind. F	99.47	0.24	95.25	4-30	1,359	F Common plantain 630; curled dock 18; wild carrot 36
9816	Campbell Bros., Greencastle[196]	Hooton-Davis Seed Co. C	99.60	......	90.00	2-30	....	C None
	Timothy, Lot T160	Lebanon, Ind. F	99.47	0.29	90.25	5-30	1,485	F Buckhorn 18; common plantain 684; curled dock 36; red sorrel 72
8938	Farmers Cooperative Co., Cicero	Hooton-Davis Seed Co. C	99.70	......	91.00	10-29	....	C None
	Timothy, Lot T156	Lebanon, Ind. F	99.66	0.14	94.25	4-30	297	F Buckhorn 36; common plantain 36
9841	Farmers Cooperative Elev. Co., Seymour	Hooton-Davis Seed Co. C	99.70	......	91.00	10-29	....	C None
	Timothy, Lot T156	Lebanon, Ind. F	99.45	0.05	94.75	5-30	369	F Buckhorn 54; common plantain 54; curled dock 18; red sorrel 1
9752	Lett & Son, R. H., Tipton	Hooton-Davis Seed Co. C	99.61	......	90.00	10-29	....	C None
	Timothy, Lot 7151	Lebanon, Ind. F	99.50	0.40	82.25	5-30	72	F Common plantain 54; curled dock 18
8989	Morgan Co. Farm Bureau Cooperative Ass'n., Martinsville	Indiana Farm Bureau Pur. Dept., Inc. C	99.50	......	92.00	12-29	....	C None
	Timothy, Lot T541	Indianapolis, Ind. F	99.52	0.24	94.00	4-30	315	F Common plantain 90
9143	Purdue Agronomy Dept.	Indiana Farm Bureau Pur. Dept., Inc. C	99.65	......	92.00	1-30	....	C None
	Timothy, Lot T541	Indianapolis, Ind. F	99.70	0.20	89.75	2-30	576	F Common plantain 126
9105	Vigo Co. Farm Bureau, Terre Haute	Indiana Farm Bureau Pur. Dept., Inc. C	99.50	......	93.00	12-29	....	C None
	Timothy, Lot T541	Indianapolis, Ind. F	99.31	0.39	93.00	4-30	387	F Buckhorn 36; common plantain 126

8986	Branch Grain & Seed Co., Martinsville	Indiana Seed Co.	C	99.50	......	90.00	8-29	....	C	Buckhorn 226; curled dock 90
	Timothy, Lot 1195	Indianapolis, Ind.	F	99.50	0.30	97.00	4-30	1,629	F	Buckhorn 198; common plantain 288; curled dock 18
59	Farmers Cooperative Co., Lucerne	Indiana Seed Co.	C	99.60	......	92.00	12-29	....	C	None
	Timothy, Lot 69794	Indianapolis, Ind.	F	99.75	0.15	88.50	7-30	477	F	Buckhorn 18; common plantain 198; red sorrel 36
8608	Hughes, John C., Morgantown	Indiana Seed Co.	C	99.75	......	90.00	6-29	....	C	None
	Timothy, Lot 28034	Indianapolis, Ind.	F	99.55	0.25	94.50	10-29	801	F	Bracted plantain 72; common plantain 18; red sorrel 36
9090	Klingensmith, E. J., New Augusta	Indiana Seed Co.	C	99.50	......	90.00	9-29	....	C	None
	Timothy, Lot 69316	Indianapolis, Ind.	F	99.70	0.15	93 00	4-30	54	F	Common plantain 36; red sorrel 18
8610	Mazur Seed Co., Indianapolis[197]	Indiana Seed Co.	C	99.75	......	90.00	6-29	....	C	None
	Timothy, Lot 28034	Indianapolis, Ind.	F	99.43	0.43	92.75	10-29	477	F	Common plantain 108; oxeye daisy 18; red sorrel 126
9823	Owen Farmers Supply Co., Spencer	Indiana Seed Co.	C	99.60	......	92.00	9-29	....	C	None
	Timothy, Lot 69542	Indianapolis, Ind.	F	99.75	0.20	84.50	5-30	405	F	Buckhorn 18; common plantain 162
8826	Pioneer Elevator Co., Worthington[198]	Indiana Seed Co.	C	99.50	......	90.00	9-29	....	C	None
	Timothy, Lot 69316	Indianapolis, Ind.	F	99.76	0.14	88.50	2-30	234	F	Buckhorn 72; common plantain 144; oxeye daisy 18
9547	Williamson Co., J. H., Muncie	Indiana Seed Co.	C	99.65	......	90.00	8-29	....	C	None
	Timothy, Lot 10071	Indianapolis, Ind.	F	99.65	0.25	91.25	5-30	225	F	None
8744	Farmers Grain & Supply Co., Modoc	Kellogg Seed Co., John L.	C	98.88	......	93.00	7-29	....	C	None
	Timothy, Lot 27011	Chicago, Ill.	F	99.12	0.15	89.00	12-29	630	F	Common plantain 126; curled dock 18; red sorrel 36
9308	Indiana State Highway Com., Indianapolis	Kellogg Seed Co.	C	99.25	......	95.00	12-29	....	C	Buckhorn 45; common plantain 128; red sorrel 15
	Timothy, Lot Owl	Milwaukee, Wis.	F	99.11	0.84	95.75	3-30	486	F	Buckhorn 54; common plantain 396; red sorrel 36
9649	†Farmers Elevator Co., So. Whitley	Kraus, Sam	C	99.60	......	93.00	12-29	....	C	None
	Timothy, Bag No. 69767	Fort Wayne, Ind.	F	99.65	0.25	87.00	4-30	351	F	Common plantain 108; red sorrel 18
9586	Beach & Simmers, Albany	Kraus & Apfelbaum	C	99.50	......	92.00	1-30	....	C	None
	Timothy, Lot 3	Fort Wayne, Ind.	F	99.70	0.15	99.00	5-30	1,035	F	Canada thistle 18; common plantain 198; wild carrot 144
8701	Eberts Grain Co., Scottsburg[198]	Lewis Implement & Seed Co.	C	99.40	......	94.00	8-29	....	C	None
	Timothy	Louisville, Ky.	F	99.25	0.35	91.00	12-29	855	F	Buckhorn 54; common plantain 450; curled dock 72; red sorrel 54
8874	Eberts Grain Co., Scottsburg	Lewis Implement & Seed Co.	C	99.25	......	90.00	11-29	....	C	Red sorrel 35
	Timothy	Louisville, Ky.	F	99.40	0.37	87.75	2-30	850	F	Buckhorn 36; common plantain 252; curled dock 36; oxeye daisy 18; red sorrel 108

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*Not labeled.

†Certified by retailer.

C and F stands, respectively, for Claimed and Found.

[194] Removed from sale. Misbranded. Retagged. Contains 9.61% Alsike Clover with 67.0% Germination and 29.5% Hard Seeds.

[195] Removed from sale. Misbranded.

[196] Removed from sale. Misbranded. Retagged.

[197] Sample secured from Indianapolis Park Department.

[198] Retagged.

TIMOTHY—Continued

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor	Purity, per cent	Inert Matter, per cent	Germination, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds	Number per Pound of each of the Noxious Weed Seeds Specified in the Law
9770	Jay Grain Co., Elwood	Leisure, Lindall C	98.30	......	100.00	1–30	....	C Buckhorn 225; common plantain 6,975; curled dock 225
	Timothy	Elwood, Ind F	99 02	0.20	91.75	5–30	4,914	F Buckhorn 108; common plantain 2,088; red sorrel 18
9730	Loughry Bros. Milling & Grain Co., Idaville[199]	Loughry Bros. Milling & Grain Co. C	99.00	......	92.00	2-29	....	C None
	Timothy, Lot 1	Monticello, Ind F	98.04	0.48	82 50	5–30	7,614	F Common plantain 1,656; curled dock 108; red sorrel 3,825
9540	Haynes & Son, Eaton[200]	McCullough Seed Co., J. Chas. C	99.60	......	94.00	11–29	....	C Common plantain 36
	Timothy, Lot 3621	Cincinnati, Ohio F	99.46	0.29	73.50	4–30	819	F Buckhorn 18; common plantain 126
9020	Hunter, Wm. M., Versailles[201]	McCullough Seed Co., J. Chas. C	99.41	......	84.00	11–29	....	C Common plantain 450
	Timothy, Lot 3656	Cincinnati, Ohio F	99.46	0.29	72.25	4–30	1,386	F Buckhorn 162; common plantain 270; red sorrel 54
8643	Wayne Co. Farm Bureau, Richmond[202]	McCullough Seed Co., J. Chas. C	99.60	......	94.00	9–29	....	C Common plantain 36
	Timothy, Lot 3621	Cincinnati, Ohio F	99.65	0.25	79.75	11 29	621	F Buckhorn 18; common plantain 360; red sorrel 18
9055	Werst & Co., Peter, Brookville	McCullough Seed Co., J. Chas. C	99.60	......	94.00	11–29	....	C Common plantain 225
	Timothy, Lot 3257	Cincinnati, Ohio F	99.47	0.29	82.50	4–30	423	F Bracted plantain 18; buckhorn 18; common plantain 162
9932	†Nedderman, Roy, Sunman	Manthey's Seed Store C	99.50	......	90.00	2–30	....	C None
	Timothy	Cincinnati, Ohio F	99.51	0.29	94.25	5–30	549	F Common plantain 198; red sorrel 126
9036	Doerflein, Chas. E., Cedar Grove	Market Gardeners Seed Co. C	99.50	......	92.00	11–29	....	C Common plantain 748
	Timothy, Lot 155	Cincinnati, Ohio F	99.25	0.35	74.25	2–30	1,521	F Bracted plantain 36; common plantain 504; curled dock 72; oxeye daisy 18; red sorrel 216
8889	Mayer Grain Co., So. Whitley[204]	Mayer Grain Co. C	99 00	......	91.00	11–29	....	C None
	Timothy, Lot AX	South Whitley, Ind F	98.09	0.39	88.25	2–30	4,617	F Bracted plantain 18; buckhorn 54; common plantain 2,646; red sorrel 324
9260	Warsaw Feed Store, Warsaw[200]	Mayer Grain Co. C	99.00	......	91.00	12–29	....	C None
	Timothy, Lot A	South Whitley, Ind F	99.30	0.20	92.75	4–30	3,474	F Common plantain 684; red sorrel 540
8624	Indianapolis Municipal Air Port, Indianapolis	Mazur Seed Co. C	99.50	......	90.00	8–29	....	C Common plantain 90
	Timothy, Lot 10069	Indianapolis, Ind F	99.32	0 49	88.25	10–29	648	F Common plantain 198

9084	Nading Grain Co., Wm., Waldron	Nading Grain Co., Wm.,	C	99.60	......	94.00	9-29	....	C	None
	Timothy, Lot 69495	Waldron, Ind.	F	99.55	0.30	95.75	4-30	522	F	Common plantain 36; red sorrel 36
8993	Bloomington Milling Co., Bloomington[205]	Pfeifer, Geo. L., Jr.	C	99.25	......	......	......	....	C	None
	Timothy, Lot P	Arcola, Ill.	F	99.01	0.45	95.25	2-30	1,170	F	Bracted plantain 18; buckhorn 18; common plantain 1,134
8628	Dilly & Son, Phil, Huntingburg	Purcell Seed Co.	C	99.50	......	90.00	9-29	....	C	Common plantain 675
	"Tru Val" Timothy, Lot 8014	Evansville, Ind.	F	99.75	0.15	85.00	10-29	423	F	Common plantain 180; red sorrel 18
9869	Wheatland Elevator Co., Wheatland[206]	Purcell Seed Co.	C	99.00	......	90.00	1-30	....	C	None
	Tru Val Timothy, Lot 7987	Evansville, Ind.	F	96.36	0.35	91.25	5-30	918	F	Common plantain 18
9112	Quinlan Seed Store, Terre Haute	Quinlan Seed Store	C	99.40	......	90.00	12-29	....	C	Curled dock 225
	Timothy, Lot B	Terre Haute, Ind.	F	99.71	0.19	80.00	4-30	36	F	Bracted plantain 18; common plantain 18
8873	Crescent Mills, Crothersville	Ross Seed Co.	C	99.60	......	95.00	9-29	....	C	Red sorrel 225
	M. B. Timothy, Lot 732	Louisville, Ky.	F	99.49	0.28	88.25	2-30	972	F	Buckhorn 126; common plantain 306; red sorrel 90
9018	Hunter, Wm. M., Versailles	Ross Seed Co.	C	99.50	......	93.00	9-29	....	C	Common plantain 675
	"Lena" Timothy, Lot 732	Louisville, Ky.	F	99.30	0.30	87.75	4-30	756	F	Buckhorn 54; common plantain 198; red sorrel 54
8629	†McCarty Seed Co., J. A., Terre Haute	Schultz Seed Co., J. M.	C	99.68	......	95.00	9-29	....	C	Oxeye daisy 225
	"Lucky Jim" Timothy, Lot 128	Dieterich, Ill.	F	99.65	0.15	83.25	11-29	720	F	Oxeye daisy 54; red sorrel 216
8869	Gienger & Co., J., Jeffersonville	Scott Seed Co.	C	99.60	......	95.00	9-29	....	C	None
	Timothy, Lot PT	New Albany, Ind.	F	99.80	0.15	94.00	2-30	234	F	Bracted plantain 18; buckhorn 72; common plantain 108; red sorrel 36
8858	Hayes & Dodds, Campbellsburg	Scott Seed Co.	C	99.50	......	95.00	9-29	....	C	None
	Timothy, Lot 879	New Albany, Ind.	F	98.87	0.54	84.75	2-30	675	F	Common plantain 450
8751	Trow Co., W., Madison	Scott Seed Co.	C	99.50	......	95.00	9-29	....	C	None
	Timothy, Lot 868	New Albany, Ind.	F	99.50	0.25	88.50	1-30	774	F	Buckhorn 36; common plantain 288
8755	Trow Co., W., Madison	Scott Seed Co.	C	99.60	......	95.00	8-29	....	C	None
	Timothy, Lot PL	New Albany, Ind.	F	99.66	0.24	90.75	1-30	108	F	Common plantain 90; curled dock 18
9606	Snapp Grain Co., Ridgeville[208]	Snapp Grain Co.	C	96.00	......	92.00	1-30	....	C	Common plantain 1,525
	Timothy, Lot 1	Ridgeville, Ind.	F	92.42	0.10	97.75	5-30	1,161	F	Common plantain 936
9607	Snapp Grain Co., Ridgeville	Snapp Grain Co.	C	99.30	......	94.00	1-30	....	C	Common plantain 450
	Timothy, Lot 4	Ridgeville, Ind.	F	99.35	0.40	82.50	5-30	297	F	Buckhorn 18; common plantain 54
8960	Cooperative Elevator Co., Francesville[205]	Sunfield Seed Service	C	99.50	......	95.00	10-29	....	C	None
	Timothy, Lot 15166	Chicago, Ill.	F	99.37	0.39	88.50	2-30	1,188	F	Buckhorn 18; common plantain 720

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*Not labeled.

†Certified by retailer.

C and F stands, respectively, for Claimed and Found.

[199] Removed from sale. Misbranded.

[200] Removed from sale. Misbranded. All sold.

[201] Retagged.

[202] Removed from sale. Misbranded. Retagged.

[204] Removed from sale. Misbranded. Recleaned.

[205] Removed from sale. Misbranded. Retagged.

[206] Removed from sale. Misbranded. All sold.

[208] Contains 7.38% Alsike Clover with 50.5% Germination and 47.0% Hard Seeds.

TIMOTHY—Continued

Laboratory No. §	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, per cent	Inert Matter, per cent	Germination, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds		Number per Pound of each of the Noxious Weed Seeds Specified in the Law
8948	Farmers Cooperative Co., Cicero	Sunfield Seed Service	C	99.50	......	95.00	10–29	....	C	None
	Timothy, Lot 15166	Chicago, Ill.	F	99.41	0.34	86.50	2–30	288	F	Buckhorn 18; common plantain 270
8924	Farmers Elevator Co., Monticello[209]	Sunfield Seed Service	C	99.50	......	95.00	10–29	....	C	None
	Timothy, Lot 15166	Chicago, Ill.	F	99.28	0.48	93.00	2–30	837	F	Common plantain 594; red sorrel 18
9715	Farmers Grain & Supply Co., Oak	Sunfield Seed Service	C	99.75	......	94.00	3–29	....	C	None
	Timothy, Lot 15140	Chicago, Ill.	F	99.70	0.20	86.25	4–30	918	F	Common plantain 198; curled dock 18; red sorrel 252
9727	Farmers Grain & Supply Co., Oak[210]	Sunfield Seed Service	C	99.50	......	95.00	1–30	....	C	None
	Timothy, Lot 15166	Chicago, Ill.	F	99.20	0.45	84.75	5–30	612	F	Common plantain 594; curled dock 18
8905	Hillisburg Grain & Coal Co., Hillisburg[209]	Sunfield Seed Service	C	99.50	......	95.00	10–29	....	C	None
	Lot 15166	Chicago, Ill.	F	99.43	0.24	87.00	2–30	558	F	Common plantain 558
9150	Logansport Elev. Co., Logansport	Sunfield Seed Service	C	99.50	......	95.00	10–29	....	C	None
	Timothy, Lot 15166	Chicago, Ill.	F	99.61	0.24	89.50	3–30	342	F	Common plantain 324; red sorrel 18
9224	McCarty Hdwe. Co., Ft. Branch	Sunfield Seed Service	C	99.75	......	95.00	7–29	....	C	None
	Timothy, Lot 15108	Chicago, Ill.	F	99.50	0.15	89.00	3–30	369	F	Common plantain 144
57	Fry Elevator, Herbert B., Argos	Teweles Seed Co., L.	C	99.70	......	93.00	3–30	....	C	None
	Timothy, Lot Badger Brand	Milwaukee, Wis.	F	99.81	0.14	95.25	7–30	225	F	None
9687	Kiest Milling Co., Knox	Teweles Seed Co., L.	C	99.70	......	93.00	2–30	....	C	None
	Timothy, Lot Badger Brand	Milwaukee, Wis.	F	99.75	0.15	93.50	5–30	243	F	Canada thistle 18
9371	Wynn, Arlie S., Rochester	Warren-Teed Seed Co.	C	99.75	......	91.50	12–29	....	C	None
	Timothy, Lot T145	Chicago, Ill.	F	99.90	0.05	92.25	3–30	108	F	Common plantain 90; curled dock 18
9422	Wilson, John, Roachdale[211]	Wilson, John	C	93.56	......	90.00	1–30	....	C	Bracted plantain 225; buckhor 225; common plantain 675
	Timothy, Lot 47629	Roachdale, Ind.	F	90.75	0.93	90.50	4–30	2,331	F	Bracted plantain 90; buckhorn 234; common plantain 882
9200	Wolfe Grain Co., Shipshewana	Wolfe Grain Co.	C	98.44	......	93.00	2–30	....	C	Buckhorn 225; common plantain 225; red sorrel 225
	Timothy	Shipshewana, Ind.	F	98.18	0 10	94.00	4–30	1,296	F	Buckhorn 180; common plantain 90; red sorrel 126

*Not labeled.
†Certified by retailer.
C and F stands, respectively, for Claimed and Found.

[209] Removed from sale. Misbranded. Returned to Distributor.

[210] Removed from sale. Misbranded. Retagged.

[211] Contains 5.81% Alsike Clover with 44.0% Germination and 41.0% Hard Seeds.

MIXTURES

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, per cent	Inert Matter, per cent	Germination, per cent	Hard Seeds, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds	Number per Pound of each of the Noxious Weed Seeds Specified in the Law
9475	Wayne Co. Farm Bureau, Richmond[212]	Brown Seed Co.	Ky. Blue Grass. C	34.32	......	84.00	......	12-29	....	
	Lawn Grass, Lot A	Alfred J.	Red Top. C	33.94	......	84.00	......	12-29	....	
		Grand Rapids, Mich.	Rye Grass. C	9.81	......	84.00	......	12-29	....	
			Dutch White Clover. C	9.28	......	84.00	......	12-29	....	C None
			Red Top. F	36.00	11.97	94.25	......	5-30	....	
			Ky. Blue Grass. F	33.21	......	74.00	......	5-30	....	
			Rye Grass. F	8.88	......	40.00	......	5-30	....	
			White Clover. F	8.01	......	67.00	28.00	5-30	23,850	F Common plantain 450; plantain 450; red sorrel 450
9850	Farmers Cooperative Co., Knox[213]	Dickinson Co., The Albert	Red Top. C	27.00	......	80.00	......	3-30	....	
	Evergreen Lawn Grass, Lot 3532	Chicago, Ill.	Rye Grass. C	19.60	......	80.00	......	3-30	....	
			Ky. Blue Grass. C	11.20	......	80.00	......	3-30	....	
			Chewing Fescue C	19.05	......	80.00	......	3-30	....	C Buckhorn 256; common plantain 1,216; red sorrel 352; yellow trefoil 480
			White Clover. C	5.00	......	80.00	......	3-30	....	
			Red Top. F	23.99	18.37	87.75	......	6-30	....	
			Ky. Blue Grass. F	11.81	......	63.50	......	6-30	....	
			I. Rye Grass. F	23.06	......	87.00	......	6-30	18,225	F Bracted plantain 450; buckhorn 900; common plantain 2,250; red sorrel 225; yellow trefoil 900
			Fescue. F	14.90	......	65.50	......	6-30	....	
9764	Goodrich Bros., Gaston[214]	Goodrich Bros.	Alsike. C	24.00	......	84.00	......	12-29	....	
	Timothy and Alsike Clover, Lot 403	Winchester, Ind.	Timothy. C	73.00	......	90.00	......	12-29	....	C Common plantain 625; curled dock 425; red sorrel 9,225
			Timothy. F	73.05	2.31	84.25	......	5-30	....	
			Alsike. F	19.91	......	53.50	13.75	5-30	35,262	F Bracted plantain 18; buckhorn 108; common plantain 13,500; curled dock 18; red sorrel 11,025; wild carrot 18

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*Not labeled.
†Certified by retailer.
C and F stands, respectively, for Claimed and Found.

[212] Removed from sale. Misbranded. Returned to Distributor.

[213] Removed from sale. Misbranded. All sold.

MIXTURES—Continued

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, per cent	Inert Matter, per cent	Germination, per cent	Hard Seeds, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds	Number per Pound of each of the Noxious Weed Seeds Specified in the Law
9667	Gotto-Mathias Co., Michigan City Evergreen Lawn Grass, Lot 36511	Gotto-Mathias Co. Michigan City, Ind.	Red Top........C	23.90		90.00		2-30		
			Chewing Fescue C	16.90		80.00		2-30		
			Rye Grass......C	19.90		92.00		2-30		
			Ky. Blue Grass.C	13.70		72.00		2-30		
			White Clover...C	4.60		80.00		2-30		C Buckhorn 256; common plantain 1,216; curled dock 64; red sorrel 352; yellow trefoil 480
			Red Top........F	22.98	20.92	82.75		6-30		
			Chewing Fescue F	20.14		69.50		6-30		
			Rye Grass......F	14.64		82.00		6-30		
			Ky. Blue Grass.F	13.95		58.00		6-30	16,691	F Buckhorn 450; common plantain 900; red sorrel 41; white top 450; yellow trefoil 450
9670	Heitschmidt, A. C., Michigan City Evergreen Lawn Grass, Lot 36384	Heitschmidt, A. C. Michigan City, Ind.	Red Top........C	17.60		90.00		3-29		
			Ky. Blue Grass.C	11.70		72.00		3-29		
			Rye Grass......C	21.30		93.00		3-29		
			Red Fescue.....C	22.40		71.00		3-29		
			White Clover...C	5.10		85.00		3-29		C Bracted plantain 90; buckhorn 300; common plantain 660; red sorrel 180
			Red Top........F	16.90	15.85	83.00		5-30		
			Ky. Blue Grass.F	13.09		54.00		5-30		
			I. Rye Grass....F	23.69		92.00		5-30		
			Festuca sp.......F	20.25		40.00		5-30		
			White Clover...F	5.73		62.00	14.00	5-30	18,900	F Bracted plantain 450; buckhorn 450; common plantain 1,350; oxeye daisy 450; red sorrel 1,350; white top 900
9482	Henry Co. Farm Bureau, Newcastle Red Clover and Alfalfa, Lot X901	Indiana Farm Bureau Purchasing Dept., Inc. Indianapolis, Ind.	Red Clover.....C	85.57		84.00	9.00	1-30		
			Alfalfa..........C	12.47		79.00	15.00	1-30		C None
			Red Clover.....F	84.51	0.28	78.00	18.00	4-30		
			Alfalfa..........F	14.13		65.00	29.50	4-30	1,548	F Curled dock 18; yellow trefoil 1,350

9531	Indiana Dairy Marketing Ass'n, Muncie Red Clover and Alfalfa, Lot X901	Indiana Farm Bureau Purchasing Dept., Inc. Indianapolis, Ind.	Red Clover	C	85.57	......	84.00	9.00	1-30	....		
			Alfalfa	C	12.17	......	79.00	15.00	1-30	....	C	None
			Red Clover	F	86.34	0.46	80.00	16.00	4-30	....		
			Alfalfa	F	12.24	......	68.00	29.50	4-30	1,827	F	Curled dock 117; yellow trefoil 1,170
9609	Jay Co. Farm Bureau, Portland Red Clover and Alfalfa, Lot M901	Indiana Farm Bureau Purchasing Dept., Inc. Indianapolis, Ind.	Red Clover	C	85.57	......	84.00	9.00	1-30	....		
			Alfalfa	C	12.17	......	79 00	15.00	1-30	....	C	None
			Red Clover	F	83.95	0.30	77.00	12.50	5-30	....		
			Alfalfa	F	14.57	......	62.00	26.00	5-30	2,106	F	Curled dock 18; dodder 18; yellow trefoil 1,620
8588	Knight Feed Store, Ft. Wayne Oak Park Mixed Lawn Seed	Johnson, J. Oliver Chicago, Ill.	Per. Rye Grass	C	33.00	......	80 00	......	1-29	....		
			Red Top	C	5 00	......	93 00	......	1-29	....		
			Timothy	C	36 00	......	90 00	......	1-29	....		
			White Clover	C	1.00	......	80 00	......	1-29	....	C	Bracted plantain 950; common plantain 1,450; oxeye daisy 500; red sorrel 1,900; white top 450
			Red Top	F	14.09	8.06	80.75	......	9-29	....		
			Timothy	F	36.98	......	73.75	......	9-29	....		
			Rye Grass (mostly Italian)	F	34.57	......	89.00	......	9-29	11,504	F	Bracted plantain 64; buckhorn 450; common plantain 448; oxeye daisy 192; red sorrel 900; white top 900
9584	Lesniak Hdwe., J., E. Chicago[217] Parke Side Mixed Brand Lawn Seed	Johnson, J. Oliver Chicago, Ill.	Ky. Blue Grass	C	3.00	......	88.00	......	1-30	....		
			White Clover	C	1.00	......	80 00	......	1-30	....		
			Red Top	C	3.00	......	90.00	......	1-30	....		
			Timothy	C	60.00	......	90 00	......	1-30	....	C	Bracted plantain 800; common plantain 200; dodder 225; red sorrel 1,000; white top 700
			Timothy	F	54.48	24.80	69.50	......	5-30	....		
			Red Top	F	9.92	......	73.75	......	5-30	....		
			Ky. Blue Grass	F	5.74	......	75.00	......	5-30	68,400	F	Bracted plantain 450; buckhorn 900; common plantain 450; red sorrel 2,700; white top 4,950
9310	Indiana State Highway Commission, Indianapolis Alsike and White Clover, Lot MM	Kellogg Seed Co. Milwaukee, Wis.	Alsike	C	77.00	......	90.00	......	1-30	....		
			White Clover	C	18.00	......	80.00	8.00	1-30	....	C	Common plantain 30; yellow trefoil 2,700
			Alsike	F	79.89	0.23	89.25	7.75	3-30	....		
			White Clover	F	16.95	......	76.00	21.75	3-30	7,722	F	Common plantain 36; red sorrel 36; yellow trefoil 3,600

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*Not labeled.
†Certified by retailer.
C and F stands, respectively, for Claimed and Found.

[214] Removed from sale. Misbranded. Retagged.
[217] Removed from sale. Misbranded. Returned to Distributor.

MIXTURES—Continued

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, per cent	Inert Matter, per cent	Germination, per cent	Hard Seeds, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds	Number per Pound of each of the Noxious Weed Seeds Specified in the Law
9250	Lease, D. L., Waterloo[218]	Lease, D. L.	Timothy C	26.10	......	61.50	......	1-30	....	
	Alsike and Timothy	Waterloo, Ind.	Alsike C	72.47	......	83.25	......	1-30	....	C None
			Alsike F	72.33	0.30	86.57	11.75	4-30	....	
			Timothy F	26.43	......	67.00	......	4-30	756	F Buckhorn 360; Canada thistle 144; common plantain 108; red sorrel 144
9583	Wadas Hdwe. Store, E. Chicago[219]	Sholes & Co., H. A.	Red Top C	19.20	......	76 00	......	10-29	....	
	Lake Park Lawn Grass Mixture	Chicago, Ill.	Timothy C	47.31	......	87 00	......	7-29	....	C None
			Timothy F	50.45	25.36	68.00	......	4-30	....	
			Red Top F	18.61	......	71.00	......	4-30	36,450	F Buckhorn 900; common plantain 3,150; white top 900
9785	Fortville Grain Co., Fortville	Teweles Seed Co., L.	Alsike Clover C	92.77	......	85.00	13 00	2-30	....	
	Alsike Clover and White Clover	Milwaukee, Wis.	White Clover C	5.47	......	81.00	17.00	2-30	....	C Curled dock 190; red sorrel 90; yellow trefoil 40
			Alsike Clover F	93.85	0.44	85.00	5.25	5-30	....	
			White Clover F	4.28	......	......	......	5-30	7,182	F Curled dock 72; red sorrel 342; yellow trefoil 468
9755	Kiefer Feed & Supply Co., Elwood	Teweles Seed Co., L.	Alsike Clover C	92.77	......	85.00	7.00	2-30	....	
	Alsike and White Clover	Milwaukee, Wis.	White Clover C	5.47	......	85.00	11.00	2-30	....	C Red sorrel 180
			Alsike Clover F	91.24	0.25	88.5	5.25	5-30	....	
			White Clover F	6.67	......	70.0	27.00	5-30	3,312	F Canada thistle 18; common plantain 234; curled dock 54; red sorrel 1,116; yellow trefoil 90
9514	Schreiver, O. B., Connersville	Teweles Seed Co., L.	Alsike Clover C	82.17	......	84.00	13.00	2-30	....	
	Alsike and White Clover	Milwaukee, Wis.	White Clover C	6.47	......	81.00	7.00	2-30	....	C None
			Alsike Clover F	92.60	0.20	84.75	10.75	5-30	....	
			White Clover F	5.98	......	69.50	29.00	5-30	4,302	F Red sorrel 342; yellow trefoil 1,260
9939	Sperb Hdwe., John, Lafayette[220]	Vaughn Seed Store	Ky. Blue Grass C	29.00	......	75.00	......	1-30	....	
	Chicago Park Mixture	Chicago, Ill.	Red Top C	30 00	......	80.00	......	1-30	....	
			Rye Grass C	12.50	......	90 00	......	1-30	....	
			White Clover C	3.50	......	......	......	......	....	C Common plantain 150; red sorrel 750

		Ky. Blue Grass . F	31.58	16.24	60.50	......	6-30	....		
		Agrostis spp..... F	27.79	......	74.50	......	6-30	....		
		I. Rye Grass... F	17.76	......	76.00	......	6-30	....		
		White Clover... F	5.16	......	66.00	19.00	6-30	10,800	F	Buckhorn 450; common plantain 1,350; red sorrel 450

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*Not labeled.
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C and F stands, respectively, for Claimed and Found.

[218] Removed from sale. Misbranded. Part used on own farm. Part retagged.
[219] Removed from sale. Misbranded. Retagged.
[220] Retagged.

GARDEN SEED

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, per cent	Inert Matter, per cent	Germination per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds		Number per Pound of each of the Noxious Weed Seeds Specified in the Law
9629	Ort & Company, Churubusco	Associated Seed Growers	C	99.00	.. ..	92.0	12–29	....	C	None
	Southport White Globe Onions	Milford, Conn.	F	99.82	0.16	87.5	3–30	....	F	None
9630	Ort & Company, Churubusco	Associated Seed Growers	C	99.00	......	90.0	12–29	....	C	None
	Southport Yellow Globe Onions	Milford, Conn.	F	99.87	0.13	80.5	5–30	....	F	None
9151	Trembley Co., S. F., Columbia City[221]	Associated Seed Growers	C	......	......	90.0	1–30	....	C	None
	Southport Yellow Globe Onions, Lot L2776	Milford, Conn.	C	99.97	0 03	84.0	3–30	....	F	None
9152	Trembley Co., S. F., Columbia City[221]	Associated Seed Growers	C	......	....	95.0	1–30	....	C	None
	Southport White Globe Onions, Lot 2991X	Milford, Conn.	F	99.94	0.06	91.0	3–30	....	F	None
9626	Wolff & Sons, G., Hamilton	Associated Seed Growers	C	98.00	......	85.0	12–29	....	C	None
	Selected Southport Yellow Globe Onions, Lot L27766	New Haven, Conn.	F	99 93	0.07	76.0	3–30	....	F	None
9194	Campbell & Co., Kendallville	Campbell & Co.	C	99.00	......	90.0	1–30	....	C	None
	Southport Yellow Globe Onions, Lot 650.	Kendallville, Ind.	F	99.93	0.07	94.5	3–30	....	F	None
9195	Campbell & Co., Kendallville	Campbell & Co.	C	99.00	......	90 0	1–30	....	C	None
	Southport Yellow Globe Onions, Lot HG.	Kendallville, Ind.	F	99.90	0.07	93.5	3–30	45	F	None
9196	Campbell & Co., Kendallville	Campbell & Co.	C	99.00	......	90.0	1–30	....	C	None
	Southport White Globe Onions, Lot 700	Kendallville, Ind.	F	99.93	0.06	87.0	3–30	45	F	None
9685	Kiest Milling Co., Knox	Condon Bros., Seedsmen	C	99.00	......	90.0	12–29	....	C	None
	Condon's Model Yellow Globe Onions, Lot T	Rockford, Ill.	F	99.93	0.06	94 5	3–30	....	F	None
9358	McKown, Fred, Warsaw	Condon Bros., Seedsmen	C	99.00	......	90.0	12–29	....	C	None
	Condon's Select Southport Yellow Globe Onions, Lot T	Rockford, Ill.	F	99.94	0.05	93 5	3–30	45	F	None
9359	McKown, Fred, Warsaw	Condon Bros., Seedsmen	C	99.00	......	90 0	12–29	....	C	None
	Condon's Select Southport White Globe Onions, Lot T	Rockford, Ill.	F	99.86	0.14	95.5	3–30	....	F	None
9175	Ort & Company, Churubusco	Condon Bros., Seedsmen	C	99.00	......	90.0	12–29	....	C	None
	Condon's Model White Globe Onions, Lot T	Rockford, Ill.	F	99.87	0.07	97.5	3–30	45	F	None
9177	Ort & Company, Churubusco	Condon Bros., Seedsmen	C	99.00	......	90.0	12–29	....	C	None
	Condon's Model Yellow Globe Onions, Lot T	Rockford, Ill.	F	99.93	0 07	91.5	3–30	....	F	None
9178	Ort & Company, Churubusco[222]	Condon Bros., Seedsmen	C	99.00	......	90.0	12–29	....	C	None
	Condon's Model Red Globe Onions, Lot T	Rockford, Ill.	F	99.87	0.12	70.0	3–30	....	F	None
9147	Trembley Co., S. F., Columbia City	Crabbs Reynolds Taylor Co.	C	99.00	......	92.0	1–30	....	C	None
	Southport Yellow Globe Onions, Lot 985	Crawfordsville, Ind.	F	99.88	0.12	92.5	3–30	....	F	None

9148	Trembley Co., S. F., Columbia City	Crabbs Reynolds Taylor Co.	C	99.00	......	95.5	1–30	....	C	None
	Southport White Globe Onions, Lot 956	Crawfordsville, Ind.	F	99.73	0.27	92.5	3–30	....	F	None
9628	Wolff & Sons, G., Hamilton	Gardner Seed Co.	C	98.00	......	85.0	12–29	....	C	None
	Southport Yellow Globe Onions	Rochester, N. Y.	F	99.97	0.03	86.0	3–30	....	F	None
9360	McKown, Fred, Warsaw	Gunson & Co., Inc., L. P.	C	99.50	......	93.0	1–30	....	C	None
	Southport White Globe Onions	Rochester, N. Y.	F	99.97	0.02	93.5	3–30	43	F	None
9361	McKown, Fred, Warsaw	Gunson & Co., Inc., L. P.	C	99.50	......	90.0	1–30	....	C	None
	Southport Yellow Globe Onions, Lot A-7662	Rochester, N. Y.	F	99.96	0.04	95.0	3–30	....	F	None
9186	†Seymour, C. R., Kimmel	Gunson & Co., Inc., L. P.	C	99.50	......	93.0	1–30	....	C	None
	Southport White Globe Onions	Rochester, N. Y.	F	99.97	0.03	92.5	3–30	....	F	None
9187	†Seymour, C. R., Kimmel	Gunson & Co., Inc., L. P.	C	99.50	......	90.0	1–30	....	C	None
	Southport Yellow Globe Onions	Rochester, N. Y.	F	99.96	0.02	90.5	3–30	....	F	None
8661	Snider Packing Co., Marion	Indiana Canners Ass'n	C	100.00	......	89.0	11–28	....	C	None
	Baltimore Tomato, Lot F	Matthews, Ind.	F	99.41	0.59	90.5	11–29	....	F	None
9146	Crowell Grain Co., Columbia City	Leonard Seed Co.	C	98.00	......	97.0	12–29	....	C	None
	Southport Yellow Globe Onions	Chicago, Ill.	F	99.94	0.04	65.5	3–30	45	F	None
9243	Strock, Frank, Hudson	Quirk, J. B.	C	99.80	......	90.0	11–29	....	C	None
	South port Yellow Globe Onions	North Madison, Ohio	F	99.98	0.02	86.5	3–30	....	F	None
9246	Strock, Frank, Hudson	Quirk, J. B.	C	99.70	......	90.0	10–29	....	C	None
	Southport White Globe Onions	North Madison, Ohio	F	99.98	0.02	82.5	3–30	....	F	None
9181	Yant, W. A., Columbia City	Quirk, J. B.	C	99.80	......	90.0	11–29	....	C	None
	Southport White Globe Onions	North Madison, Ohio	F	99.72	0.22	98.5	3–30	90	F	None
9183	Yant, W. A., Columbia City	Quirk, J. B.	C	99.80	......	90.0	11–29	....	C	None
	Southport Yellow Globe Onions	North Madison, Ohio	F	99.98	0.02	95.0	3–30	....	F	None
9683	Barker, C. Lee, Knox	Rice Seed Co., Jerome B.	C	95.00	......	93.0	11 & 12–29		C	None
	Southport Yellow Globe Onion Seed, Lot 15-E	Cambridge, N. Y.	F	99.98	0.01	96.5	3–30	45	F	None
9624	Wolff & Sons, G., Hamilton	Rice Seed Co., Jerome B.	C	95.00	......	96.0	12–29	....	C	None
	Southport Yellow Globe Onions, Lot 2	Cambridge, N. Y.	F	99.97	0.03	93.5	3–30	....	F	None
9155	Ort & Co., Churubusco	Woodruff & Sons, F. H.	C	99.00	......	90.0	12–29	....	C	None
	Southport White Globe Onions, Lot 2063	Milford, Conn.	F	99.92	0.07	98.0	3–30	45	F	None
9156	Ort & Co., Churubusco	Woodruff & Sons, F. H.	C	99.00	......	93.0	12–29	....	C	None
	Southport White Globe Onions, Lot 2051	Milford, Conn.	F	99.97	0.03	93.0	3–30	....	F	None
9157	Ort & Co., Churubusco	Woodruff & Sons, F. H.	C	99.00	......	91.0	12–29	....	C	None
	Southport White Globe Onions, Lot 2071	Milford, Conn.	F	99.88	0.12	99.0	3–30	....	F	None
9158	Ort & Co., Churubusco	Woodruff & Sons, F. H.	C	98.70	......	94.0	12–29	....	C	None
	Southport White Globe Onions, Lot 2057	Milford, Conn.	F	99.89	0.11	95.5	3–30	....	F	None
9159	Ort & Co., Churubusco	Woodruff & Sons, F. H.	C	99.00	......	91.0	11–29	....	C	None
	Southport Red Globe Onions, Lot 1321	Milford, Conn.	F	99.93	0.02	95.5	3–30	45	F	None
9160	Ort & Co., Churubusco	Woodruff & Sons, F. H.	C	99.00	......	91.0	12–29	....	C	None
	Southport White Globe Onions, Lot 2077	Milford, Conn.	F	99.96	0.04	92.5	3–30	....	F	None

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*Not labeled.

†Certified by retailer.

C and F stands, respectively, for Claimed and Found.

[221] Tag incomplete.

[222] Removed from sale. Misbranded. For own use.

GARDEN SEED—Continued

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, per cent	Inert Matter, per cent	Germination, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds		Number per Pound of each of the Noxious Weed Seeds Specified in the Law
9161	Ort & Co., Churubusco	Woodruff & Sons, F. H.	C	99.00	......	92.0	12–29	....	C	None
	Southport White Globe Onions, Lot 2081	Milford, Conn.	F	99.92	0.08	86.0	3–30	....	F	None
9162	Ort & Co., Churubusco	Woodruff & Sons, F. H	C	99.00	......	92.0	11–29	....	C	None
	Southport Yellow Globe Onions, Lot 1161.	Milford, Conn	F	99.97	0.03	87.5	3–30	....	F	None
9163	Ort & Co., Churubusco	Woodruff & Sons, F. H.	C	98.00	......	98.0	11–29	....	C	None
	Southport Yellow Globe Onions, Lot 1187.	Milford, Conn.	F	99.95	0.05	97.5	3–30	....	F	None
9164	Ort & Co., Churubusco	Woodruff & Sons, F. H.	C	98.00	......	94.0	11–29	....	C	None
	Southport Yellow Globe Onions, Lot 1157.	Milford, Conn.	F	99.97	0.03	89.0	3–30	....	F	None
9165	Ort & Co., Churubusco	Woodruff & Sons, F. H.	C	98.00	......	96.0	11–29	....	C	None
	Southport Yellow Globe Onions, Lot 1369.	Milford, Conn.	F	99.98	0.02	95.5	3–30	....	F	None
9166	Ort & Co., Churubusco	Woodruff & Sons, F. H.	C	98.00	......	96.0	11–29	....	C	None
	Southport Yellow Globe Onions, Lot 1443.	Milford, Conn.	F	99.98	0.02	94.5	3–30	....	F	None
9167	Ort & Co., Churubusco	Woodruff & Sons, F. H.	C	98.00	......	93.0	11–29	....	C	None
	Southport Yellow Globe Onions, Lot 1371.	Milford, Conn.	F	99.95	0.05	96.0	3–30	....	F	None
9168	Ort & Co., Churubusco	Woodruff & Sons, F. H.	C	98.00	......	96.0	11–29	....	C	None
	Southport Yellow Globe Onions, Lot 1411.	Milford, Conn.	F	99.92	0.08	93.5	3–30	....	F	None
9169	Ort & Co., Churubusco	Woodruff & Sons, F. H.	C	98.00	......	97.0	11–29	....	C	None
	Southport Yellow Globe Onions, Lot 1413.	Milford, Conn.	F	99.96	0.04	92.5	3–30	....	F	None
9170	Ort & Co., Churubusco	Woodruff & Sons, F. H.	C	98.00	......	96.0	11–29	....	C	None
	Southport Yellow Globe Onions, Lot 1445.	Milford, Conn.	F	99.96	0.04	92.5	3–30	....	F	None
9171	Ort & Co., Churubusco	Woodruff & Sons, F. H.	C	98.00	......	95.0	11–29	....	C	None
	Southport Yellow Globe Onions, Lot 1183.	Milford, Conn.	F	99.97	0.03	94.5	3–30	....	F	None
9172	Ort & Co., Churubusco	Woodruff & Sons, F. H.	C	99.00	......	96.0	11–29	....	C	None
	Southport Yellow Globe Onions, Lot 1185.	Milford, Conn.	F	99.98	0.02	95.0	3–30	....	F	None

MISCELLANEOUS

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, per cent	Inert Matter, per cent	Germination, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds		Number per Pound of each of the Noxious Weed Seeds Specified in the Law
9790	Pritchard & Rafert, Pendleton	Dickinson Co., The Albert	C	97.61	......	85.0	10–29	....	C	None
	Speltz, Lot 787	Chicago, Ill.	F	96.61	0.13	82.0	5–30	....	F	None
8607	Eckhart, R. B., Buck Creek	Eckhart, R. B.	C	98.40	......	92.0	8–29	....	C	None
	Purkoff Wheat	Buck Creek, Ind.	F	98.00	2.00	92.5	10–29	......	F	None
9495	Whelan, Omer G., Richmond[223]	McCullough & Sons Co., J. M.	C	99.00	......	95.0	1–30	......	C	None
	Short Seeded Rye Grass, Lot 6692	Cincinnati, Ohio	F	99.14	0.27	73.5	5–30	3,780	F	Buckhorn 90; Canada thistle 90; curled dock 180; red sorrel 90

*Not labeled.
†Certified by retailer.

C and F stands, respectively, for Claimed and Found.

[223] Removed from sale. Misbranded. Retagged.

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CIRCULAR NO. 178 JANUARY, 1931

EUROPEAN CORN BORER CONTROL–PROGRESS REPORT

1931

A corn field in Ontario, Canada, where the borer did untold damage previous to general practice of clean-up control, showing the effects of a heavy infestation. Photographed September 24, 1926. Borers (see inset) become so abundant they completely riddle the stalks, causing them to crumple over.

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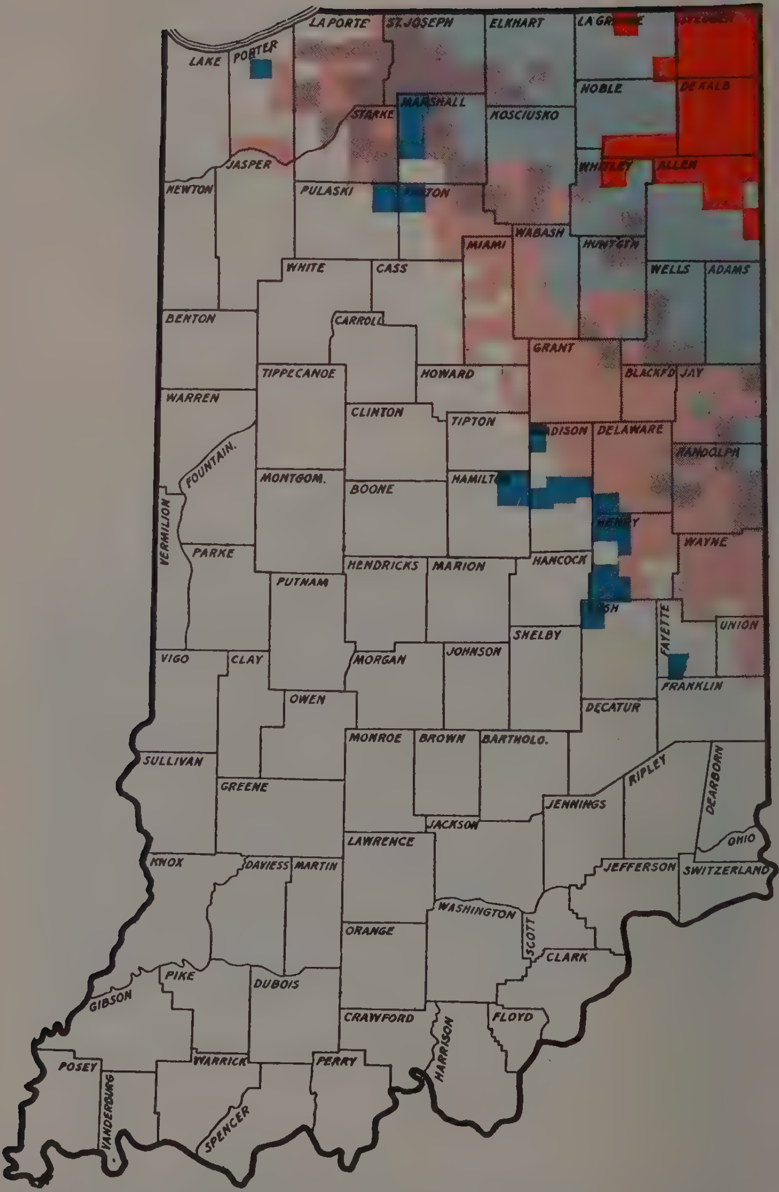
AGRICULTURAL EXPERIMENT STATION
LAFAYETTE, INDIANA


LA PORTE
ST. JOSEPH
ELKHART
LAKE
PORTER
NOBLE
DE KALB
MARSHALL
STARKE
KOSCIUSKO
JASPER
WHITLEY
ALLEN
NEWTON
PULASKI
WABASH
MIAMI
HUNT'GTN
WHITE
CASS
WELLS
ADAMS
BENTON
CARROLL
GRANT
TIPPECANOE
HOWARD
BLACKF'D
JAY
WARREN
CLINTON
TIPTON
DELAWARE
FOUNTAIN.
RANDOLPH
MONTGOM.
BOONE
VERMILION
PARKE
WAYNE
HENDRICKS
MARION
HANCOCK
PUTNAM
UNION
SHELBY
FAYETTE
VIGO
CLAY
MORGAN
JOHNSON
OWEN
FRANKLIN
DECATUR
MONROE
BROWN
BARTHOLO.
SULLIVAN
RIPLEY
DEARBORN
GREENE
JENNINGS
JACKSON
LAWRENCE
OHIO
KNOX
DAVIESS
MARTIN
JEFFERSON
SWITZERLAND
WASHINGTON
SCOTT
ORANGE
CLARK
PIKE
GIBSON
DUBOIS
CRAWFORD
FLOYD
HARRISON
POSEY
WARRICK
PERRY
VANDERBURG
SPENCER

Map showing the advance of the European Corn Borer in Indiana by years: Red—1926, Light Blue—1927, Lavender—1928, Pink—1929, Blue—1930.

EUROPEAN CORN BORER MENACES INDIANA'S MOST IMPORTANT CROP

H. J. Reed, Assistant Director
Agricultural Experiment Station

Indiana farmers grow annually about 4,350,000 acres of corn which has an approximate value of $100,000,000.00, ranging from $75,000,000.00 to $125,000,000.00 depending upon yield and price. This crop forms the basis for most types of farming in Indiana. The place that the livestock and dairy industries occupy in the production of new wealth and the maintenance of soil fertility is dependent upon the successful production of a satisfactory corn crop. In 1926, the farmers of the state were much disturbed when they learned that the European Corn Borer had been found in a few areas in the northeast corner of our state. This insect has been pronounced by eminent agricultural authorities as "the most serious menace that has ever confronted American agriculture." It has caused large losses in New England, and several counties in the corn producing areas of Ontario, Canada. The insect is thought to have been brought to Ontario, Canada about 1910 and before it was discovered in 1920, it had spread over nearly 3,000 square miles, advancing at the average annual rate of about 40 miles. In 1921, the European corn borer was discovered in Michigan in a few townships and it is reported by the Michigan authorities that some farmers in Monroe and Lenawee counties suffered losses of 50 to 70 per cent of their crop last year. The fact that the entire corn crop in Kent and Essex counties, Ontario, was practically ruined in 1925, 1926, and 1927, fifteen years after its introduction, demonstrates the potential destructiveness of this new invader. In those counties, corn growing and the production of hogs was practically abandoned because the new pest laid waste to the corn fields. The infestation in Indiana has spread from 39 townships in 1926 to 303 townships in 1930. During the season of 1930, the extremely hot and dry weather at the critical stages in the life history of the insect prevented it from making its normal increase during the past year. Unless the federal quarantine and satisfactory methods can be developed which will delay the advance of the corn borer, serious losses to Indiana's most important crop are bound to result. It may be necessary to readjust the cropping system, reduce the acreage of corn, stop the sowing of wheat in corn and plant more legumes and grass.

Obviously, the problem is eight-fold:

(1) Maintaining an effective quarantine until control methods can be worked out.

(2) Fundamental studies including behavior studies of the insect and its life history, and development under Indiana conditions which are essential to successful development of more practical and efficient controls.

(3) The study and development of agronomic and farm management practices and corn varieties under Indiana conditions that will enable the farmers to so control the insect and continue to successfully grow corn.

(4) The development of practical mechanical methods of disposing of the remnant stalks.

(5) The establishment of parasites and natural enemies in the infested areas as rapidly as possible.

(6) Acquainting the farmer with the problem and securing the adoption of known controls even in areas where the borer is scarce.

(7) Placing in the hands of growers new control measures as rapidly as they can be developed.

(8) Development of practical insecticidal controls for sweet corn.

Readjustments in the Types of Farming and the Development of New Systems of Farming Necessary to Meet the Situation

Effort is being made to produce strains of corn that will yield well in the infested territory.

The agronomic experts have as their objective the finding of the best and most practical methods of growing corn under conditions of corn borer infestation. The best way now known is to dispose of all remnants of the late corn crop before May. The success of this depends upon community cooperation. It is hoped that some practices will be developed which will make it possible for each individual to protect his crops from serious damage even though all of his neighbors do not cooperate in combatting the pest.

The work in Indiana has been confined to the northern half of the state because that is the part of the state infested at present. Forty-four varieties of corn have been tested to determine the best ones for use. It has been found that such varieties as M.A.C. Yellow Dent and Clements White Cap Yellow Dent may be planted late enough to escape serious infestation from the borer and yet produce fair yields of corn. Early varieties should be planted at a higher

Effect of Fertilizer in Hastening Development of Late Planted Corn.

This corn was planted late enough to avoid serious corn borer injury, June 16th, and was photographed on July 24th.

The plot on the left was fertilized with 200 pounds of 5-15-5 per acre in the row. The four rows to the right of the middle stake were not fertilized.

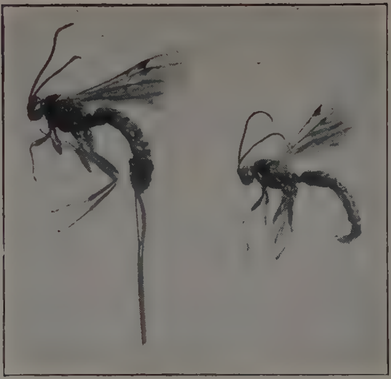
The fertilized corn ripened from 2 to 3 weeks earlier and produced 33 bushels more of merchantable corn per acre than the unfertilized corn. The fertilized corn was 90 per cent mature while the unfertilized corn was only 10 per cent mature when killed by frost.

rate than the later varieties. The use of a phosphate-potash fertilizer applied near the hill or in the row has proven profitable in most of these tests.

Scientific studies are giving new information on the life and habits of the corn borer in this area.

The greater part of our entomological investigations have been conducted at the Federal corn borer station at Monroe, Michigan, where the borers are sufficiently numerous to provide facilities better adapted to entomological studies than were available in Indiana. A Corn Borer Laboratory should be established in this state not later than 1932. Considerable work, however, has been carried on in the state and our workers have been fortunate in securing for liberation in our infested areas a large number of parasites which have been brought in by the United States Department of Agriculture.

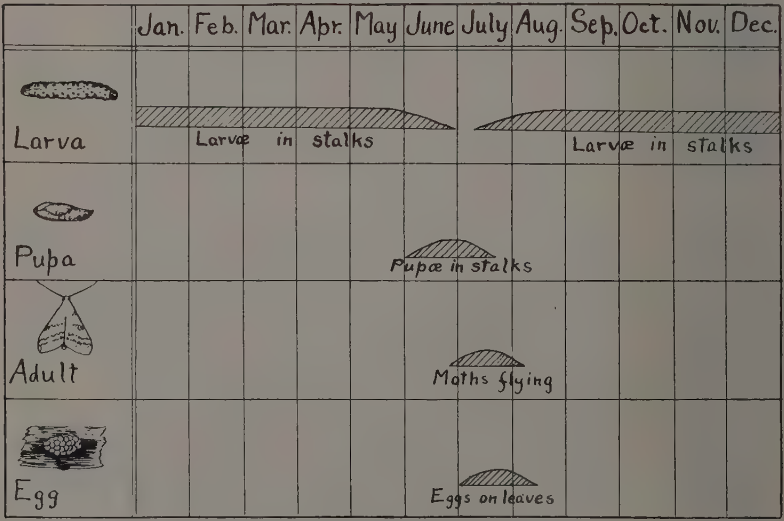
Up to the present time, approximately 166,000 corn borer parasites of 12 species have been liberated in LaGrange, Noble, Allen, Elkhart, Steuben, and Dekalb counties. As the infested area of Indiana is enlarged by the natural spread of the borer and a greater



Several parasites have been introduced from the native home of the borer to assist in checking the corn borer. One species, Exeristes roborator, is shown above. Note the long ovipositor or egg-laying organ of the female on left. With this she can pierce corn stalks and lay her eggs in the burrow with the borer. (After Pettit, Mich. Agr. Expt. Sta.)

supply of host material becomes available for parasitism, the parasite program in the state will be enlarged and additional species introduced.

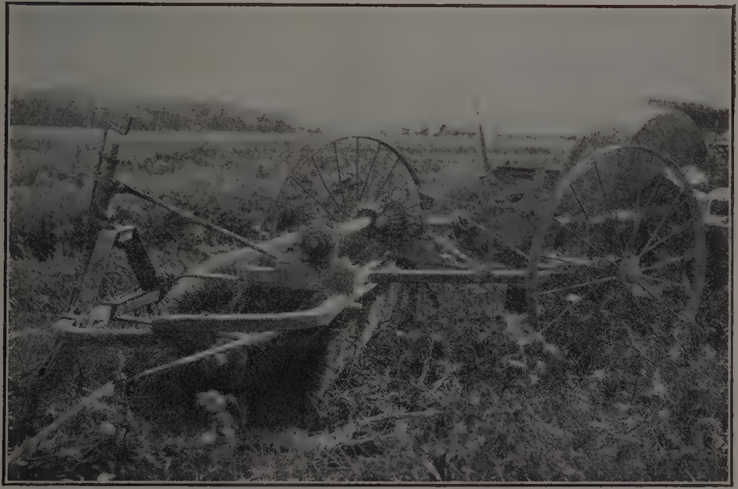
Studies at Auburn, Indiana, show that egg laying begins about June 25 and that the peak of egg deposition is reached about July 7. The status of insecticidal control of the borer is being investigated.



Seasonal history of the European corn borer.

This work should have an important application in the case of sweet corn production as a market and canning crop, and it is anticipated that sweet corn will be the first crop to be seriously affected in a commercial way in Indiana. There are about 50,000 acres of sweet corn grown for canning and market garden purposes which has a value of approximately $1,000,000.00 annually.

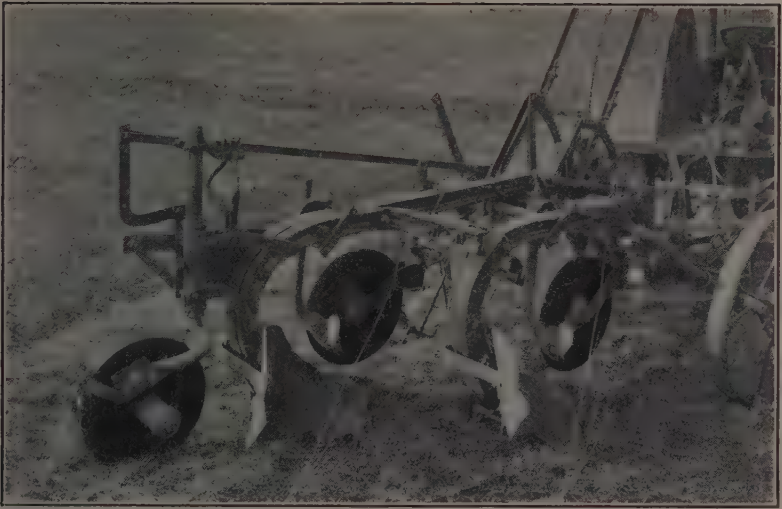
Studies of the planting date of corn in relation to the degree of stalk infestation and borer problems show that there is a proportional decrease in the percentage of stalks infested and the number of borers per stalk if the date of planting is delayed. Corn planted on May 10 showed 100 per cent infestation; corn planted on June 2, approximately 11 per cent infestation and corn planted on June 14 showed no infestation. The best average date for planting corn in northern Indiana is May 10-15. Our problem is, therefore, one of finding and developing new varieties of corn that can be planted later and speeded up by the use of proper fertilizers to mature before frost. No natural host plants other than corn have been observed in Indiana. Considerable effort has been made to discover satisfactory host plants for use as trap crops which would aid in the control of this insect.



An experimental corn stalk sweeper. The transmission permits the quick changing of brush speed for experimental purposes. Designed by Department of Agricultural Engineering to clean fields of corn stalks infested with European corn borer.

A home made adjustable low type sled cutter at work. Note the hand cut stubble in the foreground as compared to those left by the sled cutters.

A corn binder equipped with the low cutting attachment at work in the field. Note that no stubble are visible behind the machine.



A 16-inch gang plow equipped with wires which materially aid in turning under trash. The wires hold the trash against the furrow slice so that it is turned under. The large rolling coulters and separate jointers also aid toward clean plowing.

A 14-inch gang plow equipped with stalk shields and wires for turning under corn stalks. View shows condition of stalks and ground ahead of plow and the type of work being done.

Tests indicate that machinery will play an important role in controlling the corn borer.

From the standpoint of mechanical corn borer control, the greatest problem is to devise a means for handling whole corn stalks left in the field, after hand or machine picking, in such a manner that the ground can be disced and sown to small grain and at the same time obtain fields clean of all remnants or pieces of stalk which permits corn borer control. Several types of machines with power-driven discs have been devised but the field tests have not proved them to be practical for Indiana conditions. Changes are being made on these machines to increase their efficiency. A machine for shaving stalks loose and sweeping them into windrows and cutting fine enough to kill the corn borer is under construction at the present time. Plow tests show the value of large coulters and jointers, together with trash wires and shields which give better than 95 per cent coverage on the average. Much time and effort has been given to the development and improvement of such devices. The use of electric current for killing the young worms has been found impractical for corn borer control. Low cutting attachments for corn binders have proven both practical and effective. The extra labor required to clean up stalks for corn borer control was found to be about $1.30 per acre.

The Quarantine by Federal and State Authorities Should be Maintained.

United States Department of Agriculture and office of State Entomologist have cooperated in this work very efficiently.

Since the discovery of the corn borer in the United States, the Federal Department of Agriculture, State Entomologists and other regulatory officers of the affected states have maintained a quarantine to prevent the carriage of materials likely to be infested from the known infested area to points outside. The quarantine area has gradually extended each year to include new infestations found during the preceding season. The spread of the borer has been held in check except that due to the natural flight of the moth. Inasmuch as the adult is a strong flying moth, the insect is certain to gradually spread to new areas each year until it occurs throughout the corn-growing regions unless practical methods of control can be discovered and, therefore, it is not anticipated that any quarantine will completely prevent spread. However, the quarantine as practiced eliminates to a great degree the possibilities of long distance spread by artificial means. This in turn greatly aids in retarding spread to new regions, and every year of delay offers the research workers additional opportunity to discover more practical and efficient controls as well as new information regarding the life cycle of the insect and the methods for controlling it, when the borer does become a pest of major importance in the corn belt areas. Undoubtedly, the quarantine has prevented long distance spread and has, thus, already saved millions of dollars for the farmers in the corn belt.

Thousands of farmers in the infested district have been reached through meetings, farm visits, and demonstrations.

A program of educational work has been conducted by members of the staff associated with the corn borer work to give our farmers such assistance as they wish in making necessary adjustments in their farming operations to meet the new situation. This work was done in cooperation with the Division of Entomology of the State Conservation Commission.

Many organized tours have been made by our farmers to Ohio, Michigan and Canada to see the great damage to the crops in regions where the corn borer has been at work for a longer period of time and where great commercial damage has occurred. During the last year, 68 farmer meetings have been held with a total attendance of 6,568 people; exhibits have been prepared and displayed at the State Fair and in counties in the corn borer area. Eleven hundred farmers attended low cutting demonstrations.

Fifty-five corn variety and fertilizer demonstrations have been conducted in cooperation with farmers in the corn borer area so that the people of the community could see these results and draw their own conclusions.

In view of the experiences in other states and countries, the European corn borer can easily cause an annual loss of $5,000,000.00 to the Indiana corn crop.

Any research work that will delay the advance of the corn borer and reduce the loss to our agriculture will be a real contribution to the agriculture and general prosperity of the state. When the farmer is prevented from producing new wealth, the State suffers a distinct loss which is felt by bankers, farmers, and most of all, by business men.

The Agricultural Experiment Station would be negligent of its responsibility if it did not clearly and forcibly present these facts to those concerned with the future of our agriculture. The great corn belt of the central west is just ahead of the invader, our research workers are fighting with their backs to the wall and need such assistance and support as can be given by every citizen of the State and those who are the trustees of the funds of the State.

At the request of a number of the agricultural associations of the State, the 1927 State Legislature passed a special act (Acts 1927, Chapter 56), providing funds for research and educational work on the European corn borer and codling moth. This act provided for the necessary assistance, for defraying expenses incurred in conducting experiments, investigations, surveys and educational work, and for the cooperation with the United States Department of Agriculture.

Under the leadership of Professor J. J. Davis, head of the Department of Entomology, G. A. Ficht has been located in the Federal Laboratory at Monroe, Michigan, since April, 1927, conducting research studies on the corn borer. He was located at the Federal Laboratory because of the infestation was too light in Indiana for satisfactory investigations. Assistants have been provided for Mr. Ficht during the summer season. The United States Department of Agriculture has cooperated with our workers in a most gratifying way.

Infestation has now become heavy enough in certain places in northeastern Indiana to warrant the establishment of a field laboratory for our workers so they may more accurately study the insect under corn belt conditions.

Professor William Aitkenhead, chief of the Department of Agricultural Engineering, and R. H. Wileman have been carrying on studies in mechanical phases of corn borer control. New machinery has been designed to cut up the stalks and disk them into the soil. A study of the types of different kinds of farm implements, stalk cutters, corn harvesters, plows, stalk sweepers, etc., has been made for the purpose of adapting them more satisfactorily to the control of the corn borer.

L. E. Hoffman, Assistant County Agent Leader has been responsible for conducting a large amount of demonstrations and educational work having to do with the corn borer control.

The Agronomy Department, under the leadership of Professor A. T. Wiancko, has undertaken studies of the varieties of corn, methods and time of planting, the use of fertilizers, and methods of application to determine the best farm practice to reduce the injury from the corn borer. This work is being carried on in different parts of Indiana by S. R. Miles and O. B. Riggs.

CIRCULAR NO. 179 JANUARY, 1931

CODLING MOTH AND PEACH WORM INVESTIGATIONS

PROGRESS REPORT

The four stages in the life history of the codling moth are: Eggs, larvae, pupae, and adult moth. Note empty pupae skins, from which moths have emerged, protruding from two of the cocoons. Nearly natural size. (After U. S. Dept. Agriculture.)

PURDUE UNIVERSITY
AGRICULTURAL EXPERIMENT STATION
LAFAYETTE, INDIANA

The severe infestation of codling moths in the commercial orchards of the state has been the source of loss for some time. The Department of Entomology, under the leadership of Professor J. J. Davis, engaged G. E. Marshall to devote his time to codling moth and oriental fruit worm investigations. This work is being conducted in the vicinity of Bedford, Mitchell and Vincennes. A summer assistant is provided for Mr. Marshall who assists in the work during the busy season.

The Department of Horticulture, under the leadership of Professor Laurenz Greene, has played an important part in this work with the commercial orchardists. The demonstrations on the control of the codling moth were in charge of Professor C. L. Burkholder of that department. These demonstrations are linked closely with the investigations carried on by Mr. Marshall and practical results have been obtained for the fruit growers of the state.

Problems involving orchard sanitation, spray schedules, spraying materials, etc. were given first attention and immediate assistance was rendered to the growers which enabled them to better meet a bad situation and save many thousands of dollars.

The cooperation of the United States Department of Agriculture has been secured and the Bureau of Entomology has established a Federal station at Vincennes to carry on codling moth and oriental fruit worm and other studies. This work is in charge of Dr. F. H. Lathrop. The entire staff of the Vincennes station is cooperating in a fine way with the authorities of the Agricultural Experiment Station.

The codling moth will continue to be a menace to Indiana apple growers until more complete control measures, cheaper means of control and the elimination of excessive spray residue are accomplished. The continuation of the work on the oriental fruit worm is imperative. The results secured to date point the way for the development of this work.

The field laboratory at Bedford erected in the spring of 1927 for codling moth studies. Under such controlled conditions many studies bearing on the development of more efficient controls are being made.

PROGRESS REPORT ON CODLING MOTH INVESTIGATIONS

H. J. Reed, Assistant Director

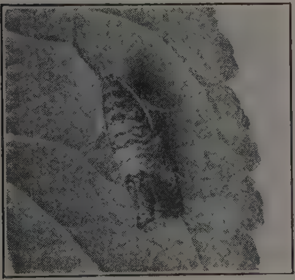
Purdue University
Agricultural Experiment Station

CODLING MOTH SITUATION

Indiana is assuming an important place in the fruit growing industry. Many sections of Indiana are favorably located and well adapted to the production of the highest quality apples and peaches. The average annual production of the orchards of Indiana is valued at approximately $6,000,000.00. One of the principal difficulties in the production of commercial apples has been the control of the codling moth. The damage caused by this insect has been increasing and threatens to cripple the apple industry in the state. The fruit growers of the state have made insistent demands for sufficient experimental and investigational work to develop effective controls.

The recent Federal regulations regarding the amount of arsenical spray residue on fruit for interstate shipment has made it imperative that control measures be developed which will not involve the usual amount of arsenate of lead in the spray schedule and which will not compel the grower to wash the fruit.

In the past three years, the oriental fruit worm has become established in Indiana. This insect will probably become the worst pest that the peach growers will have to control. The success of the peach growers depends upon their ability to produce a satisfactory crop of high quality. Indiana peaches have made a place for themselves on the principal peach consuming markets of the United States and have brought millions of dollars of new wealth into our state. Wormy fruit is a drug on the market and cause great losses to the state. If the thousands of acres of commercial orchards in this state are to continue to produce valuable crops, our growers must have control measures which will more satisfactorily protect their crops from insect damage. Much valuable work has been done during the past four years along two lines:



The adult codling moth is most active in the early evening hours. It is important to remember in timing first brood sprays that the moth is active and egg laying takes place only on nights when the temperature at sundown is above 60° F. (After U. S. Dept. Agriculture.)

(1). The making of careful studies of the insects, especially behavior studies bearing on the development of controls, life history, emergency periods, the application of new sprays, development of mechanical controls and an understanding of orchard practices as they affect the pests.

(2). The demonstration of the effectiveness of the best known methods of control. This includes orchard sanitation, packing house sanitation and spray schedules.

INVESTIGATOR GIVES FULL TIME TO PROBLEMS

A full time investigator was employed to carry on the entomological experiments outlined by Professor J. J. Davis, Chief of the Department of Entomology. A part-time assistant is employed for summer months to assist in the work. A field laboratory and insectory was provided on the Moses Fell Annex farm near Bedford for important detail studies in connection with this work. The problem of finding a spray material to replace lead arsenate is one of major importance. This is made necessary by the Federal regulations regarding spray residue on commercial fruit. Arsenate of lead has been effectively used in the standard codling moth spray solutions for a number of years. For the past four years, numerous spray materials have been tested with the hope of finding a satisfactory substitute. The most promising of these have been certain of the white oil sprays. Large scale investigations have been carried on in cooperation with growers at Orleans, Mitchell, and Bedford during the last two years. Much important work is yet to be done to determine methods of preventing spray injury to foliage and fruit before summer oil sprays can be unreservedly recommended. In cooperation with the State Chemist's Department, periodic residue analyses were made from samples of fruit representing each spray treatment to facilitate the recognition of the best spray program in respect to lead arsenate residue. Briefly, the results of the last two years were: They show a residue in excess of the federal tolerance on all fruits receiving the standard arsenate sprays but a residue below the tolerance on fruits receiving white oil sprays at the later part of the spraying season. The control obtained was approximately the same in each case.

Banding Experiments.—A great saving of time and money could be realized by growers if a tree band could be prepared which would kill all the codling moth larvae that had collected beneath it. Thousands of bands which have been given various chemical treatments have been tried out. A band which has given satisfactory results has been developed and a publication for growers is being printed. Further work is desirable to increase the efficiency of bands and decrease their cost. This work should provide a supplemental control, especially in badly infested orchards which will be of great value to the growers as has been shown in large scale tests.

Bait Experiments.—One of the fundamental principles underlying the development of baits is to find attractive material which will trap the codling moth in its flight. Through this work it has been found that certain aromatic chemicals, when added to the solutions in the bait pans, enhance the odor of the material and attract a portion of the moths. The work in 1929, demonstrates that bait traps placed in every other tree in the orchard was more efficient than bands placed on every tree. Bait pans are also proving a satisfactory method in determining the proper timing of sprays. Further study along this line is necessary, with special reference to reducing their cost to permit their use in practical control.

Sanitation.—Examinations made to determine all possible places that the codling moth may hibernate have shown that these insects will winter over in weed stems, corn stalks, apple twigs, matted grass, old bark, apple mummies, knot holes, cracks and in almost every conceivable place in the orchard. Around the packing house they may be found in the picking baskets, crates, crating and sizing machinery, cracks in the floor, walls, the ceiling and many other places. For this reason, recommendations have been made to growers to screen packing houses, to clean up brush and weeds and grass along fence rows, cut off dead limbs and scrape off and burn all excess bark on the trees. It has been found that the codling moth larvae which hibernate in the packing house in the fall continue to emerge until the first of August, the succeeding year. If these insects are not screened in, they will fly to the orchard and reproduce. Observations show conclusively that most serious infestations develop and are maintained, even in well sprayed orchards, because of improper conditions in packing houses, roadside stands, unsatisfactory orchard conditions and uncared for nearby orchards.

Life History and Behavior Studies.—It is imperative that some life history and behavior studies be carried on every year. Considerable data has been gathered through the laboratory tests which require special technique and partially controlled field experiments. This information is useful in making recommendations to the growers regarding the time for spraying.

Sanitation and Spraying.—Two phases of the codling moth work are being carried on by the Department of Horticulture.

(1). The clean-up and commercial spraying demonstrations

(2). A comparison of dust and liquid spray schedules for codling moth control.

Following the serious losses of 1926, every effort was made to cooperate with the commercial orchardists and secure a general clean-up in the orchards. This enabled the fruit growers to partially control the ravages of the insect the following year. During 1929 and 1930, another serious outbreak occurred and a very intensive campaign of spraying and banding was carried out.

Dust and Liquid Spraying. There has been considerable controversy regarding the relative merits of dusting and spraying for the control of the codling moth. For this work, a block of 175 twenty-year old trees of four leading commercial varieties is being used to compare the merits of these methods of protection. The results to date indicate that dust applications made up of arsenate of lead, in combination with sulphur and lime, are not as effective in the control of the codling moth as the same materials used in liquid form. In seasons of heavy and frequent rainfall, during the scab infection periods, dusts cannot be depended upon for even good commercial control.

PRESENT CODLING MOTH RECOMMENDATIONS BASED ON WORK OF PAST TWO YEARS

Packing House Sanitation.—1. Screening of packing sheds and holding all packages used in handling fruit inside a moth proof shed until after the first brood of moths emerges.

2. Care at roadside stands to prevent accumulation of fruit. Burn or bury all remnants and trash about stand.

Orchand Sanitation.—Elimination of conditions in the orchard which are favorable cocooning and hibernating places.

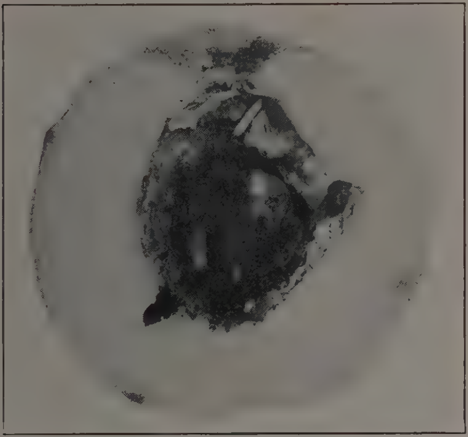
Spraying.—Thorough and heavy application for first brood worms. Continued spraying as recommended in emergency reports furnished by the Agricultural Experiment Station each season.

Banding.—The use of chemically treated bands in heavily infested orchards or where the insect is on the increase. This involves scraping of the trees to eliminate all cocooning places on the tree excepting the band applied. All scrapings should be burned.

Baits.—While promising results have been obtained from the use of bait traps, they cannot be recommended at this time because of the cost of maintaining them. A few bait traps will prove of value to the orchardist in enabling him to better time his spray applications.

ORIENTAL FRUIT WORM

Large scale spray experiments have been conducted on the Purdue-Vincennes orchard and a variety of materials used. Certain talc and hydrated lime sprays have somewhat reduced the infestation of oriental fruit worm in peaches. The spraying experiments for this year will include other materials which need to be tested out. Because of certain habits of the larva spraying with stomach poisons has proved ineffective.



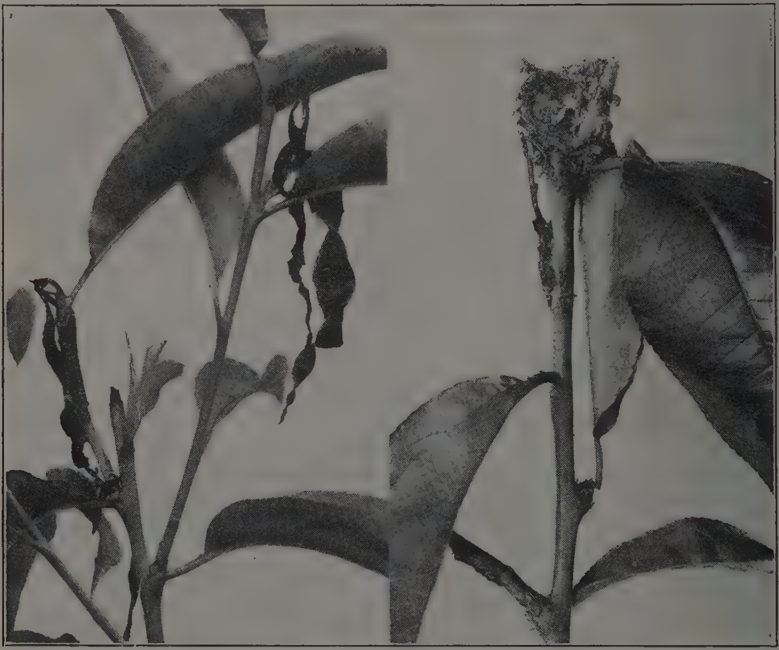
Injury to peach showing larva of oriental fruit worm and result of its feeding.

Hibernation Studies and Sanitation.—Detailed studies brought out the fact that 7 percent of the larvae of the oriental fruit worm hibernate below the snow line on the ground and 93 percent above. It has also been determined that 80 percent of all spring emergence during the last two years came from below the snow line out of weed stems from around the base of the tree and from mummied peaches on the ground. **For this reason, thorough sanitation and early spring cultivation are recommended.**

Parasites.—The experience of the investigators in New Jersey has emphasized the importance of introducing parasites to destroy the oriental fruit worm. The Department of Entomology has brought collections of these parasites to Indiana and has liberated one species (*Macrocentrus ancylivora*) in certain parts of the infested area. The first introductions were made in 1929 when more than 500 parasites were liberated near Vincennes and Mitchell. In 1930, recovery collections were made around the points of liberation, which assure us that these parasites are able to survive under Indiana conditions. In 1930, liberations were made at the Purdue-Vincennes farm near Vincennes, the Moses Fell Annex farm near Bedford and at Mitchell. Recovery collections were made at the end of the season indicate that the parasites were able to survive the extremely hot dry summer. Working in cooperation with the United States Department of Agriculture, Bureau of Entomology, liberations were made in nine other localities in the state ranging from the extremely southern end to the extremely northern part of the state. It is hoped that further liberations of this parasite which has shown a high degree of efficiency will be made this summer, and that other parasites can be introduced.

COOPERATION OF UNITED STATES DEPARTMENT OF AGRICULTURE

The Bureau of Entomology of the United States Department of Agriculture has recognized the serious situation caused by the insect and disease problems in the fruit industries and have rendered valuable cooperation in the establishment of the Federal station at Vincennes to cooperate on these problems. Much credit is due to this staff of government men. Among other things they are carrying on intensive laboratory studies with hundreds of possible insecticide materials, under the direction of Dr. F. H. Lathrop, and a large scale oriental fruit worm baiting experiment under the direction of W. P. Yetter, Jr.



Typical injury to peach twigs by the larvae of the oriental fruit worm. A, early summer injury; B, a type of injury, consisting of a mass of gum, leaves and frass, found in fall and winter.

Circular 180
(Revised)

March, 1933

UNIVERSITY

Purdue University
Agricultural Experiment Station
Lafayette, Indiana

Preparation and Use of Chemically Treated Bands for Codling Moth Control

By G. E. Marshall, *Department of Entomology*

Five years of laboratory and field experimentation with chemically treated bands have proven that such self-working bands can be used in place of ordinary bands in a commercial orchard at a very considerable saving of time and money to the fruit-grower. This is especially true in orchards where the trees have been and are to be banded every year with untreated bands and the larvae collected beneath the bands and killed by hand.

The number of larvae captured by self-working bands will vary as the infestation of the orchard concerned varies. In a badly infested orchard in 1930, the average number of larvae captured per band was, for "alpha," 105.5 (fig. 1), for "beta," 79.4, and for untreated, 81.5. On the contrary, in an orchard where the infestation was very light, the number of larvae captured per band was for "alpha," 19.3, for "beta," 15.6, and for untreated, 19.7. These two sets of figures gives the extremes. In three other orchards where experiments with these three kinds of bands were carried on, the number of larvae captured by each varied widely between these two extremes but in the same order.

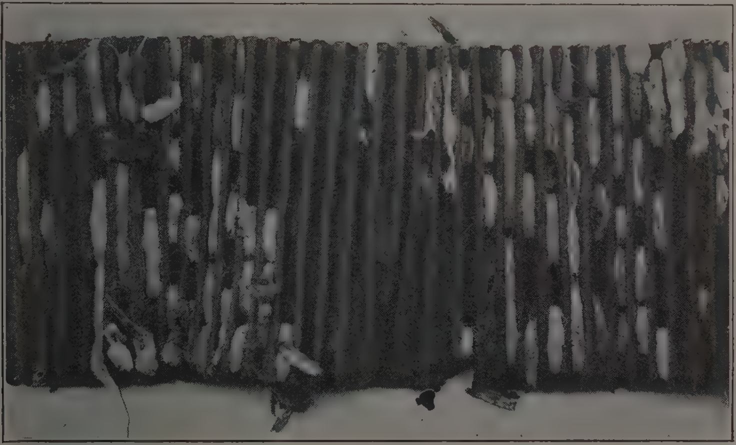


Fig. 1. Four inch chemically treated band showing cocoons of codling moth larvae. With rare exceptions every larva died before maturing.

Tests made in 1931 and 1932 showed that tallow could be used in place of oil in the "beta" bands with approximately as good results. Tallow is cheaper than oil, it prevents oils from soaking into the band and the temperature of the material need not be as high when the bands are dipped. Bands dipped in tallow and beta naphthol have a coating which will not crack off if handled in cool weather.

Aside from eliminating the worry of frequently examining bands during the summer the chemically treated or self-working bands avoid a large part of the expense of banding. For example, in one southern Indiana orchard there are 6,021 trees, all of which are regularly banded. In 1930 the bands were untreated and necessitated examination every ten days during the season. They were run nine times and, including the initial application, handled ten times. One man can visit not more than 200 bands a day. At $1.25 a day, it cost $47.50 for each run of the bands, or a total of $475.00. On the other hand, the cost of applying and removing the self-working bands was $90.00, plus the cost of treating, which would amount to not over $180.00, a total of $270.00. This amounts to a saving of at least $205.00.

Four factors of importance have been considered in the development of self-working bands as a supplementary measure in the control of the codling moth. These include,—chemical treatment, width, texture and height on the tree.

Banding Material. The bands should be made of one-faced corrugated cardboard, four inches wide, with four or five corrugations per inch.

Chemical Treatment. Three kinds of chemical treatments have given results warranting recommendation. These are alpha-naphthol-oil-parawax, beta-naphthol-oil and beta-naphthol-tallow.

Alpha-naphthol-Oil-Parawax Bands

The following materials (fig. 2) were needed for the preparation of the alpha-naphthol-oil-parawax bands:

e. Alpha-naphthylamine (technical grade), 1¾ pounds.
b. Paraffin base oil, of 200 to 300 viscosity, 1 pint.
c. Parawax, ⅜ pound.

The above amounts are sufficient to treat 50 bands.

Preparation of Bands. Select a breezy day and treat bands out-of-doors. Handle the bands with gloves and do not breathe the fumes of the chemicals. Put materials together in a large bucket or a small tub over a hot fire. When all the alpha-naphtholamine has melted and small yellow bubbles begin to form on the surface, dipping of bands may be started. Rolls of the corrugated paper of convenient size for dipping may be handled by strings tied to each side of the rolls. These are dipped flat side first into the hot chemicals. (Fig. 3.) If the mixture is hot enough, the rolls need only be half submerged and the liquid will foam up through the corrugations of the paper and spread out on top of the roll. As soon as this foam has spread over the entire surface,

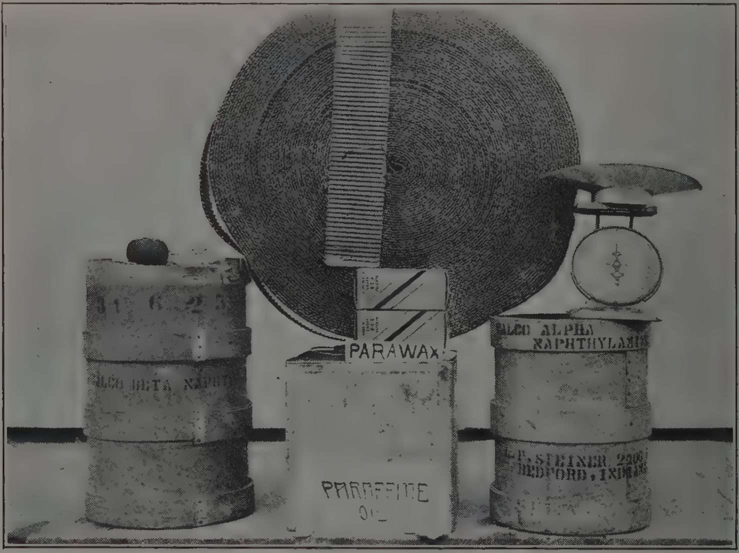


Fig. 2. Materials needed in the preparation of either alpha- or beta-naphthol bands.

raise the roll and let it drain back into the bucket. After draining, lay it aside where it can be turned over every minute or two for 10 or 12 minutes to prevent the material from running out of the bands and thus retain as much of the chemical as possible. Bands so treated will appear very oily for some time after treatment and should be a dark purplish-brown color. These bands have a very unpleasant odor.

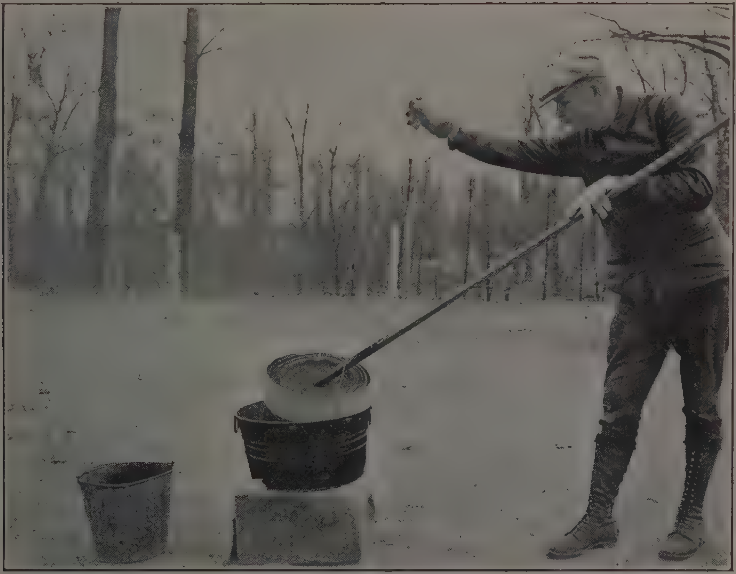


Fig. 3. Process of treating a roll of corrugated cardboard in the preparation of chemically treated bands.

Beta-naphthol Bands

The beta-naphthol-oil bands may be made in exactly the same way and using the same amounts of each material with these few exceptions: (a) no parawax is used; (b) beta-naphthol is used in place of the alpha-naphtholamine. It goes into solution at a much higher temperature and hardens much more rapidly. Beta-naphthol-oil bands are a yellow-brown color, rendered grey by crystals of naphthol which form on the surface of the paper. The oil is not conspicuous.

Beta-naphthol-tallow bands are made by using the same amounts of materials as for beta-naphthol oil bands but tallow is used in place of oil.

Precautions. A steady fire is best in the preparation of either type of band. If the liquid it too hot not enough of the chemical will be deposited in the bands at one treatment. The temperature at which the chemical will slowly foam up through the paper is best. The flash point of this mixture is 410° F., and if it is exposed directly to the flames at lower temperatures, it may catch fire. The fumes from alpha- and beta-naphthol are dangerous. Also, these materials are caustic to the skin and gloves should be worn while handling treated bands.

Use of Chemical Bands

The efficiency of any kind of tree band is directly dependent on the removal of every bit of excess bark on the tree trunk and larger branches.

Chemical bands darken the bark where applied. The beta-naphthol-tallow bands leaving the least discoloration. The discoloration left by the alpha-naphtholamine bands is much more noticeable than is that left by the beta-naphthol bands. These chemical bands have been applied to the same trees and in the same identical positions for five consecutive years with no noticeable injury. Solid bands of burlap, etc., with chemical treatments have produced injury. The corrugated cardboard must be used for all chemically treated bands.

Each year the highest single band catch has been with an "alpha" band, but since the odor of the bands is so unpleasant and the difference in catch so small most growers prefer the "beta" bands.

Bands should be applied before June 15 and should be placed about 18 to 24 inches above the ground with the corrugations next to the tree. Every care must be used to see that they fit snugly around the tree trunk. In case the tree to which the band is applied has a nitch in one side, a big headed tack should be used to hold the band against the bark in the groove. Often three to five tacks may be needed to make the band perfect fitting. The ends of the paper may be held in place by one tack and should overlap at least an inch and a half. A magnet hammer may be an aid in handling tacks with gloved hands. Bands should be removed and burned not later than April 15 the following year.

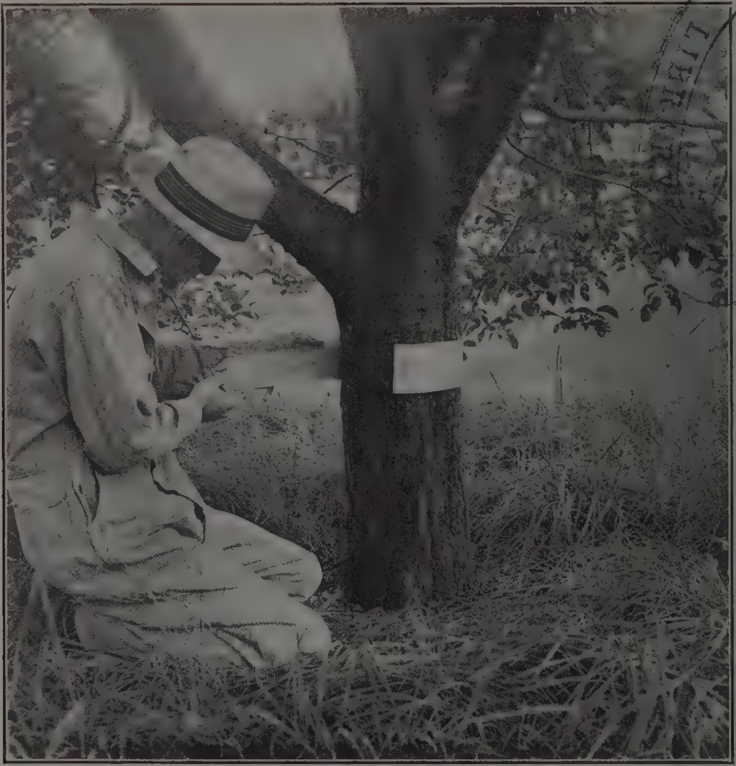


Fig. 4. Care should be taken in applying the band to see that it fits snugly about the tree and also the loose bark should be thoroughly removed from the tree before the band is applied.

Cost of Materials. The prices paid for materials used in the preparation of bands in 1932 were as follows:

Alpha-naphthylamine in 25 lb. lots	38c per lb.
Beta-naphthol in 25 lb. lots	27c per lb.
Oil in 10 gal. lots	18½c per gal.
Corrugated paper (4-inch strips 125 feet long)	12¾c
Tallow in 100 lb. lots	2c per lb.

Oil may be obtained from any filling station or oil company. Parawax is sold by most grocers and druggists.

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Circular No. 181 April, 1931

COMMERCIAL FEEDING STUFFS

Rats of same age. Small rat received protein deficient ration while large rat received ration adequate in protein.

Purdue University
Agricultural Experiment Station
Lafayette, Indiana

This circular contains a condensed report of Indiana's 1930 commercial feed inspection.

It is estimated that 512,096 tons of commercial feeds with a retail value of $24,293,652 were sold in Indiana during the year 1930. The inspectors of the State Chemist department secured 2,840 samples, or approximately one sample for each 180 tons of commercial feeds sold in this state.

All of the 2,840 samples collected were examined microscopically and 2,441 were analyzed chemically. It was found that 80 per cent of the samples were equal to or better than the manufacturer's guarantee as declared on the official tag. Of the 551 samples incorrectly guaranteed, 335 of them would be classed as seriously deficient or misbranded and sold in violation of the law. Shipments not tagged or seriously deficient were withdrawn from sale and manufacturers relabeled such feeds correctly and made refunds amounting to $1,979 to the agents and consumers.

Explanation of terms used in the analysis of feeds.

Table I Average analyses of the common cereals and by-product feeds.

Table II Estimated Sales of various classes of feeding stuffs.

Table III Withdrawals from sale.

Table IV Summary of the annual tonnage and expenditures for commercial feeding stuffs since 1911.

Definitions of feeding stuffs.

Table V Summary of inspection giving the standing of each feed manufacturer.

COMMERCIAL FEEDING STUFFS

H. R. KRAYBILL, State Chemist

O. S. ROBERTS, P. B. CURTIS, C. C. YUND, G. E. HALLIDAY, D. M. DOTY

The Indiana Feeding Stuffs law is primarily a correct labeling law. It requires the feeding stuff to be correctly labeled with official Indiana State labels or tags in order that the prospective buyer may have the information necessary to determine whether the feed is the kind which he wishes to buy. The official tag which bears the facsimile signature of the State Chemist gives the manufacturer's minimum guarantees for crude protein and crude fat and a maximum guarantee for crude fiber. Furthermore the tag states the specific name of each ingredient used in preparing the feeding stuff. Mineral feeds containing no organic ingredient do not require the usual chemical feed guarantee but do require a declaration of each ingredient contained therein and the minimum percentages of calcium (CaO), phosphorus (P_2O_5), iodine (I) and the maximum percentage of salt ($NaCl$) if same are present. With this information the purchaser is able to distinguish between superior and inferior feeds and to make an intelligent and economical purchase.

During the year 1930 the State Chemist collected 2,840 samples of commercial feeding stuffs from manufacturers, agents and farmers in the various sections of the state. One inspection sample was secured from approximately each 180 tons of commercial feed sold in Indiana. All of the 2,840 samples collected were examined microscopically and 2,441 of them were analyzed chemically for moisture, crude protein, crude fat, crude fiber and ash content. Those not analyzed were largely from shipments previously analyzed or were mineral feeds which required a different chemical analysis. Many of the samples drawn represented carload shipments.

Of the 2,840 samples secured 551 of them were found to be guaranteed incorrectly and 335 were classed as being seriously deficient or misbranded and not sold in accordance with the Indiana Feeding Stuffs law. The year's inspection showed that 80 per cent of the samples were equal to or better than the manufacturer's guarantee, as compared to 82 per cent in 1929.

Estimated Sales of Commercial Feeding Stuffs in 1930

Calculating the annual tonnage of commercial feeding stuffs sold from the number of tags issued by the State Chemist, it is estimated that 512,096 tons of commercial feeding stuffs with a retail value of $24,293,652 were sold in Indiana in 1930. Compared with the sales of 1929 this represents an increase of 13,209 tons but a decrease of $2,198,125 in expenditures. This decrease in expenditures was apparently due to the rapid decline in feed prices during the latter half of the year. From Table II the principal decreases in tonnage sold were for hominy feed, linseed oil meal, mineral feeds and condimental feeds while the principal increases were for cottonseed meal, poultry scratch feed and poultry mash.

Refunds and Withdrawals from Sale

During the year 1930 the sum of $1,979 was refunded by 74 feed manufacturers on 133 shipments of deficient feed. The payment of refunds does not nullify the right of anyone in the state to call cases of deficiency to the attention of the prosecuting attorney. On the other hand by making these refunds the manufacturer indicates his good intentions and does all that he can to correct the violation of the law.

Non-tagging still remains the most frequent cause for withdrawal of commercial feeding stuffs from the open market. Of the 733.0 tons withdrawn from sale in 1930 by the State Chemist, 466.6 tons, representing 146 shipments, were removed from sale on account of non-tagging. Thirty-one protein deficient shipments representing 105.3 tons were withdrawn from sale while 19 shipments comprising 91.8 tons were removed on account of misbranding. In practically all of the above cases the manufacturers furnished proper tags for the non-tagged feed and either replaced the deficient shipments with feed up to guarantee or retagged the feed with a correct guarantee.

Attention!

The official tag required by the Indiana feed law bears the facsimile signature of the State Chemist and contains the maunfacturer's guarantee.

Dealers and consumers should not accept any shipments without State Chemist tags or with such tags showing alterations. When such shipments are received they should not be accepted until official Indiana tags are furnished. When these are received one should be attached to each bag of 100 pounds or fraction thereof before offering or exposing for sale or selling the feed.

Manufacturers should not neglect to attach proper tags to each and every bag of feed shipped into Indiana in order to protect their dealers.

Distributors shipping feed into Indiana should request the manufacturer to furnish Indiana tags for such shipments before distributing same to Indiana dealers or consumers.

Dealers should be careful in handling the feed when unloading not to tear the tags off the sacks.

Carelessness on the part of the manufacturer, distributor or dealer may lead to serious violations of the Indiana Feeding Stuffs law.

Registration of all feeds are permanent. However, when changes are made in the chemical guarantee or ingredients in a brand of feed it is necessary to reregister such feed with the State Chemist. In registering commercial mixed feeds, trade names are not permitted in the statement of the ingredients. Furthermore, the source of such ingredients as calcium carbonate and calcium phosphate is required on the certificate of registration. When screenings are used in a mixture, the source of same must be stated. Indefinite names such as "grain screenings" will not be accepted. Also screenings must not contain any seed or other product injurious to animals and, except in poultry feeds, must be ground fine enough in all cases to destroy the viability of the seeds contained therein.

Dealers and consumers are requested not to send miscellaneous samples of feed to the State Chemist without giving full information as to name of manufacturer, brand name, amount on hand and reasons for desiring an analysis. This also includes samples of feed suspected of having caused ill effects on animals or poultry. If sufficient quantity of such feed is on hand perhaps an official sample can be drawn under the direction of the State Chemist.

The State Chemist Department does not make recommendations regarding feed formulas. If such information is desired the various Departments of the Purdue University Agricultural Experiment Station such as the Animal, Dairy, and Poultry Husbandry Departments will give to you their feeding results upon request.

Manufacturers having difficulty in computing proper guarantees for their adopted feed formulas are invited to write to the State Chemist Department regarding this matter. Table I containing the Average Analyses of Cereals and By-Products will be of great assistance to those who wish to calculate safe guarantees for their feeds.

Agents and farmers should familiarize themselves with the Explanation of Terms Used in the Analysis of Feeding Stuffs as well as with the Definitions of Feeding Stuffs. Table V "The Summary of Feed Inspection" is worth consideration by those who purchase commercial feeds.

Animal By-Products

The animal by-products most frequently used for feeding purposes include tankage, meat scraps, meat and bone scraps, dried blood and bone meal. These products are valuable as protein and mineral supplements to farm grains. When purchasing tankages or meat scraps the comparative cost per unit of protein should always be considered.

Alfalfa Products

During the past year substitution of alfalfa meal for alfalfa leaf meal was found in several poultry mashes and a few hog feeds. Manufacturers should bear in mind that when changes are made in the ingredients it is necessary to reregister the feed containing them.

Condimental Poultry and Stock Feeds

Although not all condimental feeds come under the Indiana Feeding Stuffs law it is gratifying indeed to note the decrease in tonnage and expenditures for this class of feed as recorded in Table II. This continual decrease in tonnage sold seems to indicate that the feeder is looking upon this class of feed with scrutiny.

Cottonseed Meals

Compared with the year 1929, a greater number of cottonseed meal samples were found to be seriously deficient in crude protein. Furthermore, there was a tendency for the samples to exceed their crude fiber guarantee which resulted in the necessity of re-registering several brands of cottonseed meal.

Dried Buttermilks

A tentative minimum standard of 5.5 per cent fat for dried buttermilk sold in this state was set effective January 1, 1931.

The purpose of this fat standard is to aid the correct labeling of dried skimmed milk and dried buttermilk. There is no desire to discourage increased efficiency in the churning process but after thorough investigation not only in Indiana but in several other states it was concluded that a pure dried buttermilk will practically always contain at least 5.5% fat. The method employed in determining the fat content is the official Roese-Gottlieb method.

Mill By-Products

This class of feed includes such wheat products as wheat bran, wheat middlings, flour middlings, wheat red dog, wheat low grade feed flour and wheat mixed feed. Each of these products is defined under "Definitions of Feeding Stuffs." If any of these wheat products is derived from durum wheat it must be stated on the tag.

Poultry Mashes

During the year 1930 the estimated tonnage of poultry mash sold in this state was 142,406 tons with a retail value of $7,903,533. Sales for this class of feed have steadily increased for a number of years, particularly during the last six years when the all mash system of feeding has been stressed. Manufacturers incorporating cod liver oil in their mashes should bear in mind that such mashes require separate registrations from those of plain mashes. The official Indiana State tag must state cod liver oil as an ingredient if same is added.

Proprietary Feeds

As indicated in Table II this class of feed has been divided into various sub-classes, namely, cattle and dairy feeds, hog and pig meals, horse and mule feeds, calf meals, and rabbit and dog feeds. These ready mixed feeds constitute a very important class of commercial mixed feeds. Probably there is no other class of feed where there exists such a wide range in nutritive value. Many of these feeds are of the finest quality while others contain ingredients of very little feeding value.

Explanation of Terms used in the Analysis of Feeding Stuffs

Moisture is the varying quantity of water occurring in feeding stuffs which can be driven off by heat at the temperature of boiling water. The amount of water present varies with the temperature, moisture content of the air, process of manufacture and the character of the substance. In most concentrates this value ranges from five to fifteen per cent.

Crude Fat consists mainly of fats and oils with small amounts of waxes, resins, coloring matter and similar substances, dissolved from feeding stuffs by dry ether. In calculating the heat and energy value of a feed, the fat is considered 2.25 times greater than that of either carbohydrates or protein.

Crude Protein is the term applied to the nitrogenous constitutes of a feeding stuff. It is obtained by multiplying the total nitrogen by 6.25. Protein is the most important as well as the most costly constituent in a feed. Plants have the power of building up protein from the inorganic elements of the soil and air while animals must secure their protein from the plants or other animals. The plant proteins contain varying amounts of the essential amino acids, therefore it is necessary to carefully select a variety of feeds which will furnish the essential amino acids economically.

Crude Fiber is the woody portion of a feeding stuff, for the most part cellulose, and is insoluble in dilute acids and alkalis. Most of the common seeds and grains contain very little fiber while the hulls, husks and stems are high in this constituent. In poultry and swine, crude fiber when present in considerable quantities exerts a retarding influence on the digestion of nutrients present.

Ash, the mineral matter of plants, is the residue left after burning a feeding stuff at low redness. It consists chiefly of the phosphates, sulphates, chlorides and carbonates of sodium, potassium, calcium and magnesium. The calcium and phosphorous are absolutely essential for the proper nutrition of the animal.

Nitrogen Free Extract consists of sugars, starches, pentoses, non-nitrogenous organic acids, etc., and is determined by subtracting the sum of moisture, crude fat, crude protein, crude fiber and ash from 100.

Carbohydrates is the sum of the crude fiber and Nitrogen-free extract.

TABLE I—Average Analysis of Cereals and By-Products

Material	Description of	Pounds in one hundred		
		Crude fat	Crude protein	Crude fiber
Alfalfa meal	Entire ground hay	1.5	13.0	33.0
Alfalfa leaf meal	Largely alfalfa leaves	2.5	20.0	18.0
Barley	Whole or ground	1.8	11.0	6.0
Beet pulp	Dried	0.9	8.5	18.0
Blood (dried)	Blood meal	0.5	80.0	none
Bone (raw)	Raw bone	3.0	20.0	1.0
Bone (steamed)	Steamed bone	0.5	6.0	1.0
Brewers' dried grains	From manufacture of beer	6.0	26.0	15.0
Buckwheat	Whole or ground	2.2	10.0	10.0
Buckwheat mixed feed	Entire product from manufacture of buckwheat flour	3.2	12.0	28.0
Buckwheat middlings	Entire product from manufacture of buckwheat flour, except the hulls	7.3	28.8	6.4
Buttermilk (dried)	Dried buttermilk	5.5	30.0	none
Buttermilk (condensed)	Condensed buttermilk	2.0	10.0	none
Cane seed	(Sorghum) removed from head and cleaned	2.5	9.0	2.5
Charcoal	Charcoal	none	none	90.0
Cob meal	Ground corn cob	0.5	2.0	31.0
Cocoanut oil meal	Dried cocoanut meats with partial extraction of oil	8.0	22.0	9.0
Corn	Old corn No. 2	4.0	9.5	2.0
Corn and cob meal	Ear corn (old)	3.5	8.0	8.0
Corn bran	Containing little corn germ	2.5	7.0	10.0
Corn mill feed	Corn bran, germ and some meal from manufacture of meal or corn flour	7.4	11.0	4.2
Corn feed meal	Manufacture of cracked corn	3.5	9.0	2.0
Corn germ oil meal	Corn germ with part of the oil removed	8.0	20.0	8.0
Corn gluten feed	Remains after the larger part of starch and germ is removed	2.0	25.0	7.0
Corn gluten meal	From manufacture of corn starch and glucose	1.0	42.0	2.0
Corn screenings	Small and broken grains of corn, small pieces cob, etc., removed from shelled corn	2.7	8.6	8.6

TABLE I—Continued.

Material	Description of	Pounds in one hundred		
		Crude fat	Crude protein	Crude fiber
Cottonseed meal (prime quality)	Sold as 36 per cent protein	6.0	36.0	14.0
Cottonseed meal (prime quality)	Sold as 41 per cent protein	6.0	41.0	12.0
Cottonseed meal (prime quality)	Sold as 43 per cent protein	6.0	43.0	10.0
Cottonseed feed	Below 36 per cent protein	4.0	22.8	22.0
Cottonseed hulls	Contains trace of lint and meal adhering	1.8	4.6	38.0
Cowpea	Seeds, pods removed	1.4	20.8	4.1
Distillers' grain (dried)	From corn or rye	9.0	27.0	12.0
Emmer	Often called spelt	2.0	11.5	10.0
Fish meal	Dried ground tissues of fish with or without the extraction of part of the oil	6.0	55.0	2.0
Flaxseed	Whole grain or meal without extraction of oil	32.0	22.0	7.0
Flax plant by-product	Shives, pods, etc.	2.1	15.0	31.0
Flaxseed screenings	Small and broken grains, flaxseed, weed seed and other foreign material cleaned from flaxseed	8.0	14.0	14.0
Hominy feed, meal or chop	Manufacture of hominy grits or meal by degerminator process	6.0	11.0	6.0
Kafir corn	Milo	2.5	10.0	2.5
Kelp (dried)	Ground dried kelp	1.0	6.0	10.0
Linseed meal (old process)	Oil extracted by pressure	6.0	34.0	8.0
Malt sprouts	Sprout of the barley grain	1.3	27.9	12.1
Meat scraps	Ground dry rendered residue from animal tissues	6.0	50.0	3.0
Millet	Italian millet seed	3.9	10.3	9.4
Milo	Whole or ground	2.5	10.7	2.5
Molasses	From beets	none	3.0	....
Molasses	Blackstrap from cane	none	3.0	....
Oats	Ground or whole	4.0	11.0	11.0
Oat-clipped by-product	Clippings	2.0	9.0	30.0
Oat-groats	Kernels of oat berry	6.5	15.0	2.0
Oat hulls	Oat hulls	1.5	4.0	32.0
Oat meal mill by-product	Oat hulls and oat shorts	1.5	6.0	28.0
Oat middlings	Floury portion of oat groat	5.0	15.0	5.0

Peanut oil feed	Peanut meats and peanut hulls	6.0	30.0	25.0
Peanut oil meal	Residue after the extraction of part of the oil from peanut kernels	6.0	40.0	6.0
Peanut shells	Whole or finely ground	1.2	5.5	70.9
Rice bran	Cuticle layer beneath hull	12.0	12.0	12.0
Rye	Rye	1.5	11.0	2.0
Rye feed	Rye feed	3.5	16.0	5.0
Skimmed milk (dried)	Dried skimmed milk	0.5	30.0	none
Soybean	Seed pods removed	19.0	35.0	5.0
Soybean oil meal	Ground	6.0	40.0	6.0
Sunflower seed	Whole or ground	19.0	16.0	30.0
Tankage (digester)	60 per cent reinforced with concentrated tank water or dried blood	6.0	60.0	3.0
Unscreened flaxseed oil feed	Flaxseed meal and flaxseed screenings	6.0	30.0	9.0
Velvet bean feed	Velvet beans and pods	4.0	19.0	17.0
Wheat	Whole or ground	1.9	11.9	2.4
Wheat bran (soft)	Wheat bran	3.5	14.5	8.0
Wheat bran (hard)	Wheat bran	4.0	16.0	10.0
Wheat middlings	Wheat middlings	3.5	15.5	6.0
Wheat standard middlings	With and without screenings	4.0	16.0	9.5
Wheat red dog flour	Red dog flour	3.5	15.0	4.0
Wheat mixed feed and mill run screenings	Bran, middlings, red dog flour and screenings	3.5	15.0	8.0
Whey (dried)	Dried whey	0.5	12.0	none

DEFINITIONS OF FEEDING STUFFS

Meal is the clean sound ground product of the entire grain, cereal, or seed which it purports to represent.

Chop is a ground or chopped feed composed of one or more different cereals or by-products thereof. If it bears a name descriptive of the kind of cereals, it must be made exclusively of the entire grains of those cereals.

Ear Corn Chops is corn and cob chopped, without the husk, with not a greater proportion of cob than occurs in the ear corn in its natural state.

Head Chops consists of the entire head of the grain sorghums chopped, and should bear the name of the sorghum from which it is made. This includes, among others, kaffir head chops, milo head chops, feterita head chops, and sorghum head chops.

Head Stems consists of the head of the grain sorghums, from which the grain has been removed, and should bear the name of the sorghum from which it is made.

Alfalfa Products

Chopped Alfalfa is the entire alfalfa hay, chopped and not ground finely enough to become a meal. It must not contain an admixture of alfalfa straw or other foreign material.

Alfalfa Meal is the product obtained from the grinding of the entire alfalfa hay, without the addition of any alfalfa stems, alfalfa straw or foreign material, or the abstraction of leaves. It must be reasonably free from other crop plants and weeds, and must not contain more than 33 per cent of crude fibre.

Alfalfa Leaf Meal is the ground product consisting chiefly of leafy materials separated from alfalfa hay. It must be reasonably free from other crop plants and weeds and must not contain more than 18 per cent of crude fibre.

Alfalfa Stem Meal is the ground product remaining after the separation of the leafy material from alfalfa hay or meal. It must be reasonably free from other crop plants and weeds.

Animal By-Products

Blood Meal is ground, dried blood.

Blood Flour is dried blood, prepared by special processes and reduced to a fine powder.

Digester Tankage, Meat Meal Tankage or Feeding Tankage is the residue from animal tissues exclusive of hoof, horn, manure and stomach contents, except in such traces as might occur unavoidably in good factory practice, especially prepared for feeding purposes by tanking under live steam or by dry-rendering or a mixture of the products made suitable by drying and grinding. When these products contain more than 10 per cent phosphorus (P_2O_5) they shall be designated Digester Tankage with Bone, Meat and Bone Meal Digester Tankage, Meat and Bone Meal Tankage, or Feeding Tankage with Bone. If they bear a name descriptive of their kind, composition or origin they must correspond thereto.

Meat Scraps is the ground dry rendered residue from animal tissues exclusive of hoof, horn, manure and stomach contents, except in such traces as might occur unavoidably in good factory practice. When this product contains more than 10 per cent phosphorus (P_2O_5), it shall be designated Meat and Bone Scrap. If they bear a name descriptive of their kind, composition or origin they must correspond thereto.

Raw Bone Meal is the dried, ground product suitable for animal feeding, obtained by cooking in water at atmospheric pressure, undecomposed bone, just enough to remove excess fat and meat. It must not contain less than 23 per cent of protein.

Steamed Bone Meal is the dried, ground product suitable for animal feeding obtained by cooking bones with steam under pressure.

Special Steamed Bone Meal is the dried, ground product suitable for animal feeding obtained by cooking dried bone after the removal of grease and meat fibre with steam under pressure in the process of obtaining gelatine or glue.

Apple Products

Dried Apple Pomace is the sound, dried residue obtained by the removal of cider from apples.

Dried Apple Pectin Pulp is the sound, dried residue obtained by the removal of pectin from apple products.

Barley Products

Barley Hulls are the outer coverings of the barley.

Barley Feed is the entire by-product resulting from the manufacture of pearl barley from clean barley.

Barley Mixed Feed is the entire offal from the milling of barley flour from clean barley and is composed of barley hulls and barley middlings.

Ground Barley is the entire product obtained by grinding clean sound barley, containing not less than 90 per cent pure barley and not more than 10 per cent of other grains, weed seeds and other foreign material and not more than 6 per cent fiber; provided that no portion of this stated 10 per cent of other grains, weed seeds or other foreign material shall be deliberately added.

Mixed Feed Barley is the entire product obtained by grinding country run barley containing not less than 75 per cent pure barley and not more than 25 per cent of other grains, weed seeds and other foreign material; provided that no portion of this stated 25 per cent of other grains, weed seeds or foreign material shall be deliberately added. The ingredients must be stated as barley, other grains, weed seeds and foreign material.

Brewers' and Distillers' Products

Brewers' Dried Grains are the properly dried residue from cereals obtained in the manufacture of beer.

Distillers' Dried Grains are the dried residue from cereals obtained in the manufacture of alcohol and distilled liquors. The product shall bear the designation indicating the cereal predominating.

Distillers' Corn Solubles, a by-product from the manufacture of alcohol from corn, is a mash liquor concentrated after the removal of the alcohol and wet grains.

Distillers' Rye Solubles, a by-product from the manufacture of alcohol from rye, is a mash liquor concentrated after the removal of the alcohol and wet grains.

Distillers' Corn and Rye Solubles, a by-product from the manufacture of alcohol from corn and rye, is a mash liquor concentrated after the removal of the alcohol and wet grains.

Malt Sprouts are the sprouts of the barley grain obtained in the malting process. Sprouts derived from any other malted cereal must be designated by the name of that cereal.

Yeast or Vinegar Dried Grains are the properly dried residue from the mixture of cereals, malt and malt sprouts (sometimes cottonseed meal) obtained in the manufacture of yeast or vinegar, and consists of corn or corn and rye from which most of the starch has been extracted, together with malt added during the manufacturing process to change the starch to sugars, and malt sprouts (sometimes cottonseed meal) added during the manufacturing process to aid in filtering the residue from the wort and serve as a source of food supply for the yeast.

Buckwheat Products

Buckwheat Shorts or Buckwheat Middlings are that portion of the buckwheat grain immediately inside the hull after separation from the flour.

Corn Products

Corn Bran is the outer coating of the corn kernel.

Corn Feed Meal is the by-product obtained in the manufacture of cracked corn, with or without aspiration products added to the siftings. This name is also correctly applied to the by-product obtained in the manufacture of table meal from the whole grain by the non-degerming process.

Grits are the hard, flinty portions of Indian corn containing no bran or germ.

Corn Gluten Meal is that part of commercial shelled corn that remains after the separation of the larger part of the starch, the germ and the bran by the processes employed in the manufacture of cornstarch and glucose. It may or may not contain corn solubles.

Corn Gluten Feed is that portion of commercial shelled corn that remains after the separation of the larger part of the starch and the germs by the processes employed in the manufacture of cornstarch and glucose. It may or may not contain corn solubles.

Maltose Process Corn Gluten Feed is the dried residue from degermed corn, after removal of starch in the manufacture of malt syrup.

Hominy Feed, Hominy Meal or Hominy Chop is the kiln-dried mixture of the mill-run bran coating, the mill-run germ, with or without a partial extraction of the oil, and a part of the starchy portion of the white corn kernel obtained in the manufacture of hominy, hominy grits, and cornmeal by the degerming process.

Yellow Hominy Feed, Yellow Hominy Meal or Yellow Hominy Chop is a kiln-dried mixture of the mill-run bran coating, the mill-run germ, with or without a partial extraction of the oil, and a part of the starchy portion of the yellow corn kernel obtained in the manufacture of yellow hominy grits and yellow cornmeal by the degerming process.

Corn Oil Cake consists of the corn germ from which part of the oil has been pressed and is the product obtained in the wet milling process of manufacture of corn starch, corn syrup, and other corn products.

Corn Oil Meal is ground corn oil cake.

Corn Germ Cake consists of corn germ with other parts of the corn kernel from which part of the oil has been pressed, and is the product obtained in the dry milling process of manufacture of cornmeal, corn grits, hominy feed, and other corn products.

Corn Germ Meal is ground corn germ cake.

Cottonseed Products

Cottonseed Meal is a product of the cottonseed only, composed principally of the kernel with such portion of the hull as is necessary in the manufacture of oil; provided that nothing shall be recognized as cottonseed meal that does not conform to the foregoing definition and that does not contain at least 36 per cent of protein. Cottonseed meal shall be graded and classed as follows:

1. **Cottonseed Meal,** Prime Quality. Cottonseed meal, prime quality, must be finely ground, not necessarily bolted, of sweet odor, reasonably bright in color, yellowish, not brown or reddish, free from excessive lint, and shall contain not less than 36 per cent of protein. It shall be designated and sold according to its protein content. Cottonseed meal with 36 per cent of protein shall be termed "36 per cent Protein Cottonseed Meal, Prime Quality," and higher grades similarly designated (as "43 per cent Protein Cottonseed Meal, Prime Quality"), etc.

2. **Cottonseed Meal, Off Quality.** Cottonseed meal not fulfilling the above requirements as to color, odor and texture shall be graded "36 per cent Protein Cottonseed Meal, Off Quality," and higher grades similarly designated.

Cottonseed Feed is a mixture of cottonseed meal and cottonseed hulls, containing less than 36 per cent of protein.

Cold, Pressed Cottonseed is the product obtained from the subjection of the whole undecorticated cottonseed to the cold pressure process for the extraction of oil and includes the entire cottonseed less the oil extracted.

Ground Cold Pressed Cottonseed is the product obtained by grinding cold pressed cottonseed.

Linseed and Flax Products

Linseed Cake or Meal is oil cake or meal made from flaxseed; provided that the final product shall contain less than 6 per cent of weed seeds and other foreign materials and; provided further, that no portion of the stated 6 per cent of weed seeds and other foreign materials shall be deliberately added.

Old Process Oil Meal, Old Process Linseed Meal is oil meal as defined or linseed meal as defined produced by crushing, cooking and hydraulic pressure.

New Process Oil Meal, New Process Linseed Meal is oil meal as defined or linseed meal as defined produced by crushing, heating and the use of solvents.

Flax Plant By-product is that portion of the flax plant remaining after the separation of the seed, the bast fiber and a portion of the shives, and consists of flax shives, flax pods, broken and immature flax seeds, and the cortical tissues of the stem.

Ground Flaxseed or Flaxseed Meal is the product obtained by grinding flaxseed which has been screened and cleaned of weed seeds and other foreign materials by the most improved commercial process; provided that the final product shall contain less than 4 per cent of weed seeds and other foreign materials, and; provided further, that no portion of the stated 4 per cent of weed seeds and other foreign materials shall be deliberately added.

Unscreened Flaxseed Oil Feed Cake is the product obtained by extraction of part of the oil from unscreened flaxseed by crushing, cooking and hydraulic pressure, or by crushing, heating and the use of solvents. The ingredients shall be stated as partially extracted flaxseed and foreign seeds (wheat, wild buckwheat, pigeon grass, wild mustard, etc.).

Ground Unscreened Flaxseed Oil Feed is the ground unscreened flaxseed oil feed cake.

Screenings Oil Feed is the ground product obtained after extraction of part of the oil by crushing, cooking and hydraulic pressure, or by crushing, heating and the use of solvents from the smaller imperfect grains, weed seeds and other foreign materials, having feeding value, separated in cleaning the grain. The name of the grain from which the screenings are separated shall be prefixed to "screenings oil feed."

Oil Cake is the product obtained after the extraction of part of the oil by crushing, cooking and hydraulic pressure, or by crushing, heating and the use of solvents, from seeds which have been screened and cleaned of weed seeds, and other foreign materials by the most improved commercial process. When used alone the term "Oil Cake" shall be understood to designate linseed cake as defined. When used to cover any other products the name of the seed from which it is obtained shall be prefixed to the words "Oil Cake."

Oil Meal or Ground Oil Cake is oil cake ground to a meal.

Marine Products

Fish Meal is clean dried ground tissues of undecomposed whole fish and/or fish cuttings with or without the extraction of part of the oil.

Fish Residue Meal is the clean, undecomposed residue from the manufacture of glue from non-oily fish.

Crab Meal is prepared from the undecomposed waste of the crab industry and contains the shell, viscera and part or all of the flesh. It should contain at least 25 per cent protein.

Shrimp Meal is prepared from the undecomposed waste of the shrimp industry and contains the head, hull and/or the whole shrimp.

Milk Products

Evaporated Buttermilk Feed, Concentrated Buttermilk Feed, Condensed Buttermilk Feed, is the product resulting from the removal of a considerable portion of water from clean, sound buttermilk derived from natural cream to which no foreign substances have been added excepting such as are permitted and necessary in the manufacture of butter. It contains not less than 27% of total solids, not less than 2% of butterfat, and not more than .14% ash for each per cent of solids. This definition does not prohibit the use of a distinctive trade name, provided it is followed by one of the names given.

Dried Skimmed Milk (Feeding) is the product resulting from the removal of water from clean, sound skimmed milk. It contains not more than 8 per cent moisture.

Condensed Skimmed Milk (Feeding) is the product resulting from the removal of a considerable portion of water from clean, sound skimmed milk. It contains not less than 27 per cent total solids.

Oat Products

Oat Groats are the kernels of the oat.

Oat Hulls are the outer coverings of the oat.

Oat Middlings are the floury portions of the oat groat obtained in the milling of rolled oats.

Oat Shorts are the covering of the oat grain lying immediately inside the hull, being a fuzzy material carrying with it considerable portions of the fine floury part of the groat obtained in the milling of rolled oats.

Clipped Oat By-products is the by-product obtained in the manufacture of clipped oats. It may contain the light chaffy material broken from the end of the hulls, empty hulls, light immature oats and dust. It must not contain an excessive amount of oat hulls.

Peanut Products

Peanut Oil Cake is the residue after the extraction of part of the oil by pressure or solvents from peanut kernels.

Peanut Oil Meal is ground peanut oil cake.

Unhulled Peanut Oil Feed is the ground residue obtained after extraction of part of the oil from whole peanuts, and the ingredients shall be designated as **Peanut Meal and Hulls.**

Rice Products

Rice Bran is the pericarp or bran layer of the rice, with only such quantity of hull fragments as is unavoidable in the regular milling of rice.

Rice Hulls are the outer coverings of the rice.

Rice Polish is the finely powdered material obtained in polishing the kernel.

Rice Meal is ground brown rice or ground rice after the hull has been removed.

Ground Rough Rice is ground rice from which the hull has not been removed or ground paddy rice.

Rice Stone Bran is the siftings from the materials secured in removing hulls from rice and contains rice germs, broken rice and some rice hulls.

Rice Huller Bran is a product secured by the huller and comes from brown rice and consists mostly of the bran and germs.

Rye Products

Rye Bran is the course outer covering of the rye kernel as separated from the cleaned and scoured rye.

Rye Feed, a by-product obtained in the usual process of the milling of rye flour from cleaned and scoured rye grain, consists principally of the mill-run of the outer covering of the rye grain and germ with small quantities of flour and aleurone.

Rye Red Dog, a by-product obtained in the usual process of the milling of rye flour, consists principally of aleurone with small quantities of flour and fine bran particles and shall not contain more than 3.5 per cent crude fiber.

Rye Low Grade Feed Flour consists principally of dark rye flour and small quantities of aleurone and fine bran particles and shall not contain more than 1.5 per cent crude fiber.

Rye Middlings consists of rye feed and rye red dog combined in the proportions obtained in the usual process of milling rye flour.

Rye Flour Middlings consists of rye feed, rye red dog and pure dark rye flour combined in the proportions obtained in the milling of rye flour and shall not contain more than 5 per cent crude fiber.

Velvet Bean Products

Velvet Bean Meal is ground velvet beans containing only an unavoidable trace of hulls or pods.

Ground Velvet Bean and Pod is the product derived by grinding velvet beans "in the pod." It contains no additional pods or other materials.

Wheat Products

Wheat Bran is the course outer covering of the wheat kernel as separated from cleaned and scoured wheat in the usual process of commercial milling.

Standard Middlings consists mostly of fine particles of bran, germ and very little of the fibrous offal obtained from the "tail of the mill." This product must be obtained in the usual commercial process of milling and shall not contain more than 9.5 per cent crude fiber.

Flour Middlings shall consist of standard middlings and red dog flour combined in the proportions obtained in the usual process of milling and shall not contain more than 6.0 per cent crude fiber.

Wheat Red Dog, a by-product obtained in the usual commercial process of flour milling, consists principally of aleurone with small quantities of flour and fine bran particles and shall not contain more than 4.0 per cent crude fiber.

Wheat Low Grade Feed Flour, a by-product obtained in the usual commercial process of flour milling, consists principally of flour with small quantities of aleurone and fine bran particles and shall not contain more than 1.5 per cent crude fiber.

Wheat Bran and Standard Middlings consists of the two commodities as defined above, mixed in the proportions obtained in the usual process of commercial milling.

Hard Wheat Mixed Feed (Mill-run wheat feed) consists of pure wheat bran and flour middlings combined in the proportions obtained in the usual process of commercial milling. This product shall not contain more than 9.5 per cent crude fiber.

Brown Shorts (Red Shorts) consists mostly of the fine particles of bran, germ and very little of the fibrous offal obtained from the "tail of the mill." This product must be obtained in the usual commercial process of milling and shall not contain more than 7.5 per cent crude fiber.

Gray Shorts (Gray Middlings or Total Shorts) consists of the fine particles of the outer bran, the inner bran or bee-wing bran, the germ and the offal or fibrous materials obtained from the "tail of the mill." This product must be obtained in the usual process of commercial milling and shall not contain more than 6.0 per cent crude fiber.

White Shorts or White Middlings consists of a small portion of the fine bran particles and the germ and a large portion of the fibrous offal obtained from the "tail of the mill." This product must be obtained in the usual process of flour milling and shall not contain more than 3.5 per cent crude fiber.

Wheat Mixed Feed (Mill-run wheat feed) consists of pure wheat bran and the gray or total shorts combined in the proportions obtained in the usual process of commercial milling. This product shall not contain more than 8.5 per cent crude fiber.

Screenings consists of the smaller imperfect grains, weed seeds, and other foreign materials, having feeding value, separated in cleaning the grain.

Scourings consists of such portions of the cuticle, brush, white caps, dust, smut and other materials as are separated from the grain in the usual commercial process of scouring.

(NOTE) If to any of the wheat or rye by-products feeds there should be added screenings or scourings—as above defined, either ground or unground, bolted or unbolted, such bran shall be so registered, labeled and sold as clearly to indicate this fact. The word "Screenings" or "Scourings" as the case may be, shall appear as part of the name or brand and shall be printed in the same size and face of type as the remainder of the brand name. When the word "Screenings" appears it is not necessary to show also on the labeling the word "Scourings."

Mineral Feeds

Mixed feed containing both feed and more than 5 per cent of mineral ingredients requires, in addition to the usual declaration of the chemical feed analysis, a declaration of each ingredient contained therein and the minimum percentages of Calcium (CaO), phosphorus (P_2O_5), iodine (I), and the maximum percentage of salt ($NaCl$), if same is added. If minerals predominate in the mixture, the usual declaration of the chemical feed analysis, with the exception of protein, may be omitted.

Mineral feeds containing no organic ingredient do not require the usual chemical feed guarantee, but do require a declaration of each ingredient contained therein and the minimum percentage of calcium (CaO), phosphorus (P_2O_5), iodine (I), and the maximum percentage of salt ($NaCl$) if same are present.

That the mineral ingredients be stated in the common English terms, if any such terms exist.

It being impossible to classify separately the drug ingredients and the mineral ingredients, be it resolved:

(1) That all mixtures containing mineral ingredients generally regarded as dietary factors essential for the normal nutrition of animals and which are sold or represented for the primary purpose of supplying these minerals as additions to rations in which these same mineral factors may be deficient, be classified as mineral feeds.

(2) That all other preparations which are sold or represented primarily for the cure, mitigation or prevention of disease be classified by this association as drugs, medicines or specifics.

Miscellaneous Products

Dried Beet Pulp is the dried residue from sugar beets which have been cleaned and freed from crown, leaves and sand, and which have been extracted in the process of manufacturing sugar.

Cocoanut Oil Meal or "Copra Oil Meal" is the ground residue from the extraction of part of the oil from the dried meat of the cocoanut.

Ivory Nut Meal is the ground waste material resulting from the manufacture of buttons and similar articles from the vegetable ivory nut.

Processed Garbage is composed of animal and vegetable waste from garbage collected sufficiently often that harmful decomposition has not set in and is separated from material such as crockery, glass, or similar material. Its odor must not be suggestive of the presence of decomposition and it must contain less than one per cent of glass. None of it shall contain knife like or needle like particles, and providing further, that the maximum percentage of glass be stated on the label when present in excess of one-fifth of one per cent.

Palm Kernel Oil Meal is the ground residue from the extraction of part of the oil by pressure or solvents from the kernel of the fruit of Elaeis guineensis or Elaeis malanococco.

TENTATIVE DEFINITIONS

Table Scrap Meal is the properly cooked dried and ground residue resulting from freshly collected hotel and house garbage from which all metal, crockery, glass, and other foreign material has been removed except in such traces as may unavoidably occur in good factory practice. The finished product shall not be suggestive of material decomposition in odor. It shall not contain any sharp, needle pointed pieces of glass and shall not contain more than one-fifth of one per cent of finely ground glass or dull particles of glass.

Whole Pressed Cottonseed, Prime Quality, is the product resulting from subjecting the whole, sound, mature, clean, undecorticated cottonseed to pressure for the extraction of oil, and includes the entire cottonseed less the oil extracted and the lint removed. It shall be designated and sold according to its protein content.

Ground, Whole Pressed Cottonseed, Prime Quality, is whole pressed cottonseed, ground. It shall be designated and sold occording to its protein content.

Milk Products

Condensed Soured Skimmed Milk (Feeding) is the product resulting from the removal of a considerable portion of water from the clean, sound skimmed milk which has been soured by a suitable culture of lactic bacteria. It contains not less than 27 per cent total solids.

Dried Buttermilk Feed is the product resulting from the removal of water from clean, sound buttermilk derived from natural cream, to which no foreign substances have been added, excepting such as are necessary and permitted in the manufacture of butter. It contains not more than 8 per cent of moisture, not more than 13 per cent of mineral matter (ash), and not less than 6 per cent butterfat.

Milk Sugar Feed is the by-product from the manufacture of cheese, containing at least 65 per cent lactose (milk sugar).

Corn Products

Corn Chop, Ground Corn or Cracked Corn is the entire product made by grinding, cutting or chopping the grains of Indian corn, and may be fine, medium, or coarse and must be neither weevilly, rancid nor musty, and shall not contain more than 4 per cent of foreign material.

Screened Corn Chop, Screened Ground Corn, or Screened Cracked Corn is the coarse portion of corn chop, ground corn or cracked corn from which most of the fine particles have been removed, and must be cool, neither weevilly, rancid nor musty, and shall not contain more than 4 per cent of foreign material.

Corn Meal (Feeding) is finely ground, unbolted corn.

Corn Bran is the outer coating of the corn kernel, with little or no starchy part of germ, and must be cool, neither weevilly, rancid nor musty.

Corn Feed Meal is the fine siftings obtained in the manufacture of screened corn chop, screened ground corn or screened cracked corn, with or without its aspiration products added, and must be cool, neither weevilly, rancid nor musty.

Corn Grits, Hominy Grits are the fine or medium sized, hard flinty portions of Indian corn containing little or no bran or germ.

Corn Screenings are the small, light grains of corn, parts of grains of corn and/or other cereals, and other materials having feeding value, obtained by screening shelled corn, excluding sand, dirt and other similar inert materials.

Oat Products

Oat Chop, Ground Oats, Pulverized Oats, Crushed Oats and Crimped Oats consists of the entire product made by grinding, chopping, cutting, crushing or crimping oats.

Oat Groats are the kernels produced from cleaned and dried oats in the process of manufacturing oat meal.

Hulled Oats, Undried Oat Groats are the kernels produced from the undried grain in the process of hulling oats.

Oat Meal, Ground Oat Groats is the product produced by cutting, cracking or grinding oat groats.

Rolled Oat Groats (Rolled Oats) is the product obtained in the process of rolling oat groats.

Oat Mill Feed is the by-product produced in the manufacture of oat groats and consists of oat hulls, oat shorts and oat middlings.

TABLE II—ESTIMATED SALES OF COMMERCIAL FEEDING STUFFS IN INDIANA

Kind of Feed	Estimated Tons			Estimated Retail Values, Dollars	
	1928	1929	1930	1929	1930
Alfalfa meal and leaf meal	2,625	2,657	3,063	129,130	135,997
Animal by-products (tankage, meat scrap, etc.)	25,812	26,094	27,750	1,823,971	1,709,400
Brewers, distillers' and yeast dried grains	197	63	94	2,627	2,914
Condimental poultry and stock feeds*	2,937	1,657	406	243,082	94,192
Corn bran	187	....	....	....	....
Corn feed meal	5,125	3,875	4,500	158,100	169,650
Corn germ meal	500	1,125	563	57,038	20,831
Corn gluten meal and feed	1,875	813	1,469	39,593	60,523
Corn and oats chop and miscellaneous chops	5,312	4,406	3,969	181,087	149,234
Cottonseed meal	8,532	9,406	11,750	510,746	478,225
Dried buttermilk, dried skimmed milk, condensed, etc.	5,781	7,063	6,219	1,181,640	956,482
Hominy meal and hominy feed	60,750	49,031	41,219	2,098,527	1,529,225
Linseed oil meal	7,281	9,719	7,031	622,016	371,940
Mill by-products—wheat bran, middlings, rye feeds, etc. with and without screenings	136,250	120,133	117,156	4,697,200	3,924,726
Mineral feeds	7,312	9,188	7,125	690,938	582,825
Oat meal by-products—oat shorts, oat hulls, oat middlings, oat groats, etc.	219	188	1,719	7,990	43,319
Poultry scratch feed—with and without grit	38,593	40,906	45,969	2,106,659	2,059,411
Poultry mash	102,375	120,563	142,406	7,197,611	7,903,533
Proprietary feeds—total ready mixed	110,719	88,781	87,844	4,581,100	4,028,940
Cattle and dairy feeds†	....	....	56,894	....	2,389,548
Hog and pig meals†	....	....	22,330	....	1,201,354
Horse and mule feeds†	....	....	6,051	....	240,225
Rabbit and dog feeds†	....	....	1,219	....	93,863
Calf meals†	....	....	1,350	....	103,950
Soybean oil meal	125	531	125	31,010	6,963
Miscellaneous—beet pulp, rice bran, processed garbage, cocoanut oil meal, kelp, peanut oil meal, etc.	1,969	2,688	1,719	131,712	65,322
Totals	524,476	498,887	512,096	26,491,777	24,293,652

*Not all condimental feeds come under the law.

TABLE III—WITHDRAWALS FROM SALE

Number of shipments withdrawn from sale	Number of manufacturers represented	Reasons for withdrawal from sale	Amount withdrawn tons
146	86	Not tagged	466.6
31	23	Deficient in crude protein	105.3
19	15	Misbranded	91.8
9	3	Deficient in crude fat	42.3
2	1	Deficient in crude protein and excess fiber	21.9
2	2	Excess crude fiber	3.5
2	2	Mutilated tags	0.8
1	1	Crude protein and excess glass	0.8
212	....	Totals	733.0

TABLE IV—SUMMARY OF THE ANNUAL TONNAGE AND EXPENDITURES FOR COMMERCIAL FEEDING STUFFS SINCE 1911

Year	1911	1912	1913	1914	1915	1916	1917
Estimated sales, tons..................	179,000	196,752	217,689	271,751	270,339	317,664	379,152
Estimated retail value, dollars.........	5,056,906	6,371,571	6,406,645	8,461,751	8,221,684	10,316,516	21,700,101
Year	1918	1919	1920	1921	1922	1923	1924
Estimated sales, tons..................	439,152	506,958	390,078	283,256	340,197	389,971	419,441
Estimated retail value, dollars.........	26,717,086	33,013,463	27,014,049	11,716,745	14,244,175	18,026,682	19,720,313
Year	1925	1926	1927	1928	1929	1930	
Estimated sales, tons..................	408,713	337,298	440,534	524,476	498,887	512,096	
Estimated retail value, dollars.........	20,945,026	16,837,512	24,173,605	29,818,566	26,491,777	24,293,652	

TABLE V—Summary of Feed Inspection

January 1, 1930 to January 1, 1931

Name and Address of Manufacturer	Number of samples examined	Number of samples passed	Number of samples not passed	Number of samples not tagged
Abingdon Milling & Cattle Feeding Co., Abingdon, Ill.	1	1	......	......
Acme-Evans Co., Indianapolis, Ind.	49	48	1	3
Acme Manufacturing Co., Forest Park, Ill.	2	2	......	......
Acme Milling Co., Aurora, Ind.	4	4	......	......
Advance Grain Co., Advance, Ind.	2	1	1	......
Alfocorn Milling Co., St. Louis, Mo.	3	2	1	1
Allied Mills, Inc., Chicago, Ill.	67	65	2	5
Always-A-Head Mills, Inc., East St. Louis, Ill.	1	1	......	......
American Milling Co., Peoria, Ill.	7	7	......	1
American National Mineral Corp., Hillsboro, Ind.	16	11	5	......
Amo Milling Co., Amo, Ind.	2	1	1	......
Amos Pig Grow Tonic & Food Co., Kokomo, Ind.	1	......	1	......
Anchor Milling Co., Rochester, Ind.	12	10	2	......
Anderson Mercantile Exchange, Anderson, Ind.	1	1	......	......
Angola Flour Mills, Angola, Ind.	5	5	......	......
Angola Reduction Co., Angola, Ind.	3	3	......	......
Anheuser-Busch, Inc., St. Louis, Mo.	1	1	......	......
Arcady Farms Milling Co., Chicago, Ill.	15	10	5	3
Archer-Daniels-Midland Co., Minneapolis, Minn.	1	1	......	1
Armour & Co., Chicago, Ill.	20	20	......	......
Armour Creameries, Chicago, Ill.	1	1	......	1
Armstrong Reduction Plant, Judson, Ind.	1	......	1	......
Ashley Mills, The, Ashley, Ind.	1	1	......	......
Ashpaugh & McCorkle, Flora, Ind.	1	1	......	......
Associated Feed Dealers of America, Inc., South Bend, Ind.	1	1	......	......
Atlas Mills, Vincennes, Ind.	2	2	......	......
Aubrey & Co., Louisville, Ky.	3	2	1	1
Auburn Roller Mills, Auburn, Ind.	4	4	......	......
Aukerman Bros.-Catey Co., Amboy, Ind.	6	6	......	......
Aurora Flour & Feed Co., Aurora, Ind.	4	4	......	......
Aviston Milling Co., East St. Louis, Ill.	3	3	......	......
Avondale Alfalfa Milling & Elevator Co., Pueblo, Colo.	1	1	......	1
Badenoch Co., J. J., Chicago, Ill.	10	9	1	2
Badger Grain & Feed Co., Inc., Milwaukee, Wis.	1	1	......	......
Bahler Feed Co., Remington, Ind.	7	6	1	......
Baker, Jesse I., Hagerstown, Ind.	1	1	......	......
Ballard & Ballard Co., Louisville, Ky.	2	2	......	......
Ballard Packing Co., Marion, Ind.	2	2	......	......
Baltic Mills Co., Vincennes, Ind.	36	28	8	......
Bargersville Grain Co., Bargersville, Ind.	3	3	......	......
Barr Grain Co., O. L., Bicknell, Ind.	2	2	......	......
Bash & Co., C. E., Huntington, Ind.	3	3	......	......
Bashore Feed Store, Silver Lake, Ind.	3	3	......	......
Batesville Roller Mills, Batesville, Ind.	2	2	......	......
Battle Creek Dog Food Co., Battle Creek, Mich.	1	1	......	......
Bausback Fertilizer Co., Shelbyville, Ind.	2	2	......	......
Beck Grain & Feed Co., Shelbyville, Ind.	2	2	......	......
Bisbee Linseed Co., Chicago Heights, Ill.	13	13	......	4
Bish Feed Co., Veedersburg, Ind.	2	2	......	......
Blish Milling Co., Seymour, Ind.	13	11	2	......

TABLE V—Continued.

Name and Address of Manufacturer	Number of samples examined	Number of samples passed	Number of samples not passed	Number of samples not tagged
Bloomingdale Mill Co., Bloomingdale, Ind.	1	1		
Blue River Reduction Co., Edinburg, Ind.	2	2		
Board of Sanitary Commissioners, Indianapolis, Ind.	1	1		
Boldt Milling Co., Waynetown, Ind.	5	4	1	
Boonville Milling Co., Boonville, Ind.	9	9		
Bowman Dairy Co., Chicago, Ill.	1	1		1
Branch Grain & Seed Co., Martinsville, Ind.	3	3		
Bremen Roller Mills, Bremen, Ind.	5	5		
Brewer Milling Co., Gosport, Ind.	3	2	1	
Brocker & Co., Chas., Owensboro, Ky.	1	1		
Brode Corp., F. W., Memphis, Tenn.	9	8	1	
Brook Flour & Feed Mill, Brook, Ind.	1	1		
Brown Bros., Indianapolis, Ind.	1	1		
Brown Ice & Fuel Co., West Terre Haute, Ind.	1	1		
Brown Supply Co., Valparaiso, Ind.	2	2		
Browns Valley Grain Co., Browns Valley, Ind.	2	2		
Brueggemann Bros., Milan Center, Ind.	1	1		
Buchsieb, E. G., Columbus, Ohio	5	5		1
Buckeye Cotton Oil Co., Louisville, Ky.	19	12	7	1
Bundy Bros., Medora, Ind.	1	1		
Bundy Bros. Mill Co., Vallonia, Ind.	4	4		
Burk Elevator Co., Decatur, Ind.	1	1		
Burket Elevator Co., Burket, Ind.	1	1		
Burnettsville Elevator Co., Inc., Burnettsville, Ind.	6	6		
Busenbark Grain Co., Crawfordsville, Ind.	8	4	4	
Butler Milling Co., Butler, Ind.	6	4	2	
Butt & Co., L. T., Center Point, Ind.	7	6	1	
Cadick Milling Co., Grandview, Ind.	1	1		
Cairo Meal & Cake Co., Cairo, Ill.	8	8		1
Campbellsburg Milling Co., Campbellsburg, Ind.	5	4	1	
Capital Flour Mills, Inc., Minneapolis, Minn.	8	8		
Carter Milling Co., Salem, Ind.	3	3		
Case Commission Co., Jackson, Miss.	1	1		
Cauble Grain Co., Salem, Ind.	7	7		
Cayuga Milling Co., Cayuga, Ind.	7	7		
Central States Elevator Corp., Indianapolis, Ind.	2	2		
Central States Elevator Corp., Montezuma, Ind.	1		1	
Central States Mineral Feed Co., Indianapolis, Ind.	3	1	2	1
Chalmers Grain Co., Chalmers, Ind.	1	1		
Chapin & Co., Hammond, Ind.	4	4		
Chapman-Doake Co., Decatur, Ill.	38	33	5	
Charlestown Milling Co., Charlestown, Ind.	2	2		
Choctaw Sales Co., Kansas City, Mo.	2	2		1
Clayton Milling Co., Clayton, Ind.	1	1		
Cloverleaf Creameries, Inc., Decatur, Ind.	1	1		1
Cloverleaf Mills, Kokomo, Ind.	8	7	1	
Coal City Milling Co., Coal City, Ind.	1	1		
Cohee & Clark, Kempton, Ind.	3	3		
Collis Products Co., Clinton, Iowa	1	1		1
Columbus Milling Co., Columbus, Ind.	8	6	2	
Columbus Sanitary Reduction Co., Columbus, Ind.	2	2		
Community Mill, Edinburg, Ind.	3	3		
Community Mill, Newberry, Ind.	2		2	
Conkey Co., G. E., Cleveland, Ohio	1	1		

TABLE V—Continued.

Name and Address of Manufacturer	Number of samples examined	Number of samples passed	Number of samples not passed	Number of samples not tagged
Consolidated Flour Mills Co., Wichita, Kan.	1	1	......	......
Consolidated Products Co., Danville, Ill.	1	1	......	......
Consumers Import Co., Inc., New York, N. Y.	1	1	......	1
Cook, E. N., Plymouth, Ind.	1	1	......	......
Cooperative Elevator Co., Winamac, Ind.	4	4	......	......
Corn Belt Feed Co., Boswell, Ind.	1	1	......	......
Corn Products Refining Co., New York, N. Y.	4	4	......	2
Cottrell Bros., Terre Haute, Ind.	1	1	......	......
Crabbs Reynolds Taylor Co., Crawfordsville, Ind.	8	6	2	......
Crabbs Reynolds Taylor Co., Lafayette, Ind.	21	19	2	......
Crabbs Reynolds Taylor Co., Reynolds, Ind.	1	1	......	......
Crescent Mill, Branch Blish Milling Co., Seymour, Ind.	1	1	......	......
Crete Mills, The, Crete, Nebr.	12	12	......	......
Dalrymple & Hinton, Crawfordsville, Ind.	1	1	......	......
Daniel Bros., Columbia City, Ind.	2	1	1	......
Danville Rendering Co., Danville, Ill.	1	......	1	......
Darling & Co., Chicago, Ill.	21	21	......	1
Daviess Co. Farm Bureau, Washington, Ind.	11	11	......	......
Davis, G. G., Tipton, Ind.	1	1	......	......
Davis, S. P., Little Rock, Ark.	11	9	2	......
Decatur Milling Co., Decatur, Ill.	20	20	......	1
Deck, James H., Roann, Ind.	4	4	......	......
Dekalb Tanking Co., Auburn, Ind.	3	2	1	......
Denver Alfalfa Milling & Products Co., Lamar, Col.	3	3	......	3
Depoy Feed Co., Muncie, Ind.	2	1	1	......
Diamond Mills, Evansville, Ind.	3	2	1	......
Dickinson Co., The Albert, Chicago, Ill.	14	14	......	1
Dixie Mills Co., East St. Louis, Ill.	1	1	......	......
Dorsel Milling Co., Albert H., Liberty, Ind.	6	6	......	......
Dryfus Packing & Provision Co., Lafayette, Ind.	6	5	1	......
Dubois Co. Farm Bureau Cooperative Ass'n, Huntingburg, Ind.	1	1	......	......
Dubois Milling Co., Dubois, Ind.	1	1	......	......
Dwiggins & Sons, Chas., Waynetown, Ind.	6	5	1	......
Eagle Roller Mill Co., New Ulm, Minn.	2	2	......	......
Eagle Stock Mineral Co., Indianapolis, Ind.	6	5	1	......
Early & Daniel Co., Cincinnati, Ohio	2	2	......	1
Easton's Feed Store, Bedford, Ind.	1	1	......	......
Eberts & Bro., North Vernon, Ind.	4	4	......	......
Eberts Grain Co., Louisville, Ky.	5	5	......	1
Eckhart Milling Co., B. A., Chicago, Ill.	5	4	1	1
Edwardsport Garbage Co., Bicknell, Ind.	1	1	......	......
Egloff Milling Co., Vincennes, Ind.	6	5	1	......
Elkhart County Fertilizer Co., Wakarusa, Ind.	1	1	......	......
Elkhart Packing Co., Elkhart, Ind.	1	1	......	......
Emge & Sons, Fort Branch, Ind.	4	3	1	......
English & Milltown Milling Co., Milltown, Ind.	2	2	......	......
Erie Elevator Co., Rochester, Ind.	1	1	......	......
Etna Lumber & Elevator Co., Etna Green, Ind.	1	1	......	......
Eureka Milling Co., Corydon, Ind.	2	1	1	......
Evans Milling Co., Indianapolis, Ind.	36	36	......	......
Ewing Mill Co., Brownstown, Ind.	4	2	2	......
Ewing Mill Co., Ewing, Ind.	2	2	......	......
Excello Feed Milling Co., St. Joseph, Mo.	1	1	......	......

TABLE V—Continued.

Name and Address of Manufacturer	Number of samples [redacted]ed	Number of samples passed	Number of samples not passed	Number of samples not tagged
Excelsior Milling Co., Minneapolis, Minn.	8	7	1	1
Fairplay Feed Mills, Linton, Ind.	5	4	1	......
Fall City Feed Mills, Louisville, Ky.	1	1	......	......
Farmers Coal & Feed Co., Goshen, Ind.	3	3	......	......
Farmers Cooperative Co., Cicero, Ind.	2	2	......	......
Farmers Cooperative Co., Southport, Ind.	2	......	2	......
Farmers Cooperative Co., of Cammack, R. R. 8, Muncie, Ind.	1	1	......	......
Farmers Cooperative Elevator Co., Seymour, Ind.	8	6	2	......
Farmers Cooperative Grain & Supply Co., Crawfordsville, Ind.	1	1	......	......
Farmers Elevator Co., Morocco, Ind.	2	2	......	......
Farmers Exchange, Inc., Warren, Ind.	1	......	1	......
Farmers Feed & Grain Co., Darlington, Ind.	2	2	......	......
Farmers Grain & Supply Co., Windfall, Ind.	7	7	......	......
Farmers Marketing Ass'n, Columbus, Ind.	4	4	......	......
Farmers Mill, The, Huntingburg, Ind.	3	3	......	......
Farmers Mill & Elevator Co., Columbia City, Ind.	4	4	......	......
Farmers Produce Co., Salem, Ind.	3	3	......	......
Farmers Products Co., Indianapolis, Ind.	1	1	......	......
Farmers Reduction Co., Clarks Hill, Ind.	1	1	......	......
Farm Products Ass'n, Indianapolis, Ind.	2	2	......	......
Fisher-Lambert Feed & Coal Co., Anderson, Ind.	4	3	1	......
Ford Milling Co., New Harmony, Ind.	2	2	......	......
Foster-Kendall Co., Carmel, Ind.	6	5	1	......
Fowler Roller Mills, Fowler, Ind.	1	1	......	......
Frankfort Rendering Co., Frankfort, Ind.	19	14	5	......
Freese's Sons, George, Nappanee, Ind.	6	5	1	......
Fretz Feed Store, R. C., Waterloo, Ind.	2	2	......	......
Fry Elevator, The Herbert B., Argos, Ind.	14	10	4	......
Fulks & Son, Willard, Columbus, Ind.	5	5	......	......
Fulton Mill, Fulton, Ind.	5	5	......	......
Fyke Milling Co., Kendallville, Ind.	6	5	1	......
Galesburg Molasses Feed Co., Galesburg, Ill.	1	1	......	......
Garland Milling Co., Greensburg, Ind.	3	3	......	......
Garten Feed Co., Indianapolis, Ind.	2	1	1	......
Gaston Roller Mills, Gaston, Ind.	2	2	......	......
Geabes Bros., Clay City, Ind.	18	18	......	......
General Commission Co., Kansas City, Mo.	1	1	......	......
Geneva Equity Exchange, Geneva, Ind.	1	1	......	......
Geneva Milling & Grain Co., Geneva, Ind.	3	3	......	......
Goeke Sons, Edw. F., Evansville, Ind.	19	15	4	......
Goldreich Fertilizer Co., Marion, Ind.	4	2	2	......
Gooch Milling & Elevator, Lincoln, Nebr.	1	1	......	......
Good & Son, L., Clermont, Ind.	1	1	......	......
Goodrich Bros. Co., Winchester, Ind.	11	9	2	......
Goodrich Bros. Hay & Grain Co., Winchester, Ind.	1	1	......	......
Goshorn, R. J., Washington, Ind.	2	2	......	......
Grabill Grain & Milling Co., Grabill, Ind.	2	2	......	......
Graco Milling Co., Sherman, Texas	14	13	1	......
Graft, C. V., Winchester, Ind.	4	1	3	......
Grant Coal & Feed Co., Marion, Ind.	8	6	2	......
Gay-Von Allmen, Louisville, Ky.	2	1	1	1
Greendale Mills, Inc., Lawrenceburg, Ind.	2	1	1	......
Greene Coal & Supply Co., H. O., Goshen, Ind.	1	1	......	......

TABLE V—Continued.

Name and Address of Manufacturer	Number of samples examined	Number of samples passed	Number of samples not passed	Number of samples not tagged
Greenfield Milling Co., Greenfield, Ind.	1	1		
Greenville Milling Co., Greenville, Ind.	1	1		
Grimes & Finch, Portland, Ind.	8	8		
Gro Bone Products Co., Dixon, Ill.	1		1	
Gutwein Milling Co., Francesville, Ind.	13	11	2	
Haak, Edwin, Kokomo, Ind.	1	1		
Habig Bros., Indianapolis, Ind.	7	7		
Haldeman-Baum Co., Akron, Ind.	3	3		
Hales & Hunter Co., Chicago, Ill.	13	11	2	
Hales Milling Co., Milwaukee, Wis.	4	4		
Hamlet Grain & Feed Co., Hamlet, Ind.	1	1		
Hartman & Dotterer, Bluffton, Ind.	2	2		
Hayes, W. E., Kokomo, Ind.	2	2		
Haynes Milling Co., Portland, Ind.	4	3	1	
Heflin, R. L., Galveston, Texas	1	1		
Heise Bros., Orleans, Ind.	19	15	4	
Heitschmidt, A. C., Michigan City, Ind.	1	1		
Heldt Co., The, Evansville, Ind.	4	4		1
Heppe Co., The, Logansport, Ind.	1		1	
Hirsch Bros. Grain Co., Logansport, Ind.	1	1		
Hirst & Begley Linseed Works, Chicago, Ill.	5	5		
Hite Bros., Peru, Ind.	2	2		
Hobbs Grain Co., Hobbs, Ind.	3	3		
Hollingsworth, C. W. & S. P., Russiaville, Ind.	5	5		
Holser & Co., B. I., Walkerton, Ind.	3	1	2	
Home Packing & Ice Co., Terre Haute, Ind.	5	5		
Hoosier Mineral Feed Co., Greenwood, Ind.	4	4		
Hornung & Sons, J. M., Greensburg, Ind.	1	1		
Hughes-Curry Packing Co., Anderson, Ind.	12	9	3	
Humphreys-Godwin Co., Memphis, Tenn.	33	29	4	2
Huntington Equity Exchange, Huntington, Ind.	3	3		1
Huntington Mill Co., Huntington, Ind.	6	5	1	
Hutchins Bros. Mineral Works, Hillsboro, Ind.	1	1		
Igleheart Bros., Evansville, Ind.	6	6		2
Illinois Feed & Elevator Co., Bloomington, Ill.	4	4		
Illinois Linseed Meal Co., Chicago Heights, Ill.	1	1		
Illinois Milling Co., Chicago, Ill.	1	1		
Imperial Meal Co., Minneapolis, Minn.	3	3		
Indiana Farm Bureau Cooperative Ass'n, Inc., Indianapolis, Ind.	142	124	18	16
Indiana Flour & Feed Co., Muncie, Ind.	5	5		
Indiana Hide & Tallow Co., South Bend, Ind.	10	9	1	2
Indiana State Milling Co., South Bend, Ind.	6	5	1	
Indianapolis Abattoir Corp., Indianapolis, Ind.	4	4		
Inland Milling Co., DesMoines, Iowa	4	4		1
International Agricultural Corp., Cincinnati, Ohio	1	1		1
International Milling Co., Minneapolis, Minn.	1	1		1
International Sugar Feed Co., Minneapolis, Minn.	3	3		3
Interstate Feed Co., Fort Worth, Texas	2	2		
Iroquois Roller Mills, Rensselaer, Ind.	10	8	2	
Jacobson, Soren, Young America, Ind.	1	1		
Jay Grain Co., Elwood, Ind.	3	3		
Jersee Co., The, Minneapolis, Minn.	7	6	1	
Jones Bros., West Lebanon, Ind.	3	2	1	
Jordan & Sons, Geo. M., Vincennes, Ind.	6	5	1	

TABLE V—Continued.

Name and Address of Manufacturer	Number of samples examined	Number of samples passed	Number of samples not passed	Number of samples not tagged
Joslin-Schmidt Corp., Cincinnati, Ohio	13	11	2	......
Kahn's Sons Co., The E., Cincinnati, Ohio	5	4	1	......
Kasch, Louis, Logansport, Ind	4	3	1	......
Kellogg & Sons, Spencer, Buffalo, N. Y	9	9	......	4
Kellogg Co., Battle Creek, Mich	3	3	......	1
Kendallville Fertilizer Co., Kendallville, Ind	2	2	......	......
Kentland Reduction Co., Kentland, Ind	1	1	......	......
Kentucky Chemical Manufacturing Co., Covington, Ky	5	5	......	......
Kentucky Feed & Grain Co., Louisville, Ky	1	1	......	......
Kerlin Elevator & Feed Co., Sullivan, Ind	3	3	......	......
Kibler, F. M., West Terre Haute, Ind	3	3	......	......
Kiefer Feed & Supply Co., Elwood, Ind	9	8	1	......
Kiefer Feed & Supply Co., Sharpsville, Ind	1	1	......	......
Kiest Milling Co., Knox, Ind	3	3	......	......
Killian Elevator, Newberry, Ind	2	2	......	......
Kingan & Co., Indianapolis, Ind	10	10	......	......
King Elevator Co., Wabash, Ind	4	3	1	......
King Midas Mill Co., Minneapolis, Minn	2	2	......	......
Kinney Grain Co., H. E., Indianapolis, Ind	1	1	......	......
Kirk Feed Co., Indianapolis, Ind	1	1	......	......
Klondike Milling Co., Danville, Ind	2	2	......	......
Knecht Milling Co., Hartford City, Ind	3	3	......	......
Knox County Fertilizer Co., Vincennes, Ind	1	1	......	......
Kosciusko County Farm Bureau Cooperative Ass'n, Inc., Warsaw, Ind	3	3	......	......
Krause Milling Co., Chas. A., Milwaukee, Wis	32	32	......	1
Lafayette Cooperative Elevator Co., Lafayette, Ind	11	11	......	......
Lafayette Milling Co., Lafayette, Ind	4	3	1	1
Lake & Reagan Grain Co., Manson, Ind	3	3	......	......
Landman Milling Co., St. Henry, Ohio	1	1	......	......
Land O' Lakes Creameries, Minneapolis, Minn	2	1	1	......
L. & S. Grain Co., Buck Creek, Ind	1	1	......	......
Lapaz Grain Co., Lapaz, Ind	2	2	......	......
Larkin & Denny, Cloverdale, Ind	3	2	1	......
Lash Flour Mills, Fred B., Farmersburg, Ind	6	6	......	......
Lauramie Grain Co., Stockwell, Ind	1	1	......	......
Lawrenceburg Roller Mills Co., Lawrenceburg, Ind.	4	4	......	1
Lebanon Grain Co., Lebanon, Ind	1	1	......	......
Lemon Milling Co., Bedford, Ind	5	4	1	......
Liberty Rendering Co., Liberty, Ind	1	1	......	......
Lingeman, Adams & Co., Brownsburg, Ind	2	2	......	......
Linton Mill Co., Linton, Ind	2	2	......	......
Long Co., J. A., Portland, Ind	2	2	......	......
Loughrey Bros. Milling & Grain Co., Monticello, Ind	8	8	......	......
Louisville Cereal Mill Co., Louisville, Ky	2	2	......	1
Louisville Cotton Oil Mill, Louisville, Ky	8	6	2	......
Louisville Milling Co., Louisville, Ky	1	1	......	......
Lovitt & Co., L. B., Memphis, Tenn	7	7	......	2
Lowell Grain & Hay Co., Lowell, Ind	1	1	......	1
Lucas, Henry, Brownstown, Ind	1	1	......	......
Lyon & Greenleaf Co., Ligonier, Ind	5	5	......	......
McComas & Randall, Indianapolis, Ind	2	2	......	......

TABLE V—Continued.

Name and Address of Manufacturer	Number of samples examined	Number of samples passed	Number of samples not passed	Number of samples not tagged
McCormick Co., Chas. W., Logansport, Ind.	2	2	......	......
McMahan Seed Co., Valparaiso, Ind.	5	5	......	......
Macdonald, C. L., R. R. 5, Marion, Ind.	1	1	......	......
Major Bros. Packing Co., Mishawaka, Ind.	2	2	......	......
Majot, E. C., Michigan City, Ind.	6	4	2	1
Mansfield Roller Mills, Rockville, Ind.	2	2	......	......
M. & R. Grain Corp., Indianapolis, Ind.	3	2	1	......
Maney Milling Co., Omaha, Nebr.	1	1	......	1
Marianna Sales Co., Memphis, Tenn.	12	11	1	1
Marlatt, E. H., Attica, Ind.	1	1	......	......
Marshall Feed & Grain Co., Marshall, Ind.	4	3	1	......
Martin, John D., Lafayette, Ind.	8	7	1	......
Martinsville Milling Co., Martinsville, Ind.	7	4	3	......
Mayer Grain Co., South Whitley, Ind.	9	8	1	......
Mayflower Mills, Fort Wayne, Ind.	3	3	......	......
Medaryville Cooperative Co., Medaryville, Ind.	1	1	......	......
Meier Packing Co., Indianapolis, Ind.	1	1	......	......
Memphis Cottonseed Products Co., Memphis, Tenn.	6	4	2	1
Menaugh, Will H., Osceola, Ind.	8	7	1	1
Metamora Roller Mills, Metamora, Ind.	4	3	1	......
Mexico Elevator & Live Stock Co., Mexico, Ind.	2	2	......	......
Midway Elevator, Colfax, Ind.	1	1	......	......
Midwest Flour & Feed Co., St. Louis, Mo.	1	1	......	......
Miesenhelder Bros., Inc., Palestine, Ill.	1	1	......	1
Milford Mills, Milford, Nebr.	3	2	1	......
Miller Cereal Mills, Omaha, Nebr.	46	32	14	3
Miller Coal Co., Thorntown, Ind.	3	3	......	......
Miller Grain Co., Bainbridge, Ind.	8	8	......	......
Millersburg Hammer Mill, Millersburg, Ind.	3	3	......	......
Minneapolis Milling Co., Minneapolis, Minn.	2	2	......	1
Mishawaka Grain & Coal Co., Mishawaka, Ind.	4	4	......	......
Missouri Cotton Oil Co., Cairo, Ill.	9	7	2	......
Monarch Mill, Columbia City, Ind.	1	1	......	......
Monroe Mills, Bloomington, Ind.	1	1	......	......
Montezuma Mill & Elevator Co., Montezuma, Ind.	2	2	......	......
Mooresville Milling Co., Mooresville, Ind.	3	2	1	......
Morgan, Frank, Plainville, Ind.	1	1	......	......
Morgan, R. J., Jonesboro, Ind.	3	2	1	......
Morris & Co., (Branch North America Provision Co.), Chicago, Ill.	19	17	2	1
Morristown Elevator Co., Morristown, Ind.	2	1	1	......
Morrow Grain Co., Wabash, Ind.	2	2	......	......
Mote, W. C., Laura, Ohio	1	1	......	......
Mount Vernon Milling Co., Mount Vernon, Ind.	1	1	......	......
Mulberry Grain Co., Mulberry, Ind.	2	2	......	......
Murphy Products Co., Burlington, Wis.	3	1	2	2
Mutschler Packing Co., Fred, Decatur, Ind.	1	1	......	......
Naber & Co., Chas. F., Alexandria, Ind.	2	2	......	......
Naber & Co., Chas. F., Fairmount, Ind.	2	2	......	......
Nading Grain Co., Wm., Greensburg, Ind.	9	9	......	......
Nappanee Milling Co., Nappanee, Ind.	15	12	3	......
National Feed Co., St. Louis, Mo.	18	15	3	......
New Albany Milling Co., New Albany, Ind.	1	1	......	......
New Carlisle Hide & Rendering Co., New Carlisle, Ind.	3	3	......	......

TABLE V—Continued.

Name and Address of Manufacturer	Number of samples examined	Number of samples passed	Number of samples not passed	Number of samples not tagged
New Carlisle Milling Co., New Carlisle, Ind.	3	3	......	......
New Ross Grain & Lumber Co., New Ross, Ind.	1	1	......	......
Newsome Feed & Grain Co., Pittsburgh, Pa.	9	9	......	......
New Ulm Roller Mill Co., New Ulm, Minn.	1	1	......	......
Niles Creamery Co., Niles, Mich.	1	1	......	1
Noblesville Milling Co., Noblesville, Ind.	2	2	......	......
Northern Indiana Poultry Improvement Ass'n, Mentone, Ind.	2	2	......	2
North Madison Coal Co., North Madison, Ind.	1	1	......	......
North Manchester Fertilizer Co., North Manchester, Ind.	2	2	......	......
North Manchester Milling Co., North Manchester, Ind.	2	1	1	......
Norton & Co., Willis, Topeka, Kan.	1	1	......	1
Nowak Milling Corp., Buffalo, N. Y.	2	1	1	......
Nowak Milling Corp., Hammond, Ind.	14	14	......	......
Nunn & Sons Milling Co., Chas., Evansville, Ind.	12	9	3	1
Oakland City Milling Co., Oakland City, Ind.	3	3	......	......
Odon Milling Co., Odon, Ind.	8	7	1	......
Ohio Valley Seed Co., Evansville, Ind.	8	7	1	4
Old Dutch Mills, Minneapolis, Minn.	1	1	......	......
Page Dairy Co., The, Toledo, Ohio	1	......	1	1
Paoli Milling Co., Paoli, Ind.	3	3	......	......
Park, Inc., Philip R., San Pedro, Calif.	4	4	......	......
Park & Pollard Company of Ill., Chicago, Ill.	1	1	......	......
Parke County Farm Bureau, Inc., Rockville, Ind.	2	2	......	......
Paxson, C. E., Elkhart, Ind.	4	4	......	......
Pearl Packing Co., Inc., Madison, Ind.	6	5	1	......
Pecos Valley Alfalfa Mill Co., Hagerman, N. Mex.	2	2	......	1
Penman Bros., Brazil, Ind.	2	2	......	......
Pennville Milling Co., Pennville, Ind.	2	1	1	......
Peoples Cooperative Feed Store, Wolcott, Ind.	2	2	......	......
Petersburg Milling & Grain Co., Petersburg, Ind.	4	4	......	......
Pfeffer Milling Co., Lebanon, Ill.	3	3	......	......
Phillips, J. C., Star City, Ind.	4	3	1	......
Pillsbury Flour Mills Co., Minneapolis, Minn.	5	5	......	1
Pinola Cooperative Co., LaPorte, Ind.	3	1	2	......
Pinola Cooperative Co., Pinola, Ind.	1	1	......	......
Pioneer Elevator Co., Worthington, Ind.	2	2	......	......
Plant Flour Mills Co., St. Louis, Mo.	1	1	......	......
Plymouth Fertilizer Co., Plymouth, Ind.	3	3	......	......
Portland Equity Exchange, Portland, Ind.	2	2	......	......
Posey Seed & Feed Co., Mount Vernon, Ind.	4	4	......	3
Postum Co., Inc., Battle Creek, Mich.	1	1	......	......
Pottage Tankage Corp., Dayton, Ohio	3	2	1	2
Prairie State Milling Co., Chicago, Ill.	5	4	1	......
Pratt Food Co., Hammond, Ind.	23	22	1	1
Pratt Food Co., Philadelphia, Pa.	1	1	......	......
Pritchard & Rafert, Inc., Pendleton, Ind.	1	......	1	......
Proctor & Gamble Co., Cincinnati, Ohio	3	3	......	......
Producers Creamery, Marion, Ind.	3	2	1	......
Purcell Seed Co., Evansville, Ind.	13	9	4	......
Quaker Oats Co., Chicago, Ill.	55	52	3	2
Rach Milling Co., Cairo, Ill.	22	22	......	2
Rakestraw, H. E., Oakford, Ind.	1	1	......	......

TABLE V—Continued.

Name and Address of Manufacturer	Number of samples examined	Number of samples passed	Number of samples not passed	Number of samples not tagged
Ralston Purina Co., St. Louis, Mo.	25	22	3	1
Rapier Sugar Feed Co., Inc., Owensboro, Ky.	3	3		
Rauh & Sons Animal Feed Co., E., Indianapolis, Ind.	6	4	2	
Read Phosphate Co., New Albany, Ind.	1		1	
Rector Feed Store, Dugger, Ind.	1	1		
Red Key Equity Exchange Co., Red Key, Ind.	1	1		
Reed Elevator Co., Decatur, Ind.	2	2		
Reid, Volney T., Salem, Ind.	1	1		
Reising & Sons, N., Poseyville, Ind.	1	1		
Richland Milling Co., Bloomfield, Ind.	2	2		
Richmond Feed Milling Co., Richmond, Ind.	11	10	1	
Riverdale Products Co., Chicago, Ill.	15	13	2	3
Riverside Mills, Clinton, Ind.	2	2		
Roberts Cotton Oil Mill, Cairo, Ill.	5	3	2	
Roberts Feed & Produce Co., Brookville, Ind.	5	3	2	
Robertson Grain Co., Williamsport, Ind.	1	1		
Robinson Feed Co., Perrysville, Ind.	3	3		
Roby, Harry B., Winchester, R. R. 5, Ind.	1	1		
Roper & Brown, Hobart, Ind.	5	5		
Rosenbaum Bros., Chicago, Ill.	1	1		
Routh & Co., W. C., Logansport, Ind.	4	3	1	1
Rund & Klink Packing Co., Lafayette, Ind.	4	4		
Russell & Martin, Elkhart, Ind.	1	1		
Russell-Miller Milling Co., Minneapolis, Minn.	1	1		
Russellville Flour & Feed Co., Russellville, Ind.	1		1	
Rush County Mills, Rushville, Ind.	5	2	3	
Rush Service Bureau, Rushville, Ind.	3	3		
Rushville Milling Co., Rushville, Ind.	2		2	
St. Louis Independent Packing Co., St. Louis, Mo.	3	3		
Salamonie Mills, Warren, Ind.	3	3		
Sample, John L., Madison, Ind.	3	3		
Schaefer, John H., Columbus, Ind.	1	1		
Schafer & Sons, Joe, Springfield, Ill.	2	2		
Schlemmer Feed Co., Harrison, Ohio	4	4		
Schlosser Bros., Frankfort, Ind.	1	1		
Schmadel Packing & Ice Co., Evansville, Ind.	3		3	
Schnaible Co., M. & J., Lafayette, Ind.	2	2		
Schnellville Flour Mills, Schnellville, Ind.	1	1		
Schultz Bros., Elberfeld, Ind.	4	4		
Schultz, Baujan & Co., Beardstown, Ill.	14	10	4	5
Schuppert Milling Co., New Salisbury, Ind.	2	1	1	
Scottsburg Milling Co., Scottsburg, Ind.	1		1	
Sears, Roebuck & Co., Chicago, Ill.	2	2		
Shepherd & Son, N. B., Geneva, Ind.	1	1		
Sherwin-Williams Co., Cleveland, Ohio	4	4		1
Shirley Fertilizer Co., Knightstown, Ind.	3	3		
Silver Lake Egg Farm & Hatchery, Silver Lake, Ind.	2	2		
Sims Milling Co., Frankfort, Ind.	12	11	1	1
Slugg, W. G., Milwaukee, Wis.	3	2	1	
Smith & Cascadden, Lapel, Ind.	1	1		
Smith & Co., T. P., Chicago, Ill.	2	2		
Smock & Caca, Noblesville, Ind.	3	2	1	
Sommerfield & Swanson, LaPorte, Ind.	2	1	1	

TABLE V—Continued.

Name and Address of Manufacturer	Number of samples examined	Number of samples passed	Number of samples not passed	Number of samples not tagged
Southern Indiana Reduction Co., Salem, Ind.	1	1	......	......
Southwestern Milling Co., Kansas City, Mo.	2	2	......	......
Sparks Milling Co., Terre Haute, Ind.	7	7	......	......
Springer, W. D., Indianapolis, Ind.	1	1	......	......
Springs Valley Milling Co., French Lick, Ind.	4	4	......	......
Spurgin, Archie B., Columbus, Ind.	2	1	1	......
Stahl Packing Co., Evansville, Ind.	3	3	......	......
Staley Manufacturing Co., A. E., Decatur, Ill.	4	4	......	1
Staley Milling Co., Kansas City, Mo.	13	12	1	2
Stanard Tilton Milling Co., St. Louis, Mo.	1	1	......	......
Stanchfield Co., A. L., Minneapolis, Minn.	2	2	......	......
Star Milling Co., Shoals, Ind.	2	2	......	......
Starr Mills, South Bend, Ind.	9	8	1	......
Star Roller Mills, Burlington, Ind.	6	5	1	......
Steckley, George, Kendallville, Ind.	3	2	1	......
Strauch, Albert H., Royal Center, Ind.	2	2	......	......
Strauss & Son, J. W., North Manchester, Ind.	3	3	......	......
Street Milling Co., J., LaPorte. Ind.	5	5	......	......
Success Mills, Inc., Chicago, Ill.	3	3	......	......
Suckow Milling Co., Franklin, Ind.	1	1	......	......
Sugar Creek Creamery Co., Danville, Ill.	1	......	1	......
Sugar Creek Grain Co., Thorntown, Ind.	1	1	......	......
Sunman Flour Mills, Reading, Ohio	1	1	......	......
Sunnyside Milling Co., Evansville, Ind.	3	3	......	......
Sunshine Farms, Inc., Lafayette, Ind.	2	2	......	......
Swayzee Grain Co., Swayzee, Ind.	1	1	......	......
Swift & Co., Chicago, Ill.	36	33	3	1
Syler & Syler, Nappanee, Ind.	1	1	......	......
Tanvilac Feed Co., DesMoines, Iowa	1	1	......	......
Tell City Flouring Mills, Tell City, Ind.	6	6	......	......
Terre Haute Abattoir & Stock Yard Co., Terre Haute, Ind.	1	1	......	......
Terre Haute Grease & Tallow Factory, Terre Haute, Ind.	1	1	......	......
Thomas, Fred, Veedersburg, Ind.	1	......	1	......
Thomas Milling Co., Marion, Ind.	11	9	2	......
Thornburg Milling & Elevator Co., Martinsville, Ind.	3	2	1	......
Tipton Fertilizer Co., Tipton, Ind.	3	2	1	......
Tipton Milling Co., Tipton, Ind.	5	5	......	......
Tower & Merryman, Marengo, Ind.	3	3	......	......
Travis, S. A., Linton, Ind.	2	2	......	......
Trenton Milling Co., Trenton, Ill.	2	2	......	......
Trow Co., W., Madison, Ind.	1	1	......	......
Ubiko Milling Co., Cincinnati, Ohio	4	4	......	......
Uhl-Snider Milling Co., Connersville, Ind.	2	2	......	......
Union Mills, Wabash, Ind.	3	3	......	......
Union Roller Mills, West Harrison, Ind.	1	1	......	......
United Bi-Products Co., Chicago, Ill.	8	6	2	......
Urmston Grain Co., Kokomo, Ind.	1	......	1	......
Urmston Grain & Seed Co., Anderson, Ind.	18	11	7	......
Urmston Grain & Seed Co., Elwood, Ind.	2	2	......	......
Urschel Bros., Tippecanoe, Ind.	2	2	......	......
Utterback, Frank E., Washington, Ind.	1	1	......	......
Valentine & Co., Terre Haute, Ind.	3	3	......	......

TABLE V—Continued.

Name and Address of Manufacturer	Number of samples examined	Number of samples passed	Number of samples not passed	Number of samples not tagged
Valentine & Valentine, Franklin, Ind.	1	1	......	......
Valier & Spies Milling Corp., St. Louis, Mo.	1	1	......	......
Veedersburg Roller Mills, Veedersburg, Ind.	8	6	2	......
Vermillion County Farmers Cooperative Ass'n, Dana, Ind.	2	2	......	......
Versailles Feed Co., Versailles, Ind.	1	1	......	......
Vevay Flour Mills, Vevay, Ind.	3	1	2	......
Victoria Mill & Elevator Co., Jasper, Ind.	7	7	......	......
Vitality Mills, Inc., Chicago, Ill.	19	18	1	4
Vogel Bros., Seymour, Ind.	1	1	......	......
Wachtel Co., John, Indianapolis, Ind.	4	4	......	......
Wakarusa Milling Co., Wakarusa, Ind.	4	4	......	......
Walker & Co., Peter M., Loogootee, Ind.	1	1	......	......
Walker & Co., Peter M., Washington, Ind.	7	7	......	......
Walker & Son, J. M., Middletown, Ind.	1	1	......	......
Wall, N. A., Pittsboro, Ind.	2	2	......	......
Ward Dry Milk Co., St. Paul, Minn.	1	1	......	1
Warsaw Fertilizer & Tankage Co., Warsaw, Ind.	3	......	3	......
Warsaw Milling & Grain Co., Warsaw, Ind.	1	1	......	......
Washburn Crosby, General Mills, Inc., Minneapolis, Minn.	18	18	......	2
Washington County Farm Bureau Cooperative Ass'n, Salem, Ind.	8	8	......	......
Wayne Dairy Products Co., Richmond, Ind.	1	1	......	......
Wayne Feed Mills, The McMillen Co., Owners, Fort Wayne, Ind.	7	6	1	......
Weber Milling Co., Brookville, Ind.	4	3	1	......
Wellington Milling Co., Anderson, Ind.	5	3	2	......
Whelan, Omer G., Richmond, Ind.	4	1	3	......
Whitelock Mill Co., Petersburg, Ind.	2	2	......	......
Wiedlocher & Sons, Springfield, Ill.	1	1	......	......
Wildcat Roller Mills, R. R. 2, Cutler, Ind.	9	7	2	......
Wilkinson, Henry, Clay City, Ind.	2	2	......	......
Wilkinson & Co., T. B., Knightstown, Ind.	1	1	......	......
Williams, T. L., Muncie, Ind.	2	2	......	......
Wilson & Co., Chicago, Ill.	8	8	......	1
Wilson & Co., J. C., Russellville, Ind.	4	4	......	......
Wilson Bros. Fertilizer Co., Noblesville, Ind.	2	2	......	......
Wilson Grain Co., Sulphur Springs, Ind.	1	1	......	......
Winkler & Son, Inc., J., Dale, Ind.	1	1	......	......
Wolcottville Hammer Mill Co., Wolcottville, Ind.	2	1	1	......
Wolfe, C. G., North Liberty, Ind.	3	2	1	1
Woodburn Equity Exchange, Woodburn, Ind.	1	1	......	......
Woodbury-Elliott Grain Co., Muncie, Ind.	2	2	......	......
Wooster Feed Manufacturing Co., Wooster, Ohio	2	2	......	1
Worthington Grain Co., Worthington, Ind.	5	5	......	......
Wright, John H., Clinton, Ind.	7	4	3	......
Yeddo Farmers Grain Co., Yeddo, Ind.	2	2	......	......
Young, W. H., Rushville, Ind.	1	1	......	......
Zabel Milling Co., New Albany, Ind.	4	2	2	......
Ziliak & Schafer Milling Co., Evansville, Ind.	17	11	6	......
Zionsville Grain Co., Zionsville, Ind.	3	3	......	......

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Circular No. 182

UNIVERSITY OF ARIZONA
SEP 26 1931
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May, 1931

COMMERCIAL FERTILIZERS

Fertilized   Unfertilized

Fertilizer Response on Wheat

Purdue University
Agricultural Experiment Station
Lafayette, Indiana

This circular gives a detailed report of the commercial fertilizer sold in Indiana for the year 1930. Table X reports the standing and individual record of every manufacturer responsible for the sale of fertilizer in Indiana from whose goods samples were taken.

Table II shows the tonnages of the analyses for which there is the most demand. The sales of 2-12-6 as in previous years are still far above any other analysis. Manufacturers report the sale of more than 89,000 tons as compared to about 79,000 tons of this analysis as calculated from tag sales.

There were 192,792 tons of high grade mixed fertilizer and only 5,001 tons of low and medium grade mixed fertilizer sold in Indiana last year.

The average content of actual plant food in all of the fertilizers sold in 1930 was 517 pounds per ton. The average analysis was 1.9% total nitrogen, 15.4% available phosphoric acid and 6.7% water soluble potash.

The sale of gross tons in 1930 was below that of 1929. The total number of pounds of available P_2O_5 was higher while the number of pounds of nitrogen and potash were somewhat lower than 1929.

Purchasers of Commercial Fertilizer for the Fall of 1931 and the Spring of 1932 should read the paragraph entitled "SPECIALS" on page 5 of this circular.

COMMERCIAL FERTILIZERS

H. R. Kraybill, *State Chemist*

. S. Roberts O. W. Ford L. E. Horat

M. H. Thornton

It is estimated that 219,684 tons of commercial fertilizer with a retail value of $8,521,905 were sold in Indiana in 1930. Inspectors from the State Chemist department drew 1421 official samples, representing one sample for every 147 tons sold. Of these samples 1320 were equal to or above the value in guarantee, 89 were within 10% of the value guaranteed and 10 were 10% or more below the guarantee in value. Eleven of the 897 samples which contained nitrogen showed inferior nitrogen of which six were dried manures and one was a tobacco product, which are inferior sources of nitrogen.

The Indiana Fertilizer Law is essentially a correct labeling law. It is not the intent of the law to determine what type of fertilizer may be sold. The law is designed to furnish the purchaser with certain information on the state tag that will enable him to decide whether or not the fertilizer is the type that will meet his needs. The Indiana state tag gives a statement of the percentages of total nitrogen, total or available phosphoric acid and water soluble potash. With this information available it is assumed that the purchaser will be able to judge whether the fertilizer offered for sale meets his requirements. In order that the law may be effective in accomplishing its purpose it is necessary that the consumer understand the meaning of the information on the state tag.

The fertilizer law is designed to protect the honest and efficient fertilizer manufacturer, dealer and agent as well as the consumer. Full cooperation on the part of the manufacturer, dealer, agent and consumer is necessary in order to accomplish the purpose of the law.

A copy of the full text of the law will be sent to persons making requests for the same to the State Chemist, Purdue University Agricultural Experiment Station, Lafayette, Indiana.

REFUNDS

Previous to 1930 most of the refunds have been due to deficiencies in potash but this year they were fairly well distributed between nitrogen, phosphoric acid and potash. A number of the phosphoric acid deficiencies have no doubt been due to reversion caused by the use of anhydrous ammonia. There is reason to believe that most of the fertilizer companies now doing business in Indiana are trying to maintain their guarantees.

When deficiencies in analysis amounting to $1.00 per ton or more as calculated from the wholesale price on raw materials are found refunds are calculated and indicated on the report of the analysis sent to the manufacturer and purchaser. Refunds are calculated on mixed fertilizers when one ingredient is deficient to the extent of $1.00 per ton regardless of the excess of other ingredients. Very frequently the excess value of one ingredient does not compensate for the deficiency of another in as much as the plant foods, nitrogen, available phosphoric acid and potash have specific functions to perform in plant production.

All refunds are required to be distributed to the consumer and receipts for same must be filed with the State Chemist.

A refund paid by the manufacturer to the consumer does not remove the violation of the law but it indicates his good intentions to correct the violation in so far as possible. The payment of these refunds, however, does not nullify the right of anyone in the state to call cases of deficiencies of analysis to the attention of prosecuting attorneys.

Refunds amounting to $920.09 were paid by 23 manufacturers on 85 shipments of fertilizer in 1930.

MANUFACTURERS

Any material used for manuring purposes except barnyard manure, marl, lime, wood ashes and plaster, must be registered with the State Chemist and properly tagged with the official state tag or label before it is offered or exposed for sale. A tag is good for 200 pounds but each package regardless of its weight must have attached to it a tag or label before it is offered or exposed for sale. Bulk shipments must be accompanied by sufficient tags or labels to cover the total weight of the shipment.

Manufacturers make themselves as well as their agents liable to prosecution when they ship untagged fertilizer. Several cases of this nature in 1930 were called to the attention of the prosecutor with the result that the manufacturer paid the usual fine of $50 and costs for the first offense.

Manufacturers should not ship untagged fertilizers with a view to furnishing the state tags later by mail. Experience has shown hat when this is done it is difficult to avoid the sale of untagged ertilizer. The State Chemist has no authority to grant permission o a manufacturer to ship unlabeled fertilizer.

AGENTS, DEALERS, DISTRIBUTORS

The Indiana Fertilizer Law recognizes only the State Chemist ags or labels bearing the facsimile signature of the State Chemist (see reproduction page 20). The State Chemist label is always rinted and any alteration thereon constitutes a violation of the aw. Do not accept, offer or expose for sale, sell, deliver, distribute r have in your possession any quantity of commercial fertilizer hat is not tagged with the State Chemist label.

Since local agents are directly responsible for the fertilizer they ffer for sale, they should protect themselves by a clause in their ontract wherein the manufacturer agrees to assume all responsibility for all fines or refunds in cases where the fertilizer fails to neet the requirements of the law.

CONSUMERS

Refuse to accept any fertilizer that is not correctly labeled. Be guided by the analysis rather than the brand name. Consult the nnual fertilizer circular of this department and buy from those ompanies whose records of inspection show that they are shipping agged fertilizer and are maintaining their guarantees.

SPECIALS

Frequently cases of trade misrepresentation are called to the ttention of the State Chemist. It should be remembered in this onnection that the Indiana Fertilizer Law is essentially a correct abeling law and that the fact that a State Chemist tag is attached o the fertilizer is no assurance that the fertilizer is a good fertilizer. The presence of the State Chemist tag shows that the manufacturer has complied with the fertilizer law by registering the material and attaching to it an Indiana state tag on which is shown he manufacturer's guaranteed analysis. A poor fertilizer may be old under the law so long as it is correctly labeled. In order to btain full benefit of the law it is necessary for the consumer to onsider the information given on the state tag.

Recently mixtures of rock phosphate and potash and mixtures f rock phosphate and potash and nitrogen salts have been placed n the market. Typical examples of these are as follows:

1. Mixtures of rock phosphate and potash in which the guarantees are 19.0% total phosphoric acid and 10.0% water solubl potash; 24.0% total phosphoric acid and 12.0% water solubl potash, etc.
2. Mixtures of rock phosphate and potash and nitrogen salts i which the guarantees are as follows: 2.0% total nitroger 24.0% total phosphoric acid and 6.0% water soluble potash 4.0% total nitrogen, 22.0% total phosphoric acid and 6.0 water soluble potash.

These mixtures have been referred to in unfair trade practice as 0-19-19, 0-24-12, 2-24-6 and 4-22-6 respectively. In this connection the consumer should keep in mind the distinction betwee total phosphoric acid and available phosphoric acid. A fertilizer o the grade 0-24-12 contains 24% available phosphoric acid. Thes mixtures made from rock phosphate contain very low amounts o available phosphoric acid. The value of the total phosphoric aci in one of these rock phosphate mixtures is from 40 to 50 cents unit while the value of the available phosphoric acid is $1.20 pe unit.

Another misrepresentation that is frequently made is the implication that a fertilizer that shows the following analysis, 2.0 total nitrogen, 8.0% available phosphoric acid, 8.0% insoluble phosphoric acid and 2.0% water soluble potash is a 2-16-2 fertilizer. Th former fertilizer is not worth as much money as a 2-16-2 fertilize The 2-16-2 fertilizer contains 16.0% available phosphoric aci while the other fertilizer contains only 8.0% available phosphori acid.

It is important for the consumer to read the tag carefully an to be guided by the analysis rather than by the brand name o claims of the agent.

A fair and comparatively simple way to evaluate different fertilizers is to calculate the value of the ingredients of each accordin to the same standard. Using $3.00 per unit for nitrogen, $1.00 pe unit for potash and $1.20 per unit for available phosphoric acid an $0.40 per unit for insoluble phosphoric acid which has about th same value as the total phosphoric acid in raw rock phosphate th fertilizer containing 2.0% nitrogen, 8.0% available phosphoric acid 8.0% insoluble phosphoric acid and 2.0% water soluble potash woul be worth $22.40 as compared to $28.80 for the regular 2-16-2 fertilizer.

Using the same values for plant foods we find that a rock phosphate mixture containing 4.0% nitrogen, 24.0% total P_2O_5 and 6.0% water soluble potash has a value of $27.60 per ton while a regular 4-24-6 fertilizer has a value of $46.80 per ton. The method of calculation is as follows:

FOR ROCK PHOSPHATE MIXTURE

4 units of nitrogen	$12.00
24 units total P_2O_5 from rock phosphate	9.60
6 units water soluble potash	6.00
Total	$27.60

FOR THE REGULAR 4-24-6

4 units of nitrogen	$12.00
24 units of available P_2O_5	28.80
6 units of water soluble potash	6.00
Total	$46.80

In the group of comparisons that follow the above values were applied to various analyses and this value was then inserted between the high and low retail price as found on the open Indiana fertilizer market.

Analysis	Minimum Retail Price	Comparative Value	Maximum Retail Price
2-12-6	$27.90	$26.40	$41.65
4-24-12	51.50	52.80	71.75
2-16-8	37.15	33.20	43.20
1-8-4	24.20	16.60	31.50
2-12-2	27.85	22.40	34.92
4-24-4	48.50	44.80	57.00
2-8-2	28.70	17.60	37.05
4-16-4	34.25	35.20	47.45
2-16-2	32.00	27.20	35.70
*2-8-8-2	36.25	20.80	36.85
*0-6-6-10	35.55	17.20	37.65
0-14-6	26.90	22.80	33.25
0-28-12	57.20	45.60	65.00
0-12-12	32.10	26.40	37.00
0-24-24	60.80	52.80	65.00
0-10-10	26.00	22.00	33.05
0-20-20	44.00	44.00	56.85

* The above so called "2-8-8-2" and "0-6-6-10" are no longer received for registration as such. See the explanation of cases of this kind under specials, page — of this circular.

MEANING OF ANALYSIS

As recognized under the Indiana Fertilizer Law there are only three valuable fertilizer elements, nitrogen, phosphorus and potassium. These three elements do not occur in a free state but are always combined as chemical compounds. This facilitates the han ling of them in commercial fertilizer mixtures. A brief discussi of these, their value and availability as plant food, is given in t following paragraphs.

Nitrogen.

In 1881 when the Indiana Fertilizer Law was passed the pri cipal source of nitrogen was of an organic nature. The nitrog was derived largely from such products as dried blood, bone, tan age and slaughter house by-products, garbage tankage, cottonse meal, castor pomace, tobacco stems, manure sweepings and dri peat. Although there was little water soluble nitrogen in the abo products all carry a good source of nitrogen with the exception garbage tankage, manure sweepings, tobacco stems and dried pea Since 1881 most of the bone products have been diverted into t mixed feed channels and water soluble forms of nitrogen have tak their place in fertilizer mixtures. Today we find that most of trogen carrying fertilizers have better than 80% of their nitrog content in some water soluble form.

A few of the sources of water soluble forms of nitrogen are follows: nitrate of soda (natural and synthetic), ammonia su phate, cal urea, cal-nitro, urea and calcium nitrate.

Since water soluble forms of nitrogen are considered as bei ready available for plant growth, we class a fertilizer that h 60% of its guaranteed nitrogen as water soluble as satisfactory.

If less than 60% of its guaranteed nitrogen is water soluble th the availability of the insoluble organic nitrogen is determined the alkaline permanganate method. In this case if the active wat insoluble nitrogen is equal to or greater than the inactive the trogen is classed as satisfactory. If less than half of the insolub nitrogen is active the nitrogen is classed as inferior.

In case the nitrogen is found to be inferior the inactive wat insoluble nitrogen appears in heavy type in Table X. Manures a garbage tankages that have not been acidulated show an inferi quality of nitrogen.

This is not the fault of the manufacturer when they are sold manure and garbage tankage. The past year's inspection had sev samples showing an inferior source of nitrogen, of which numbe one was a manure. This is noted and set forth in Table X of th Circular.

Phosphoric Acid.

The phosphorus in the fertilizer is linked up as chemical compounds with calcium, iron and aluminum. It may be as mono-, di- or tricalcium phosphate.

As monocalcium phosphate $CaH_4(PO_4)_2$ it is water soluble and readily available to plants for growth.

As dicalcium phosphate $Ca_2H_2(PO_4)_2$ it is water soluble in the soil solution and rendered available to plants for growth.

As tricalcium phosphate $Ca_3(PO_4)_2$ it is somewhat less available to plants.

As a complex tricalcium phosphate combined with fluorine and lime (raw rock phosphate) it is much less available to plants and becomes available only slowly in the soil.

The bulk of the fertilizer sold today contains mixtures of large amounts of mono and dicalcium phosphate and a slight amount of tricalcium phosphate. This is in contrast to the earlier years when most of the fertilizers used was bone where the phosphorus is present as tricalcium phosphate.

In acidulated goods the phosphorus is sold only on the available P_2O_5 content. This would be the sum of the soluble and reverted P_2O_5.

In bone and rock phosphate the phosphorus is sold only on the total P_2O_5 content. It is only fair to state, however, that about $^1/_3$ of the total P_2O_5 content of bone would show available by the neutral ammonium citrate method while rock phosphate would show only from two to four per cent by the same method.

Potash.

Potash, as the official label states, must be soluble in water, in which form it is considered directly available for plant use.

No difference in crop growth has been noted in American, French or German potash. Muriate of potash (KCl) being the cheapest has largely supplanted other potash salts for general crops.

STATE CHEMIST RULING

After January 1, 1929, no applications for registration of mixed fertilizers will be accepted except those that are guaranteed to contain minimum percentages of nitrogen, available phosphoric acid and water soluble potash, stated as whole numbers in the preceding order. Any numerals used on the bag or in advertising matter to describe the analysis of the fertilizers being offered for sale must be so arranged that the first numeral will be the minimum guaranteed percentage of nitrogen, the second numeral the minimum guaranteed percentage of available phosphoric acid and the third numeral the minimum guaranteed percentage of water soluble potash.

RULINGS ADOPTED BY A. O. A. C.

FERTILIZER GRADE

The grade of a fertilizer shall represent the minimum guarantee of its plant food expressed in terms of nitrogen, available phosphoric acid, and water soluble potash.

FERTILIZER FORMULA

The term fertilizer formula shall be interpreted as expressing the quantity and grade of the crude stock materials used in making a fertilizer mixture. For example: 800 pounds of 16 per cent acid phosphate, 800 pounds of 9-20 tankage, and 400 pounds of sulfate of potash-magnesia.

FERTILIZER ANALYSIS

The word analysis, as applied to fertilizers, shall designate the percentage composition of the product expressed in terms of nitrogen or ammonia, phosphoric acid, and potash in their various forms.

BRAND AND BRAND NAME

A brand is a term, design, or trade mark used in connection with one or several grades of fertilizers.

A brand name is a specific designation applied to an individual fertilizer.

INTERPRETATION OF BRAND NAME TO INCLUDE THE ANALYSIS OR GRADE OF FERTILIZER

The committee recommends and urges the practice of including the analysis or grade of fertilizer with the brand name, both by the manufacturer on sacks and in printed literature and by the control official in his reports and publications.

UNIT

A unit of plant food is twenty (20) pounds, or one per cent (1%) of a ton.

MEANING OF TERM "FINELY GROUND"

The term finely ground in the definition of basic phosphate slag shall refer to actual size of particles as determined by the use of standard sieves, as follows: seventy per cent (70%) or more should pass a 100-, and ninety per cent (90%) or more should pass a 50-mesh sieve.

"LIME" AS APPLIED TO FERTILIZERS

The term lime shall not be used in the registration, labeling, or guaranteeing of fertilizers or fertilizing materials unless the lime is in a form to neutralize soil acidity, such as the oxide, hydroxide, or carbonate, or equivalent magnesia compounds.

LEACHED WOOD ASHES

Leached wood ashes are defined as ashes resulting from burning unleached wood, but as having had part of their plant food removed by artificial means or by exposure to rains, snows, or other solvent.

UNLEACHED WOOD ASHES

Unleached wood ashes are ashes that result from burning unleached wood, that had had no part of their plant food removed, and that contain four per cent (4%) or more of water-soluble potash (K_2O).

ASHES FROM LEACHED WOOD

Ashes from leached wood are defined as unleached ashes resulting from burning wood that has been exposed to or digested in water or other liquid solvent, as in the extraction of dyes, so that a part of the plant food has been dissolved and removed.

DRIED PULVERIZED OR SHREDDED MANURES

Dried pulverized or shredded manures shall be only what the name indicates, and not mixtures of manures and other materials.

FORM OF NITROGEN IN CYANAMIDE

The nitrogen in calcium cyanamide shall be considered as being of organic nature.

KAINIT

Kainit is a potash salt containing potassium and sodium chlorides and sometimes sulfate of magnesia with not less than twelve per cent (12%) of potash (K_2O).

MANURE SALTS

Manure salts shall be understood to mean potash salts containing high percentages of chloride and from twenty per cent (20%) to thirty per cent (30%) of potash (K_2O). The term double manure salts should be discontinued.

NITRATE OF POTASH (COMMERCIAL POTASSIUM NITRATE)

Nitrate of potash is a salt containing not less than twelve per cent (12%) of nitrogen and forty-four per cent (44%) of potash (K_2O).

MURIATE OF POTASH (COMMERCIAL POTASSIUM CHLORIDE)

Muriate of potash is a potash salt containing not less than forty-eight per cent (48%) of potash (K_2O) chiefly as chloride.

SULFATE OF POTASH-MAGNESIA

Sulfate of potash-magnesia is a potash salt containing not less than twenty-five per cent (25%) of potash (K_2O), nor less than twenty-five per cent (25%) of sulfate of magnesia, and not more than two and five-tenths per cent (2.5%) of chlorine.

SULFATE OF POTASH (COMMERCIAL POTASSIUM SULFATE)

Sulfate of potash is a potash salt containing not less than forty-eight per cent (48%) of potash (K_2O) chiefly as sulfate, and not more than two and one-half per cent (2.5%) of chlorine.

MAXIMUM AMOUNT OF CHLORINE PERMISSIBLE IN FERTILIZERS IN WHICH THE POTASH IS CLAIMED AS SULFATE

The chlorine in mixed fertilizers in which the potash is claimed as sulfate shall not exceed five-tenths of one per cent (0.5%) more than what is called for in the minimum potash content based on the definition for sulfate of potash as formulated by the committee. Calculate as follows: 0.05 times the percentage of potash found plus 0.5.

DEFINITION OF PRODUCTS SECURED BY HEATING CALCIUM PHOSPHATE WITH ALKALI SALTS CONTAINING POTASH

These products are not potassium phosphate. They may be called non-acid phosphates with potash.

BASIC PHOSPHATE SLAG

Basic phosphate slag is a by-product in the manufacture of steel from phosphatic iron ores. The product shall be finely ground and shall contain no admixture of materials other than what results in the original process of manufacture. It shall contain not less than twelve per cent (12%) of total phosphoric acid (P_2O_5), not less than eighty per cent (80%) of which shall be soluble in two per cent (2%) citric acid solution according to the Wagner method of analysis. Any other phosphate slag not conforming to this definition shall be designated low grade.

DISSOLVED BONE

Dissolved bone is defined as a ground bone or bone meal that has been treated with sulfuric acid.

NITRATE OF SODA (COMMERCIAL SODIUM NITRATE)

Nitrate of soda is commercial sodium nitrate containing not less than fifteen per cent (15%) of nitrogen, chiefly as sodium nitrate.

DRIED BLOOD

Dried blood is the collected blood of slaughtered animals, dried and ground and containing not less than twelve per cent (12%) of nitrogen in organic forms.

GROUND RAW BONE

Ground raw bone is a product resulting from drying and grinding animal bones that have not been previously steamed under pressure.

GROUND STEAMED BONE

Ground steamed bone is a product resulting from grinding animal bones that have been previously steamed under pressure.

TANKAGE

The term tankage (without qualification) shall be restricted to meat and bone tankage derived from the rendered, dried and ground by-products from slaughter of animals, or from carcasses of animals that have died otherwise than by slaughter.

FISH TANKAGE, FISH SCRAP, DRY GROUND FISH, FISH MEAL FERTILIZER GRADE

Fish tankage, fish scrap, dry ground fish, fish meal fertilizer grade is the dried ground product derived from rendered or unrendered fish.

GARBAGE TANKAGE

Garbage tankage is the rendered, dried, and ground product derived from waste household food materials.

HOOF AND HORN MEAL

Hoof and horn meal is a product resulting from the processing, drying, and grinding of hoofs and horns.

SUPERPHOSPHATE

Superphosphate is the product resulting from mixing rock phosphate and sulfuric acid and/or phosphoric acid. The grade should always be used as a prefix to the name.

Example: 16% Superphosphate.

It is recommended that the use of the term "Acid Phosphate" be discontinued.

CRUDE, INERT, OR SLOW-ACTING NITROGENOUS MATERIALS

Crude, inert, or slow-acting nitrogenous materials are unprocessed organic substances relatively high in nitrogen but having a very low value as plant food and showing a low activity by both the alkaline and neutral permanganate methods (below fifty per cent (50%) and eighty per cent (80%) respectively).

ACTIVITY OF WATER-SOLUBLE NITROGEN IN MIXED FERTILIZERS

The alkaline and neutral permanganate methods distinguish between the better and the poorer sources of water-soluble nitrogen, and do not show the percentage availability of the material. The available nitrogen of any product can be measured only after carefully conducted vegetation experiments.

(a) The methods shall be used on mixed fertilizers containing water-soluble nitrogen amounting to three-tenths of one per cent (0.3%) or more of the weight of the material. In the event of a total nitrogen exceeding the minimum guarantee, accompanied by a low activity of the insoluble nitrogen, the over-run may be taken into consideration in determining the classification of the water-insoluble nitrogen.

(b) The water-insoluble nitrogen in mixed fertilizers showing an activity below fifty per cent (50%) by the alkaline method and also below eighty per cent (80%) by the neutral method shall be classed as inferior. This necessitates the use of both methods before classifying as inferior.

CLASSIFIED FERTILIZER SALES SINCE 1883

The changes in the sales of fertilizing materials have kept in line with the development of both the feed and fertilizer industries. In the early years the fertilizer consisted almost entirely of bone and other animal products. Today these products have been diverted largely into the feed channels and replaced by superphosphates and nitrogen salts. Additions of potash salts to the superphosphate and nitrogen salt mixtures and various combinations of these ingredients have replaced almost entirely the tonnages that were formerly sold under the general classification of animal by-products.

The following table sets forth the changes that have occurred since the Indiana Fertilizer Law was passed in 1881.

TABLE I. Classified Fertilizer Sales Since 1883

Year	Total Tons	Tons Nitrogen Salts	Tons Potash Salts	Tons Super-Phosphate	Tons Bone	Tons Raw Rock Phosphate	Tons Phosphate Potash	Tons Ammoni-ated Super-Phosphate	Tons Complete
1883........	8,000	....	....	....	8,000	....	....	....	....
1888	10,000	....	....	‡	10,000	....	‡	‡	‡
1893........	38,000	....	....	1,000	14,000	....	1,000	4,000	18,000
1895........	45,000	....	....	1,000	15,000	....	1,000	3,800	20,300
1897........	49,400	....	....	7,200	13,900	50	1,500	5,200	21,450
1909........	134,064	268*	2,146	8,111	13,004	804	18,769	1,009	89,287
1914........	219,139	123*	3,576	12,878	11,023	2,400	40,462	1,184	148,126
1918........	244,446	82*	....	57,984	13,300	1,079	9,822	83,111	78,302
1923........	195,702	1,550†	3,251	49,501	8,669	....	35,494	4,309	91,220
1927........	240,498	3,530†	5,200	32,041	5,050	719	41,785	520	151,112
1928........	221,082	1,350†	1,700	26,997	2,782	968	40,451	....	145,709
1929........	291,193	3,140	1,800	21,655	2,848	844	45,000	62	214,010
1930........	219,684	2,950	1,900	12,188	2,445	1,500	34,657	....	163,136

* Largely Nitrate of Soda.
† Nitrate of Soda and Ammonium Sulphate.
‡ Light Sales.

WHY THE MULTIPLICITY OF ANALYSES

The question has often been asked "Why are so many different analyses offered for sale?" It is universally agreed that this practice is both costly and useless. By following the recommendation of the Purdue University Agricultural Experiment Station (Circular 162 Fertilizer for Indiana Soils and Crops) the number of the analyses and the cost of the same could be reduced.

While the analyses listed below are not all recognized recommendations, it shows that at least 75 per cent of those that are offered for sale could be eliminated without affecting the total tonnage materially.

TABLE II. Showing tons sold under 33 analyses for past seven years—calculated from tag sales. A glance at the last four columns shows the difference in tons calculated by tag sales and that reported by Manufacturers as being sold under these 33 analyses for 1929 and 1930.

ANALYSIS	Year 1924	Year 1925	Year 1926	Year 1927	Year 1928	Year 1929	Rept. by Mfrs. Year 1929	Year 1930	Rept. by Mfrs. Year 1930
Nitrate of Soda	400	500	350	433	500	1,740	728	1,150	613
Ammonium Sulphate	1,250	4,100	2,350	3,090	900	1,400	545	1,800	1,799
0–16–0	28,907	23,282	16,744	12,665	8,053	6,241	7,223	3,937	7,064
0–20–0	15,912	21,093	19,518	16,281	13,000	12,826	12,790	6,781	12,310
0–40–0	8,336	11,186	9,375	2,905	3,689	1,563	1,438	750	306
Potash Salts	5,850	10,000	5,700	4,500	1,600	1,800	1,560	1,750	1,333
Raw Bone	2,519	2,266	900	1,750	813	869	‖{ 3,477	750	‖{ 1,465
Steamed Bone	6,488	3,025	4,175	2,706	1,094	1,781		1,250	
2–8–2	2,511	2,990	1,340	1,260	594	2,063	403	1,094	268
2–8–5	1,581	1,656	2,625	1,053	1,906	1,531	849	563	1,361
2–8–10	1,468	1,125	1,650	656	1,125	1,463	592	1,094	895
2–8–16	2,156	2,150	282	2,650	2,531	3,919	2,390	4,063	2,920
2–10–4	893	875	1,750	1,625	2,169	1,146	1,074	406	1,122
2–12–2	24,006	31,044	41,237	45,109	43,606	36,550	26,501	19,313	25,073
2–12–4	2,557	2,406	4,154	4,375	2,906	2,688	1,632	1,375	1,576
2–12–6	8,075	21,881	23,580	37,290	43,078	74,850	81,417	78,894	89,175
2–14–4	250	....	....	....	2,760	9,906	7,493	3,719	4,722
2–16–2	4,393	4,400	4,562	4,821	2,813	2,575	922	844	842
2–16–8	....	740	1,081	2,018	2,250	2,769	2,524	3,594	3,597
4–24–4	656	1,562	2,812	5,275	3,603	4,150	3,415	2,619	2,584
4–24–12	375	718	687	906	3,331	7,853	6,434	6,806	8,711
0–8–24	2,868	2,400	2,687	3,962	1,681	1,750	2,480	3,444	3,178
0–10–10	10,900	10,843	10,481	15,525	11,969	7,744	9,016	7,206	8,865
0–12–12	3,531	5,325	5,031	5,312	3,438	6,813	9,192	6,500	8,536
0–20–20	150	531	1,156	2,531	2,281	1,313	2,430	2,181	2,444
0–12–6	3,781	4,187	4,056	5,312	5,312	1,954	2,135	1,000	1,373
0–14–4	875	1,750	3,156	4,312	3,750	1,625	1,179	719	970
0–14–6	....	....	....	....	2,063	9,150	9,661	7,425	7,751
0–8–32	....	....	....	....	343	856	499	656	434
0–16–4	....	....	....	....	2,250	313	593	937	757
0–14–14	....	....	625	718	463	813	964	969	667
0–16–8	....	....	500	593	1,313	844	967	94	668
0–12–8	156	31	....	....	....	1,844	1,898	406	1,167
33*	140,844	172,066	172,564	189,633	175,260	214,702	204,421	174,089	204,546
167†	43,308	54,082	55,716	50,865	45,822	76,491	....	....	....
200‡	189,152	226,148	228,280	240,498	221,082	291,193	¶237,590	....	§246,009

* Tonnage sold under these 33 analyses per year calculated by tag sales.

† Tonnage sold under these 167 analyses per year calculated by tag sales.

‡ Total yearly tonnage sales calculated by tag sales.

‖ Reported together by Manufacturer.

¶ This does not include the 12611 tons calculated from tag sales of companies that did not report their tonnage sales for 1929.

§ This does not include the 1469 tons calculated from tag sales of companies that did not report their tonnage sales for 1930.

Fertilizer Tonnage Sold in Indiana in 1930 as Reported by Fertilizer Manufacturers

A. Raw Materials—

1. Nitrogen Salts—

Nitrate of Soda	Calcium Nitrate	Ammonium Sulphate
613.5	20.0	1,799.8

2. Phosphates—

Above 40% P_2O_5	0-33-0	0-32-0	0-24-0	0-20-0	0-18-0	0-16-0	0-13-0	0-12-0
1,100.0	1,247.0	24.0	247.0	12,310.1	29.7	7,064.4	904.0	0.8

3. Potash Salts—

Muriate of Potash	Sulphate of Potash	Manure Salts	Kainit
1,282.1	1.1	0.2	50.0

B. Phosphate and Potash Mixtures—

0-32- 8	120.8
0-18-12	484.6
0-24-24	733.7
0-24-12	33.0
0-22-22	191.9
0-21- 9	139.0
0-20-20	2,444.6
0-16-32	0.2
0-16- 8	668.0
0-16- 6	224.0
0-16- 4	757.0
0-15- 7	127.2
0-14-14	667.5
0-14- 6	7,751.0
0-14- 4	970.3
0-13-13	21.5
0-12-28	41.0
0-12-20	38.0
0-12-18	242.3
0-12-12	8,536 4
0-12- 8	1,167.4
0-12- 6	1,373.0
0-12- 5	23.0
0-12- 4	35.0
0-11-15	52.0
0-10-20	2.0
0-10-10	8,865.1
0-10- 6	7.0
0 10- 5	116.5
0- 8-32	434.4
0- 8-25	41.2
0- 8-24	3,178.9
0- 5-15	248.0
0- 2-27	7.0

C. Complete Fertilizer Mixtures—

12- 8- 4	11.0
12- 6- 4	7.0
12- 3- 3	33.9
11-15-20	1.0
11-12-15	1.0
11- 3- 4	0.1
10-30-10	2.0
10- 8- 6	35.0
10- 6- 4	58.4
10- 3- 3	13.5
9-27- 9	47.0
9-18-18	15.0
8-24- 8	30.0
6 36-18	2.0
6-15- 9	93.0
6- 8- 6	69.0
6- 8- 5	5.0
6- 4- 2	20.0
5-15- 5	23.0
5-10-10	2.0
5-10- 5	112.0
5- 9- 6	3.0
5- 8- 7	8.0
5- 8- 6	14.0
5- 5-25	0.1
4-28- 8	186.8
4-24-12	8,711.3
4-24- 4	2,584.5
4-16-32	68.0
4-16-20	12.0
4-16- 8	12.0
4-16- 4	1,138.7
4-14- 4	1.0
4-12- 8	224.0
4-12- 4	443.9
4-10- 6	646.4
4-10- 4	4.0
4-10- 0	20.0
4- 8-10	25.0
4- 8- 8	152.0
4- 8- 7	47.0
4- 8- 6	524.9
4- 8- 4	13.0
4- 8- 3	80.0
3-29-20	33.0
3-24- 6	0.5
3-21- 6	377.3
3-20-20	41.2
3-18- 9	783.0
3-18- 3	213.0
3-15-12	672.0
3-12-12	223.0
3-12- 7	54.0
3-12- 4	318.1
3-10- 6	681.0
3-10- 4	102.0
3- 9-18	1,196.1
3- 8- 6	1,619.7
3- 7- 7	192.0
2-20-10	143.0
2-16- 8	3,597.7
2-16- 6	148.0
2-16- 2	842.0
2-15- 4	191.0
2-14- 7	160.6
2-14- 4	4,722.4
2-12- 8	6.0
2-12- 6	89,175.1
2-12- 4	1,576.0
2-12- 2	25,073.1
2-10- 8	706.1
2-10- 6	254.0
2-10- 4	1,122.8
2-10- 3	247.6
2-10- 2	256.0
2- 9- 5	136.0
2- 8-16	2,920.7
2- 8-15	158.0
2- 8-10	895.7
2- 8- 8	285.0
2- 8- 6	178.0
2- 8- 5	1,361.0
2- 8- 4	893.0
2- 8- 2	268.0
2- 4- 3	29.5
2- 1- 2	114.5
2- 1- 1	20.0
1-14- 5	77.0
1-14- 3	139.0
1-14- 2	620.0
1-13- 5	620.8
1-12- 4	85.0
1-12- 3	1,400.0
1-12- 2	859.0
1-12- 1	26.0
1-11- 5	2,437.0
1-11- 4	1,153.3
1-11- 3	1,339.0
1-10- 5	243.0
1-10- 4	149.0
1-10- 3	664.0
1-10- 2	848.0
1-10- 1	351.0
1- 8-32	4.0
1- 8-10	4.0
1- 8- 8	45.3
1- 8- 7	18.0
1- 8- 5	16.0
1- 8- 4	1,750.0
1- 8- 3	972.0
1- 8- 2	275.4
1- 8- 1	5.3
2-10-10-0	11.0
2-8-8-2	326.0
2-8-4-6	1,919.0
2-8-4-2	511.0
2-6-6-10	0.3
2-6-6-3	852.0
0-6-6-10	52.1

D. Bone Products (Steam and Raw Bone—Fertilizer Tankages)—1,465.9.
E. Raw Rock Phosphate—543.0.
F. Miscellaneous—1,269.1.
G. Unclassified (Made up of Superphosphates reported sold in bulk but no definite analysis reported)—1,035.2.

Summary—

1. Total tons reported—246,009.1.
2. Tag sales from firms not reporting—1,469.0.
3. Total tonnage based on reports (Items 1 and 2)—247,478.1.
4. Total tonnage from tag sales—219,653.0.

EXPLANATION OF TABLES

Buyers of fertilizer for the Fall of 1931 and the Spring of 1932 should read this circular before buying.

A brief study of the column headings will aid in a better understanding of the various tables appearing in this circular.

Figures appearing in heavy type indicate that the analysis failed to meet the guarantee of the manufacturer. There is one exception to this rule, namely, heavy type in the third column of Table XI indicates that inferior nitrogen was found in the sample.

The footnotes at the bottom of each page explain whether refund was made, amount of shipment returned to manufacturer, etc.

In case of deficient samples manufacturers were given ten days' advance notice and opportunity to secure a portion of our sample for review of our results by their chemists.

In comparing the standing of the manufacturers, Table X should always be used in connection with Table XI.

The following table (III) sets forth the total tonnage, retail value, cost per ton, pounds of actual plant food per ton and the cost per pound of plant food for the past 11 years.

TABLE III

Year	Tonnage per year	Retail Value Dollars	Cost per ton Dollars	Pounds per ton actual plant food	Cost per pound Plant Food Cents
1920	231,791	8,637,055	37.26	328	0.114
1921	187,923	6,031,305	32.10	354	0.091
1922	209,310	5,730,536	27.40	372	0.074
1923	198,581	6,293,033	31.70	412	0.077
1924	192,417	6,479,605	33.68	446	0.075
1925	226,148	8,253,670	36.50	458	0.079
1926	228,280	8,464,607	37.22	452	0.082
1927	240,498	8,998,412	37.41	444	0.084
1928	221,082	8,254,591	37.33	444	0.084
1929	291,193	11,327,868	38.89	417	0.094
1930	219,684	8,521,905	38.79	518	0.075

Since 1920 there has been a marked reduction in the sales of low and medium grade mixed fertilizers and a corresponding increase of high grade fertilizers.

The actual plant food per ton in pounds was higher in 1930 than it has been any year since the same has been calculated. The fact that this was true in spite of the large reduction in the total tonnage only strengthens the statement that the sales of high grade fertilizers are still increasing.

The comparison of mixed fertilizer sales for the past eleven years follows:

TABLE IV

Mixed Fertilizer	1920 tons	1921 tons	1922 tons	1923 tons	1924 tons	1925 tons	1926 tons	1927 tons	1928 tons	1929 tons	1930 tons
Low and Medium Grade....	84,760	55,887	43,459	25,773	21,759	17,989	16,892	13,722	6,562	10,506	5,001
High Grade.	57,881	59,809	89,527	104,990	98,832	127,928	146,177	179,695	179,597	248,566	192,792

The following table (V) shows the comparison of tonnage sales for the past eleven years with the amount of actual plant food in tons per year and with the retail value per year.

TABLE V

Year	Fertilizer tons	Tons of nitrogen, phosphoric acid and potash	Cost Indiana farmers
1920	231,791	37,961.57	$8,637,055.00
1921	187,923	33,170.08	6,031,305.00
1922	209,310	39,026.25	5,730,536.00
1923	198,581	40,929.03	6,293,033.00
1924	192,417	*43,004.72	*6,479,605.00
1925	226,148	51,803.84	8,253,670.00
1926	228,280	51,572.55	8,464,607.00
1927	240,498	53,388.66	8,998,412.00
1928	221,082	49,038.59	8,254,591.00
1929	291,193	60,737.35	11,327,868.00
1930	219,684	56,813.27	8,521,905.00

* Corrected figures for 1924.

A glance at Table VI shows the total nitrogen, potash, available (P_2O_5), insoluble (P_2O_5), total (P_2O_5) from bone and total (P_2O_5) from rock expressed in tons of actual plant food for the past eleven years.

TABLE VI. Plant Food in Tons

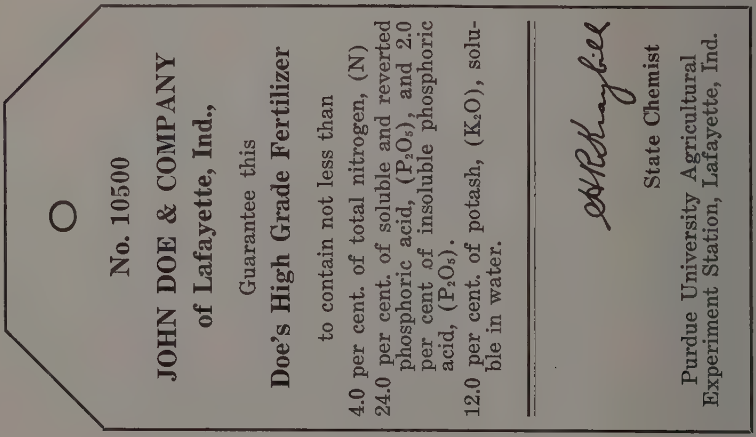
Year	Nitrogen	Available phosphoric acid	Insoluble phosphoric acid	Total phosphoric acid (bone)	Total phosphoric acid (rock)	Potash
1920	1,748.56	25,129.73	3,401.61	2,840.77	1,045.18	3,795.72
1921	1,640.07	21,657.09	2,407.64	2,615.83	289.99	4,559.46
1922	1,887.08	24,870.10	2,791.37	2,778.99	9.28	6,689.43
1923	2,348.63	24,124.84	2,777.82	2,545.94	....	9,131.80
1924	2,159.37	*25,731.53	*2,340.83	2,740.71	....	10,032.16
1925	3,160.08	31,182.63	2,987.80	1,567.16	....	12,906.17
1926	3,167.26	31,811.25	3,196.64	1,529.17	37.13	11,831.11
1927	3,822.06	31,214.50	2,912.51	1,141.05	210.67	14,087.88
1928	3,142.32	30,471.69	1,840.96	708.66	302.02	12,572.95
1929	5,978.96	31,760.58	3,632.01	732.02	274.30	18,361.48
1930	4,304.99	33,875.30	3,114.06	556.76	449.36	14,512.80

* Corrected figures for 1924.

TABLE VII. Summary of Inspection for the Past Twenty-nine Years

Year	Number of samples reported	Number equal to guarantee in every particular	Number equal in value to guarantee	Number within 10 per cent of value of guarantee	Number not within 10 per cent of value of guarantee
1902	679	335	564	93	22
1903	674	286	492	139	43
1904	643	248	451	148	44
1905	734	312	528	158	48
1906	879	374	642	176	61
1907	793	265	481	210	102
1908	901	391	683	171	47
1909	969	417	720	215	34
1910	1,118	441	834	242	42
1911	1,095	527	896	180	19
1912	1,220	636	1,034	175	11
1913	1,204	714	1,021	178	5
1914	1,396	727	1,152	239	5
1915	1,368	684	1,145	214	9
1916	1,367	870	1,183	168	16
1917	919	622	830	76	13
1918	1,285	888	1,142	121	22
1919	1,401[1]	936	1,227	141	32
1920	1,491[2]	944	1,267	188	27
1921	1,314	754	1,070	227	17
1922	1,216	812	1,071	132	13
1923	1,325	970	1,214	108	3
1924	1,439	1,072	1,340	94	5
1925	1,442	1,019	1,329	111	2
1926	1,225	798	1,033	183	9
1927	1,450	909	1,277	163	10
1928	1,437	865	1,283	144	9
1929	1,378	854	1,217	155	6
1930	1,421	1,090	1,320	89	10

[1] One sample not registered.
[2] Nine samples not registered.


No. 10500

JOHN DOE & COMPANY
of Lafayette, Ind.,

Guarantee this

Doe's High Grade Fertilizer

to contain not less than

4.0 per cent. of total nitrogen, (N)
24.0 per cent. of soluble and reverted phosphoric acid, (P_2O_5), and 2.0 per cent of insoluble phosphoric acid, (P_2O_5).
12.0 per cent. of potash, (K_2O), soluble in water.

HRKraybill
State Chemist

Purdue University Agricultural
Experiment Station, Lafayette, Ind.

LABELS

The only label recognized under the law is that bearing the facsimile signature of the State Chemist. (See reproduction.) The label as issued is always printed and contains all the facts required by law; any alteration thereon constitutes a violation of the law.

Label No. 10500 guarantees that each 100 pounds of fertilizer will contain at least 4.0 pounds of total nitrogen (N), 24.0 pounds of soluble and reverted phosphoric acid (P_2O_5), and 2.0 pounds of insoluble phosphoric acid (P_2O_5), and 12.0 pounds of water soluble potash (K_2O).

We hope that it will not again be necessary to file affidavits against agents for distributing unlabeled fertilizer. There can be no excuse for shipping unlabeled fertilizer. Agents receiving same should protect themselves by refusing to accept the car. Wire the manufacturer for official labels and write the State Chemist fully concerning the unlabeled shipment.

TABLE VIII—Fertilizer Tonnage and Estimated Retail Value, 1930

Class of Fertilizer	Spring 1930 tons	Fall 1930 tons	Total 1930 tons	Estimated 1930 Retail Value Dollars
1. Acid phosphate, 14% and less	63	813	876	$21,900.00
2. Acid phosphate, 16%	1,250	2,437	3,687	85,464.66
3. Acid phosphate, 18-20%	1,875	4,563	6,438	173,954.76
4. Acid phosphate above 20%	500	687	1,187	55,926.40
10. Acid phosphate and potash, 14-19 units	594	1,250	1,844	54,213.60
10a. Acid phosphate and potash above 20 units	24,469	8,344	32,813	1,217,034.17
11. Complete fertilizer (low)	469	750	1,219	40,470.38
12. Complete fertilizer (medium)	1,688	2,094	3,782	111,606.82
13. Complete fertilizer (high)	21,688	20,444	42,132	1,547,087.04
13a. Complete fertilizer above 20 units	70,047	45,956	116,003	4,802,524.20
14. Steamed bone	156	1,063	1,219	50,783.54
15. Raw bone	288	469	757	31,309.52
16. Tankage†	219	250	469	19,229.00
19. Rock phosphate, nitrogen salts, and potash salts (A)	31	....	31	1,280.30
20. Rock phosphate and potash salts (B)	63	63	126	5,342.40
21. Rock phosphate	625	875	1,500	17,085.00
22. Nitrogen salts*	2,500	450	2,950	165,318.00
23. Potash salts*	1,900	....	1,900	81,713.00
31. Miscellaneous (peat, dried manure, dried blood, garbage, tankage, etc.)	688	63	751	39,662.80
Total	129,113	90,571	219,684	$8,521,905.59

* Tonnage in these classes estimated on the 200-pound sack or 10 per ton. All other classes estimated on the 125-pound sack or 16 per ton.

† No samples taken. Value based on last year's prices.

(A) Mixture of rock phosphate, nitrogen, and potash salts.

(B) Mixture of rock phosphate and potash salts.

PRICES USED IN SECURING COMPARATIVE VALUE OF FERTILIZERS

These values are not for the purpose of fixing the commercial value of mixed fertilizers, but are for comparative purposes only. They are for use in comparing the value of inspection samples with manufacturers' guarantees, and can be used advantageously by fertilizer purchasers in calculating the relative values of various brands offered for sale by different manufacturers.

For use in determining the comparative values of fertilizer inspected in 1931, the following prices have been adopted:

	Per lb. cts.	Per unit or per cent, $
All fertilizers		
Nitrogen (N)	12.5	2.50
Potash (K_2O) Soluble in water	5.0	1.00
Soluble and reverted phosphoric acid (P_2O_5)	6.0	1.20
Mixed fertilizers containing nitrogen		
Insoluble phosphoric acid (P_2O_5)	2.0	0.40
Precipitated bone		
Available phosphoric acid (P_2O_5)	6.0	1.20
Insoluble phosphoric acid (P_2O_5)	5.0	1.00
Animal by-products, bone, tankage, etc.		
Total phosphoric acid (P_2O_5)	4.5	0.90
Basic slag		
Total phosphoric acid (P_2O_5)	4.5	0.90
Rock phosphate (floats) and low grade slag		
Total phosphoric acid (P_2O_5)	2.0	0.40
Mixed fertilizer, acid phosphate, etc., containing no nitrogen		
Insoluble phosphoric acid	.0	0.00

TABLE IX—Summary of Inspection on the Basis of Composition, Guaranteed, Found, and Retail Values

Class of Fertilizer	Number of Samples	Nitrogen (N), average per cent.		Available phosphoric acid (P_2O_5), average per cent.		Insoluble phosphoric acid (P_2O_5), average per cent.		Total phosphoric acid (P_2O_5), average per cent.		Potash (K_2O), soluble in water average per cent.		Comparative value per ton, dollars		Retail price per ton, average, dollars	Comparison, retail price and found comparative value per ton, dollars	Range in retail price per ton, dollars
		Guaranteed	Found	Guaranteed	Found	Guaranteed	Found	Guaranteed	Found	Guaranteed	Found	Guaranteed	Found			
1. Acid phosphate, less than 16 per cent available phosphoric acid	3	......	......	13.0	14.3	......	1.9	......	......	......	......	15.60	17.16	25.00	+ 7.84	25.00–
2. Acid phosphate, 16 to 18 per cent available phosphoric acid	39	......	......	16.0	16.7	1.0	1.3	......	......	......	......	19.20	20.04	23.18	+3.14	21.00–24.35
3. Acid phosphate, 18 to 20 per cent available phosphoric acid	79	......	......	20.0	20.8	1.1	0.5	......	......	......	......	24.00	24.96	27.02	+2.06	24.25–32.25
4. Acid phosphate more than 20 per cent available phosphoric acid	17	......	......	38.8	39.2	1.4	0.7	......	......	......	......	46.56	47.04	47.20	+0.16	45.40–56.00
10. Acid phosphate and potash (High grade), 14 or more per cent available plant food	15	......	......	13.0	13.2	0.7	1.1	......	......	4.7	5.0	20.30	20.84	29.40	+8.56	24.95–30.00
10a. Acid phosphate and potash (High grade), 20 or more per cent available plant food	245	......	......	13.1	13.9	0.8	1.3	......	......	12.5	12.9	28.22	29.46	37.09	+7.63	26.00–65.00
11. Complete fertilizer (Low grade), less than 12 per cent available plant food	7	1.9	2.1	6.3	8.7	6.0	3.7	......	......	2.9	3.0	20.08	22.90	34.02	+11:12	33.85–34.02
12. Complete fertilizer (Medium grade), 12 to 14 per cent available plant food	33	1.6	2.0	8.0	9.2	1.8	2.1	......	......	2.9	3.6	19.30	23.08	29.51	+5.43	24.20–36.85
13. Complete fertilizer (High grade), 14 or more per cent available plant food	306	1.9	2.0	10.9	11.4	1.1	1.2	......	......	3.1	3.7	23.84	25.48	36.72	+11.24	22.95–44.65
13a. Complete fertilizer (High grade), 20 or more per cent available plant food	602	2.3	2.4	14.0	14.8	0.8	1.3	......	......	6.6	7.4	32.46	34.80	41.40	+6.60	22.95–118.00
14. Steamed bone	5	1.3	2.1	......	......	......	......	28.8	29.1	......	......	30.86	34.17	41.66	+6.49	31.00–45.35
15. Raw bone	5	2.7	3.2	......	......	......	......	22.8	25.1	......	......	30.78	34.75	41.36	+6.61	33.45–47.30
19. Rock phosphate, nitrogen salts and potash salts	2	2.0	2.0	......	......	......	......	25.0	25.4	6.0	6.1	23.60	23.90	41.30	+17.40	41.25–41.35
20. Rock phosphate and potash salts	2	......	......	......	......	......	......	24.0	24.2	12.0	11.3	22.00	21.38	42.40	+21.02	42.00–42.80
21. Rock phosphate	17	......	......	......	......	......	......	25.1	27.4	......	......	10.04	10.96	11.39	+0.43	9.90–17.01
22. Nitrogen salts	20	17.0	17.8	......	......	......	......	......	......	......	......	64.60	67.64	56.04	—9.60	42.00–64.15
23. Potash salts	16	......	......	......	......	......	......	......	......	45.4	45.6	45.40	45.60	48.27	+2.67	37.00–55.45
31. Miscellaneous (peat, peat and limestone, dried manure, dried blood, garbage tankage, etc.)	8	1.9	2.0	......	......	......	......	1.2	1.6	2.5	3.1	10.80	12.14	52.80	+40.66	34.50–60.00

TABLE X—Standing of Manufacturers Determined by Inspection of 1930

Manufacturers	Number of samples reported	Number equal to guarantee in every particular	Number equal in value to guarantee	Number within 10 per cent of value of guarantee	Number not within 10 per cent of value of guarantee	Number with inferior nitrogen	Total number with nitrogen
American Agricultural Chemical Co., The, Cincinnati, Ohio	3	3	3				
American Agricultural Chemical Co., The, New York, N. Y.	86	71	83	3			73
American Cynamid Co., New York, N. Y	1	1	1				1
Anaconda Copper Mining Co., Chicago, Ill.	1			1			
Armour Fertilizer Works, Chicago, Ill.	151	131	147	4			69
Barrett Company, The, New York, N. Y.	2	2	2				2
Buhner Fertilizer Co., The, Seymour, Ind.	81	39	71	7	3		69
Clendenin & Co., Richmond, Ind.	4		1	2	1		4
Clendenin Fertilizer Co., Richmond, Ind.	2	1	2				2
Consolidated Chemical Co., Louisville, Ky.	13	10	11	2			9
Darling & Co., Chicago, Ill.	38	32	36	2			28
Diamond Fertilizer Co., Sandusky, Ohio	7	7	7				4
D. & K. Fertilizer Co., Indianapolis, Ind.	37	18	30	7			29
Empire Guano Co., New Albany, Ind.	1	1	1				
Everitt Seed Store, Indianapolis, Ind.	1			1			1
Fall City Fertilizer Co., New Albany, Ind.	6	4	6				
Farmers Fertilizer Co., Seymour, Ind.	1	1	1				1
Farmers Grain Dealers Ass'n of Indiana, Indianapolis, Ind.	20	14	18	2			9
Federal Chemical Co., Inc., Louisville, Ky.	111	88	105	6			92
Fertilizer Products Co., Chicago, Ill.	1	1	1			1*	1
Globe Fertilizer Co., Louisville, Ky.	1	1	1				
Groves Chemical Co., Columbus, Ohio	40	26	37	3			36
Hopkins Fertilizer Co., New Albany, Ind.	49	30	49			4	43
Hutchins Bros. Mineral Works, Hillsboro, Ind.	1	1	1				1
Indiana Consumers Gas & By-products Co., Terre Haute, Ind.	2	2	2				2
Indiana Farm Bureau Cooperative Ass'n, Inc., Indianapolis, Ind.	299	250	283	15			129
International Agricultural Corp., Cincinnati, Ohio	53	41	46	6	1		38
Joslin-Schmidt Corp., (Groves Fertilizer Works), Cincinnati, Ohio	40	22	35	5			23
Long Co., The J. K., Versailles, Ohio	1				1	1†	1
Louisville Fertilizer Co., (Owned and Operated by Armour Fertilizer Works). Cincinnati, Ohio	3	2	3				2
Louisville Fertilizer Co., (Armour Owned), Louisville, Ky.	3	3	3				
Miami Fertilizer Co., Dayton, O.	13	9	11	2			7
Nitrate Agency Co., New York, N. Y.	1	1	1				1
Nitrate Fertilizer Co., The, Columbus, Ohio	4	2	2	2			1
Norris Fertilizer Co., Rushville, Ind.	17	14	16	1			12

Manufacturers	Number of samples reported	Number equal to guarantee in every particular	Number equal in value to guarantee	Number within 10 per cent of value of guarantee	Number not within 10 per cent of value of guarantee	Number with inferior nitrogen	Total number with nitrogen
North American Fertilizer Co., Louisville, Ky.	8	6	8	....	....	....	8
N. V. Potash Export My, New York, N. Y.	1	1	1	....	....	....	....
Old Gardener Fertilizer Co., The, Pittsburgh, Pa.	2	1	1	1	....	....	2
Pacific Manure & Fertilizer Co., San Francisco, Calif.	1	1	1	....	....	1*	1
Price Chemical Company, Louisville, Ky.	23	13	20	3	....	....	14
Pulverized Manure Company, The, Chicago, Ill.	4	4	4	....	....	4*	4
Rasin Monumental Co. (Sub. of Virginia-Carolina Chemical Corp., Cincinnati Division), Cincinnati, Ohio	1	1	1	....	....	....	1
Rauh & Sons Fertilizer Co., E., Indianapolis, Ind.	41	39	41	....	....	....	23
Read Phosphate Co., New Albany, Ind.	13	8	12	1	....	....	10
Robin Jones Phosphate Co., Nashville, Tenn.	1	1	1	....	....	....	....
Royster Guano Company, The F. S., Toledo, Ohio	6	6	6	....	....	....	3
Ruhm Phosphate and Chemical Co., Mount Pleasant, Tenn.	5	4	4	1	....	....	....
Smith Agricultural Chemical Co., Indianapolis, Ind.	64	57	58	6	....	....	44
Steinkamp, Hugo, Holland, Ind.	1	1	1	....	....	....	1
Swift & Co., Fertilizer Works, Calumet City, Ill.	68	52	64	4	....	....	43
Synthetic Nitrogen Prod. Corp., New York, N. Y.	5	4	5	....	....	....	5
Tennessee Copper & Chemical Co., Lockland, Ohio	1	....	1	....	....	....	1
Tennessee Phosphate & Fertilizer Co., Cincinnati, Ohio	11	5	5	....	6	....	1
Thompson Phosphate Company, Chicago, Ill.	4	1	3	1	....	....	2
Virginia-Carolina Chemical Co., Cincinnati Division, Cincinnati, Ohio	2	2	2	....	....	....	....
Virginia-Carolina Chemical Corp., Cincinnati Division, Cincinnati, Ohio	48	46	48	....	....	....	29
Welch Chemical Co., Columbus, Ohio	10	5	10	....	....	....	8
Wuichet Fertilizer Co., The, Dayton, Ohio	9	4	8	1	....	....	7
Totals	1,421	1,090	1,320	89	12	11	897

*Manures—Manufacturers not responsible for the quality of the nitrogen.

†Tobacco product—Manufacturers not responsible for the quality of the nitrogen.

TABLE XI.—Report of Inspection of Fertilizer Collected in 1930

Labels and names of persons from whom samples were secured	Official No.	Inspection No. H. H.	Samples taken at		Nitrogen (N)				Phosphoric acid (P₂O₅)			Potash (K₂O), soluble in water, per cent
					Water soluble as nitrates, ammonia salts and organic, per cent	Active water insoluble organic, per cent	Inactive water insoluble organic, per cent	Total per cent	Soluble and reverted (available), per cent	Insoluble, per cent	Total per cent	
American Agricultural Chemical Company, The, Cincinnati, Ohio.												
A. A. C. Basic Lime Phosphate	9023	.....	.....	guaranteed	.....	.....	.....	.....	13.0	.....	.....	.....
Warren H. Todd	9023	5505	Flora	found	.....	.....	.....	.....	13.5	2.8	.....	.....
Walter Hughes[1]	9023	5540	Crown Point	found	.....	.....	.....	.....	15.4	1.6	.....	.....
L. A. Mauck	9023	6027	Corydon	found	.....	.....	.....	.....	13.9	1.4	.....	.....
American Agricultural Chemical Company, The, New York, N. Y.												
Nitrate of Soda	4649	.....	.....	guaranteed	.....	.....	.....	15.0	.....	.....	.....	.....
Clyde L. Culbertson	4649	4735	Vevay	found	.....	.....	.....	15.5	.....	.....	.....	.....
A. A. Double Ten Mixture	9404	.....	.....	guaranteed	.....	.....	.....	.....	10.0	0.5	.....	10.0
Huntertown Grain Co.	9404	5591	Huntertown	found	.....	.....	.....	.....	10.6	0.9	.....	10.9
A. A. Prize Mixture	9405	.....	.....	guaranteed	.....	.....	.....	.....	8.0	0.5	.....	24.0
Dave Kabel Tractor Co.	9405	5245	Winchester	found	.....	.....	.....	.....	9.8	0.4	.....	23.2
A. A. 16% Superphosphate	9407	.....	.....	guaranteed	.....	.....	.....	.....	16.0	0.5	.....	.....
Huntertown Grain Co.	9407	5581	Wallen	found	.....	.....	.....	.....	16.1	1.8	.....	.....
Michigan Carbon Homestead Superior Superphosphate	9422	.....	.....	guaranteed	.....	.....	.....	.....	16.0	0.5	.....	.....
King Elevator Co.	9422	5524	Wabash	found	.....	.....	.....	.....	16.0	2.4	.....	.....
Horse Shoe 20% Superphosphate	9427	.....	.....	guaranteed	.....	.....	.....	.....	20.0	0.5	.....	.....
Dave Kabel Tractor Co.	9427	5250	Winchester	found	.....	.....	.....	.....	22.4	0.9	.....	.....
A. A. Boss Mixture	9707	.....	.....	guaranteed	.....	.....	.....	.....	10.0	.....	.....	5.0
Clyde L. Culbertson[2]	9707	4732	Vevay	found	.....	.....	.....	.....	10.5	1.1	.....	4.9
Clyde L. Culbertson	9707	6015	Vevay	found	.....	.....	.....	.....	9.9	1.1	.....	4.9
Northwestern Horse Shoe Higrade Vegetable Fertilizer	241a	.....	.....	guaranteed	.....	.....	.....	2.0	8.0	0.5	.....	5.0
Bornwasser & Gwin Implement Co.	241a	4985	New Albany	found	1.99	.....	.....	2.1	8.5	0.6	.....	5.0
Northwestern Horse Shoe Bison Fertilizer	243a	.....	.....	guaranteed	.....	.....	.....	1.0	10.0	0.5	.....	3.0
Dave Kabel Tractor Co.	243a	5246	Winchester	found	1.01	.....	.....	1.1	10.7	0.5	.....	3.6
Michigan Carbon Homestead Higrade Garden and Vegetable Fertilizer	245a	.....	.....	guaranteed	.....	.....	.....	2.0	8.0	0.5	.....	5.0
C. L. Graf[3]	245a	4984	New Albany	found	2.00	.....	.....	2.1	8.4	4.0	.....	5.0
C. L. Graf	245a	5630	New Albany	found	1.96	.....	.....	2.1	8.3	1.1	.....	5.0
Michigan Carbon Homestead Bone Black Fertilizer	247a	.....	.....	guaranteed	.....	.....	.....	2.0	12.0	0.5	.....	2.0
L. A. Mauck	247a	4697	Corydon	found	1.89	.....	.....	2.1	11.9	1.5	.....	2.1
King Elevator Co.[3]	247a	4851	Wabash	found	1.99	.....	.....	2.2	14.5	0.5	.....	2.4
King Elevator Co.	247a	5519	Wabash	found	1.93	.....	.....	2.2	12.0	1.5	.....	2.0
Crescent Mills	247a	5527	Crothersville	found	1.92	.....	.....	2.1	12.4	1.5	.....	2.2

LaGro Equity Exchange	247a	5530	LaGro	found	2.00	......	......	2.2	12.3	1.8	......	2.2
Rich Valley Co-operative Elevator	247a	5605	Rich Valley	found	2.02	......	......	2.2	12.1	1.2	......	2.0
Paoli Hardware Co.	247a	5954	Paoli	found	1.89	......	......	2.1	13.4	0.7	......	2.2
James E. Turley	247a	6033	English	found	1.82	......	......	2.1	12.9	1.9	......	2.3
Michigan Carbon Red Line Complete Fertilizer	248a	......	......	guaranteed	......	......	......	2.0	10.0	0.5	......	2.0
Paoli Hardware Co.	248a	4930	Paoli	found	1.83	......	......	2.0	9.5	1.5	......	2.1
Bowker's Harvest Queen Fertilizer	249a	......	......	guaranteed	......	......	......	1.0	8.0	0.5	......	4.0
Clyde L. Culbertson[3]	249a	4737	Vevay	found	0.78	......	......	1.0	9.6	1.4	......	4.0
Clyde L. Culbertson	249a	6014	Vevay	found	1.06	......	......	1.2	7.8	1.2	......	4.3
Bowker's Harvest Jewel Fertilizer	252a	......	......	guaranteed	......	......	......	2.0	8.0	0.5	......	5.0
Henry J. Laswell	252a	5961	Versailles	found	1.93	......	......	2.1	8.7	0.6	......	5.1
Bowker's Liberty Bell Fertilizer	253a	......	......	guaranteed	......	......	......	2.0	12.0	0.5	......	2.0
Joe Brown	253a	5062	Waldron	found	2.06	......	......	2.2	12.8	1.5	......	2.2
Warren H. Todd	253a	5509	Flora	found	1.93	......	......	2.1	12.3	1.5	......	2.1
Hershell Miller	253a	5796	Bargersville	found	2.00	......	......	2.2	12.1	1.3	......	2.0
Henry J. Laswell	253a	5962	Versailles	found	2.03	......	......	2.2	12.0	1.4	......	2.1
R. A. Sawdon	253a	6043	Aurora	found	1.90	......	......	2.2	12.1	1.4	......	2.1
Bowker's Tomato Special Fertilizer 2-12-6	254a	......	......	guaranteed	......	......	......	2.0	12.0	......	......	6.0
Henry J. Laswell[4]	254a	5424	Osgood	found	2.09	......	......	2.2	12.0	1.9	......	6.0
Henry J. Laswell	254a	5966	Versailles	found	2.00	......	......	2.1	12.9	0.9	......	6.4
Bowker's Economy Fertilizer	255a	......	......	guaranteed	......	......	......	2.0	16.0	0.5	......	2.0
Home Grain Co.	255a	5707	South Milford	found	2.07	......	......	2.2	17.1	1.5	......	2.4
Agrico for Grain	256a	......	......	guaranteed	......	......	......	2.0	12.0	0.5	......	4.0
Frank Singer	256a	4843	Haubstadt	found	1.92	......	......	2.2	12.5	1.3	......	4.7
Huntertown Grain Co.	256a	5585	Huntertown	found	2.10	......	......	2.2	12.6	1.5	......	4.2
Hershell Miller	256a	5792	Bargersville	found	2.07	......	......	2.1	12.0	1.6	......	4.1
R. A. Sawdon	256a	6052	Aurora	found	1.56	......	......	2.2	12.8	1.3	......	4.3
Agrico for Potatoes 4-8-6	257a	......	......	guaranteed	......	......	......	4.0	8.0	0.5	......	6.0
Ben J. Struewing	257a	4757	Batesville	found	3.98	......	......	4.2	8.2	1.0	......	6.5
Burket Elevator Co.	257a	5092	Burket	found	4.06	......	......	4.2	8.0	0.7	......	6.0
Agrico for Truck	258a	......	......	guaranteed	......	......	......	5.0	10.0	0.5	......	5.0
Fruit Growers Supply Co.[5]	258a	5367	Franklin	found	4.59	......	......	4.7	11.7	1.4	......	5.2
Agrico for Corn 3-10-6	259a	......	......	guaranteed	......	......	......	3.0	10.0	0.5	......	6.0
Ben J. Struewing	259a	4758	Batesville	found	2.93	......	......	3.1	9.7	1.8	......	6.1
Huntertown Grain Co.	259a	4915	Huntertown	found	2.93	......	......	3.1	11.0	0.8	......	6.3
Burket Elevator Co.	259a	5088	Burket	found	2.98	......	......	3.1	10.6	1.3	......	6.0
Dave Kabel Tractor Co.	259a	5247	Winchester	found	3.05	......	......	3.2	10.0	1.5	......	6.1
Agrico for Tobacco 4-10-6	260a	......	......	guaranteed	......	......	......	4.0	10.0	0.5	......	6.0
Ben Struewing	260a	4751	Batesville	found	3.63	......	......	4.0	10.6	1.0	......	6.0
A. A. Sure Crop Fertilizer	261a	......	......	guaranteed	......	......	......	1.0	8.0	0.5	......	4.0
L. A. Mauck	261a	4706	Corydon	found	0.92	......	......	1.1	8.5	1.8	......	4.0
Crescent Mills	261a	5532	Crothersville	found	1.01	......	......	1.1	8.0	1.0	......	4.1
W. E. Jenner & Son	261a	6026	Marengo	found	0.81	......	......	1.1	8.5	1.3	......	4.2
A. A. Special Tobacco Fertilizer 3-8-6	263a	......	......	guaranteed	......	......	......	3.0	8.0	0.5	......	6.0
Clyde L. Culbertson	263a	4738	Vevay	found	2.58	......	......	2.8	10.2	1.7	......	6.0
Ben J. Struewing	263a	4743	Batesville	found	2.88	......	......	3.1	8.1	0.6	......	6.0

Where 60.0 per cent or more of the total nitrogen guaranteed was found to be water soluble, the active and inactive insoluble organic was not determined.
Percentages appearing in bold type in the "Inactive water insoluble organic" column denote inferior nitrogen.

[1] Purchased from H. W. Sitzenstock.

[2] Sample received in the spring.

[3] Sample received in the spring.

[4] Not tagged. Labels furnished. Sample received in the spring.

[5] Sample to manufacturer. Refund $1.14.

TABLE XI.—Report of Inspection of Fertilizer Collected in 1930—Continued

Labels and names of persons from whom samples were secured	Official No.	Inspection No. H. H.	Samples taken at		Nitrogen (N) Water soluble as nitrates, ammonia salts and organic, per cent	Nitrogen (N) Active water insoluble organic, per cent	Nitrogen (N) Inactive water insoluble organic, per cent	Nitrogen (N) Total per cent	Phosphoric acid (P_2O_5) Soluble and reverted (available), per cent	Phosphoric acid (P_2O_5) Insoluble, per cent	Phosphoric acid (P_2O_5) Total per cent	Potash (K_2O), soluble in water, per cent
A. A. Red Dragon Fertilizer	269a	......	......	guaranteed	......	......	......	2.0	12.0	0.5	......	2.0
Flora Artificial Stone Co.[6]	269a	4776	Flora	found	1.90	......	......	2.1	14.0	0.8	......	2.3
Frank Singer	269a	4853	Haubstadt	found	1.89	......	......	2.2	13.0	1.2	......	2.2
Flora Artificial Stone Co.[6]	269a	5507	Flora	found	2.13	......	......	2.3	12.6	2.0	......	2.1
A. A. New Rival Fertilizer	270a	......	......	guaranteed	......	......	......	2.0	12.0	0.5	......	4.0
Flora Artificial Stone Co.	270a	4759	Flora	found	2.05	......	......	2.3	12.7	1.3	......	4.0
Dave Kabel Tractor Co.	270a	5248	Winchester	found	2.10	......	......	2.2	13.0	1.3	......	4.2
Flora Artificial Stone Co.	270a	5508	Flora	found	1.96	......	......	2.1	12.5	1.7	......	4.0
H. W. Sitzenstock	270a	5539	Crown Point	found	1.96	......	......	2.1	12.6	1.8	......	4.1
A. A. Antler Fertilizer	271a	......	......	guaranteed	......	......	......	2.0	12.0	0.5	......	6.0
Clyde L. Culbertson[6]	271a	4739	Vevay	found	1.97	......	......	2.1	12.0	2.2	......	5.9
Ben J. Struewing	271a	4747	Batesville	found	2.06	......	......	2.2	12.5	1.2	......	6.1
Flora Artificial Stone Co.[6]	271a	4775	Flora	found	2.01	......	......	2.2	12.3	2.3	......	6.3
King Elevator Co.	271a	4842	Wabash	found	2.11	......	......	2.3	13.3	0.5	......	6.4
Frank Singer	271a	4854	Haubstadt	found	1.74	......	......	2.2	13.2	0.9	......	6.1
Burket Elevator Co.	271a	5090	Burket	found	2.04	......	......	2.2	12.0	0.6	......	6.1
Dave Kabel Tractor Co.	271a	5244	Winchester	found	1.92	......	......	2.0	13.1	0.9	......	6.1
Flora Artificial Stone Co.	271a	5504	Flora	found	1.91	......	......	2.1	12.9	1.7	......	6.0
Rich Valley Co-operative Elevator	271a	5518	Rich Valley	found	1.96	......	......	2.1	12.6	1.4	......	6.0
Arthur Miller	271a	5545	Pleasant Ridge	found	2.06	......	......	2.2	12.0	1.3	......	6.3
Huntertown Grain Co.	271a	5627	Huntertown	found	1.86	......	......	2.0	12.0	1.5	......	6.1
Lloyd Zent	271a	5690	Tippecanoe	found	2.16	......	......	2.3	12.1	1.4	......	6.3
Home Grain Co.	271a	5709	South Milford	found	2.02	......	......	2.2	12.0	1.4	......	6.4
Paoli Hardware Co.	271a	5963	Paoli	found	1.89	......	......	2.0	13.1	0.9	......	6.4
Clyde L. Culbertson	271a	6021	Vevay	found	2.16	......	......	2.3	12.2	1.0	......	6.4
A. A. Tomato Special Fertilizer 2-12-6	272a	......	......	guaranteed	......	......	......	2.0	12.0	0.5	......	6.0
L. A. Mauck	272a	4707	Corydon	found	2.00	......	......	2.2	12.0	1.8	......	6.5
C. L. Graf[6]	272a	4979	New Albany	found	2.03	......	......	2.2	12.6	1.7	......	6.3
C. L. Graf	272a	5629	New Albany	found	2.27	......	......	2.4	12.0	1.8	......	6.3
A. A. Paramount Fertilizer	275a	......	......	guaranteed	......	......	......	3.0	8.0	0.5	......	6.0
Ben J. Struewing	275a	4748	Batesville	found	2.76	......	......	3.0	8.4	1.8	......	6.0
A. A. Two In One Fertilizer	276a	......	......	guaranteed	......	......	......	4.0	16.0	0.5	......	4.0
Lloyd Zent	276a	5691	Tippecanoe	found	3.96	......	......	4.1	16.0	1.8	......	4.2
Paoli Hardware Co.	276a	5944	Paoli	found	3.96	......	......	4.1	16.5	1.2	......	4.0
A. A. Hawkeye Fertilizer	277a	......	......	guaranteed	......	......	......	4.0	24.0	0.5	......	4.0
LaGro Equity Exchange[7]	277a	5523	LaGro	found	3.73	......	......	3.9	24.1	0.9	......	4.2

A. A. Double Ten Mixture	278a			guaranteed					10.0	0.5		10.0
Ben J. Struewing	278a	4752	Batesville	found					9.9	0.9		10.2
King Elevator Co.	278a	4841	Wabash	found					10.6	0.4		9.6
Mike Gorman[8]	278a	5349	Morocco	found					10.4	1.1		10.0
A. A. Top Notch Fertilizer	435a			guaranteed				10.0	6.0	0.5		4.0
Bornwasser & Gwin Implement Co.[9]	435a	4986	New Albany	found	9.63			9.7	7.4	0.5		4.5
A. A. Hi-Test Fertilizer 4-24-12	752a			guaranteed				4.0	24.0	0.5		12.0
Dave Kabel Tractor Co.[10]	752a	5255	Winchester	found	3.83			4.0	22.9	0.6		11.5
A. A. Hi-Test Fertilizer 0-20-20	753a			guaranteed					20.0	0.5		20.0
Guy Daniels[11]	753a	5474	Rensselaer	found					20.3	0.6		20.0
Kainit	764a			guaranteed								14.0
Callahan & Kanne	764a	4686	Rensselaer	found								15.1
Callahan & Kanne	764a	4687	Rensselaer	found								15.1
American Cyanamid Company, New York, N. Y.												
Ammo-Phos-Ko	815a			guaranteed				10.0	30.0			10.0
John N. Dyer[12]	815a	4849	Vincennes	found				10.5	33.0	0.5		10.2
Anaconda Copper Mining Company, Chicago, Illinois.												
Anaconda Treble Superphosphate	8126			guaranteed					44.0	3.0		
Chas. McCauley[13]	8126	5767	Attica	found					42.8	0.9		
Armour Fertilizer Works, Chicago, Illinois.												
Raw Bone	2903			guaranteed				3.7			22.0	
George P. Wagoner	2903	5951	Jasper	found	0.11	2.66	1.13	3.9			23.9	
Armour's Sulphate of Ammonia	7472			guaranteed				20.6				
Ed. Stafford[14]	7472	5317	Odell	found				21.1				
Armour's Big Crop 16% Superphosphate	7629			guaranteed					16.0	0.5		
Farmers Feed & Coal Co.	7629	4669	Bloomington	found					16.4	0.6		
Big Crop 10-10 Fertilizer	7713			guaranteed					10.0	0.5		10.0
Bolles Hardware Co.	7713	4963	Ewing	found					10.6	0.5		10.2
Kraus & Apfelbaum	7713	5120	Argos	found					11.1	0.6		10.0
Frank Melrose	7713	5342	Remington	found					10.2	0.5		10.7
Armour's Nitrate of Soda	7986			guaranteed				14.8				
Lewis J. Withrow	7986	5321	Odell	found				16.2				
Armour's Big Crop 0-12-12 Fertilizer	8665			guaranteed					12.0	0.5		12.0
Clay Syler	8665	5036	North Manchester	found					12.6	0.5		12.2
Armour's Big Crop 0-8-24 Fertilizer	8666			guaranteed					8.0	0.5		24.0
Frank Parks	8666	5353	Morocco	found					8.3	0.3		24.6
J. J. Lawler	8666	5435	Conrad	found					8.5	0.7		24.2
J. J. Lawler	8666	5436	Fair Oaks	found					8.2	0.4		25.2

Where 60.0 per cent or more of the total nitrogen guaranteed was found to be water soluble, the active and inactive insoluble organic was not determined.

Percentages appearing in bold type in the "Inactive water insoluble organic" column denote inferior nitrogen.

[6] Sample received in the spring.

[7] Misbranded. Not tagged. Labels furnished.

[8] Purchased from Farmers Elevator Co.

[9] Sample to manufacturer. Refund $1.14.

[10] Sample to manufacturer. Refund $0.45.

[11] Purchased from Calahan and King.

[12] Not tagged. Labels furnished.

[13] Purchased from Frank McCarty. Refund $6.48.

[14] Purchased from Lewis J. Withrow.

TABLE XI.—Report of Inspection of Fertilizer Collected in 1930—Continued

Labels and names of persons from whom samples were secured	Official No.	Inspection No. H. H.	Samples taken at		Nitrogen (N)				Phosphoric acid (P_2O_5)			Potash (K_2O), soluble in water, per cent
					Water soluble as nitrates, ammonia salts and organic, per cent	Active water insoluble organic, per cent	Inactive water insoluble organic, per cent	Total per cent	Soluble and reverted (available), per cent	Insoluble, per cent	Total per cent	
Noah Cockrell[15]	8666	5437	Roselawn	found	......	......	......	......	7.9	0.6	......	24.6
W. F. Todd[15]	8666	5438	Rensselaer	found	......	......	......	......	8.5	0.5	......	23.7
Truman Ware[15]	8666	5452	Rensselaer	found	......	......	......	......	8 7	......	......	23 4
John Doyle[15]	8666	5457	Pleasant Ridge	found	......	......	......	......	8.7	......	......	23.8
Armour's Big Crop 20% Superphosphate	9210	......	......	guaranteed	......	......	......	......	20.0	0.5	......	......
W. C. Smock & Co.	9210	4779	Burrows	found	......	......	......	......	21.4	0.8	......	......
R. C. Fretz Feed Store	9210	5016	Waterloo	found	......	......	......	......	20.1	1.8	......	......
Kraus & Apfelbaum	9210	5116	Argos	found	......	......	......	......	21.1	1.4	......	......
Rich Valley Co-operative Elevator	9210	5528	Rich Valley	found	......	......	......	......	20 5	1.0	......	......
E. K. Sowash	9210	5538	Crown Point	found	......	......	......	......	21.2	1.1	......	......
Peru Grain & Coal Co.	9210	5738	Peru	found	......	......	......	......	20.4	0.8	......	......
Armour's Big Crop 0-16-8 Fertilizer	9367	......	......	guaranteed	......	......	......	......	16.0	0.5	......	8 0
Bob's Hardware Co.	9367	4951	Elberfeld	found	......	......	......	......	17.8	0 1	......	8 0
Worthington Grain Co.	9367	5302	Worthington	found	......	......	......	......	16.8	0.5	......	8 5
Hobbs Grain Co.	9367	5785	Hobbs	found	......	......	......	......	16.8	0 6	......	8.2
C. L. Johnson	9367	5867	Clayton	found	......	......	......	......	16 0	1.1	......	8.7
Armour's Big Crop 0-14-14	9368	......	......	guaranteed	......	......	......	......	14.0	0.5	......	14.0
Milford Grain & Milling Co.	9368	5098	Milford	found	......	......	......	......	14.0	0.9	......	15.5
J. J. Lawler	9368	5434	Shelby	found	......	......	......	......	14.7	0.9	......	14 2
Truman Ware[16]	9368	5450	Rensselaer	found	......	......	......	......	14.3	0.7	......	14.1
Chas. E. Day[16]	9368	5451	Surrey	found	......	......	......	......	13 7	1.0	......	14.0
Everett Walker[16]	9368	5453	Pleasant Ridge	found	......	......	......	......	14.1	0 6	......	13.7
Joe F. Scheurich[16]	9368	5541	Rensselaer	found	......	......	......	......	14.8	0.6	......	14.4
Roy Wood[16]	9368	5542	Newton Co. Ranch	found	......	......	......	......	14.7	0.8	......	14 2
Armour's Big Crop 0-20-20 Fertilizer	21a	......	......	guaranteed	......	......	......	......	20.0	0.5	......	20.0
Scircleville Grain Co.	21a	5284	Scircleville	found	......	......	......	......	20.4	2.1	......	19.5
Levi Frey[16]	21a	5455	Mount Ayr	found	......	......	......	......	20.1	0.8	......	20.7
Armour's Big Crop 24% Superphosphate	33a	......	......	guaranteed	......	......	......	......	24.0	0.5	......	......
Peru Grain & Coal Co.	33a	5726	Peru	found	......	......	......	......	25.1	1.4	......	......
Armour's 2-8-2 Fertilizer	318a	......	......	guaranteed	......	......	......	2.0	8.0	......	......	2.0
Paoli Hardware Co.	318a	4937	Paoli	found	2.03	......	......	2.2	8.6	0.5	......	2 3
Mike Ripperger	318a	5195	Brookville	found	1.86	......	......	2.0	9.6	0.8	......	2.4
Armour's Big Crop 2-12-2 Fertilizer	319a	......	......	guaranteed	......	......	......	2.0	12.0	......	......	2.0
Archie B. Spurgin	319a	4652	Columbus	found	1.79	......	......	2.0	12 2	0.3	......	2.7
George Bollinger	319a	4715	Henryville	found	1.88	......	......	2.1	12.8	......	......	2.2
Bobs' Hardware Co.	319a	4952	Elberfeld	found	1.96	......	......	2.1	12 0	0 9	......	2.0
Clay Syler	319a	5040	North Manchester	found	2.07	......	......	2.2	12.7	0.9	......	2.6

J. A. Bertch & Son	319a	5189	Liberty	found	1.87			2.1	12.3	1.3		1.4
R. C. Fretz Feed Store	319a	5601	Waterloo	found	1.89			2.1	12.8	0.8		2.2
Etna Lumber & Elevator Co.	319a	5673	Atwood	found	1.99			2.2	14.0	0.3		2.4
Peru Grain & Coal Co.	319a	5724	Peru	found	2.16			2.3	12.0	1.0		2.3
W. H. Hardy & Son	319a	5927	Anderson	found	1.86			2.0	12.4	0.9		2.7
George P. Wagoner	319a	5946	Jasper	found	1.85			2.0	12.2	0.9		2.4
Salem Co-operative Ass'n	319a	6035	Salem	found	1.82			2.1	12.0	1.2		2.0
Armour's Big Crop 2-12-6 Fertilizer	320a			guaranteed				2.0	12.0			6.0
Archie B. Spurgin	320a	4650	Columbus	found	1.79			2.0	12.0	0.4		6.1
Farmers Feed & Coal Co.	320a	4670	Bloomington	found	1.93			2.1	12.1	0.9		6.0
George Bollinger	320a	4714	Henryville	found	1.93			2.1	12.7	0.6		6.0
W. C. Smock & Co.[17]	320a	4767	Burrows	found	2.26			2.4	13.1	1.0		6.6
Logansport Elevator Co., South Side	320a	4778	Logansport	found	1.98			2.2	12.0	0.8		6.7
Logansport Elevator Co., North Side	320a	4788	Logansport	found	2.10			2.3	13.6			6.7
Hosea Stewart	320a	4812	Farmersburg	found	1.85			2.0	11.8	0.8		6.3
E. Ryboldt	320a	4844	Fairmount	found	2.19			2.4	11.9	0.4		6.1
Bob's Hardware Co.	320a	4953	Elberfeld	found	1.96			2.1	12.3	0.5		6.3
R. C. Fretz Feed Store	320a	5024	Waterloo	found	2.18			2.3	12.0	1.5		6.1
Clay Syler	320a	5026	North Manchester	found	2.16			2.3	12.2	1.5		6.0
Maxwell-Marshall Hardware[17]	320a	5136	Martinsville	found	2.09			2.2	12.9	0.4		6.3
J. A. Bertch & Son	320a	5188	Liberty	found	2.03			2.2	12.7	0.5		6.0
Hobbs Grain Co.[17]	320a	5308	Hobbs	found	2.24			2.3	12.0	1.5		6.2
Farmers Mill & Elevator Co.	320a	5448	Veedersburg	found	2.03			2.2	12.3	0.7		6.8
J. W. Reed	320a	5501	Mulberry	found	1.96			2.1	12.4	1.4		6.0
Peabody Co-operative Co.	320a	5576	Peabody	found	1.93			2.0	13.1	0.7		6.3
Bashore Feed Store	320a	5665	Warsaw	found	2.07			2.2	12.3	0.5		6.2
W. C. Smock & Co.	320a	5722	Burrows	found	1.96			2.1	13.2	0.9		6.5
Peru Coal & Grain Co.	320a	5742	Peru	found	2.10			2.3	12.8	0.6		6.7
Hobbs Grain Co.	320a	5784	Hobbs	found	1.96			2.1	12.0	0.6		6.0
Farmers Co-operative Elevator	320a	5825	Ladoga	found	1.98			2.1	12.6	0.3		6.0
Maxwell-Marshall Hardware	320a	5859	Martinsville	found	1.89			2.0	12.8	0.4		6.5
W. H. Hardy & Son	320a	5925	Anderson	found	1.89			2.0	12.3	1.0		6.3
Elmer Kemick	320a	5964	Scottsburg	found	1.89			2.0	12.5	0.3		6.0
Armour's Big Crop Tomato Grower 2-12-6	321a			guaranteed				2.0	12.0			6.0
Vincennes Packing Corp.	321a	4961	Crothersville	found	1.93			2.0	12.4	0.1		6.4
Vincennes Packing Corp.	321a	4969	Seymour	found	1.96			2.1	12.8	0.3		6.3
Bolles Hardware Co.	321a	4971	Ewing	found	2.04			2.1	11.8	1.0		6.0
Worthington Grain Co.	321a	5291	Worthington	found	2.13			2.2	11.9	0.4		6.0
Armour's Big Crop Burley Tobacco Grower 3-8-6	322a			guaranteed				3.0	8.0			6.0
Archie B. Spurgin	322a	4654	Columbus	found	2.37			3.1	8.8	0.2		6.0
W. Trow & Co.	322a	5412	Madison	found	2.40			3.1	9.2	0.8		6.1
Armour's Big Crop Plant Bed Special	323a			guaranteed				4.0	8.0			3.0
Vincennes Packing Corp.	323a	4680	Washington	found	3.93			4.1	8.4	0.2		3.2
Geo. B. Gibson Sons Co.	323a	4734	Rising Sun	found	2.81			4.0	8.7	0.8		3.0
Armour's Big Crop 2-16-8 Fertilizer	324a			guaranteed				2.0	16.0			8.0
Vincennes Packing Corp.	324a	4679	Washington	found	2.03			2.2	16.8	1.2		8.7
Vincennes Packing Corp.	324a	4690	Vincennes	found	1.93			2.1	16.5	1.4		8.4
C. F. Cripe Elevator	324a	4760	New Waverly	found	2.10			2.3	17.0	1.0		8.5
Hosea Stewart	324a	4814	Farmersburg	found	2.01			2.2	17.6	1.0		8.8

Where 60.0 per cent or more of the total nitrogen guaranteed was found to be water soluble, the active and inactive insoluble organic was not determined.

Percentages appearing in bold type in the "Inactive water insoluble organic" column denote inferior nitrogen.

[15] Purchased from J. J. Lawler.

[16] Purchased from J. J. Lawler.

[17] Sample received in the spring.

TABLE XI.—Report of Inspection of Fertilizer Collected in 1930—Continued

Labels and names of persons from whom samples were secured	Official No	Inspection No. H. H.	Samples taken at		Nitrogen (N)				Phosphoric acid (P_2O_5)			
					Water soluble as nitrates, ammonia salts and organic, per cent	Active water insoluble organic, per cent	Inactive water insoluble organic, per cent	Total per cent	Soluble and reverted (available), per cent	Insoluble, per cent	Total per cent	Potash (K_2O), soluble in water, per cent
E. Ryboldt	324a	4850	Fairmount	found	2 10	....	....	2 3	17.6	0.6	....	8.0
Bob's Hardware Co.	324a	4950	Elberfeld	found	2.11	....	....	2 2	17.9	0.3	....	8.6
Vincennes Packing Corp	324a	4966	Seymour	found	2 25	....	....	2.3	16.2	0 7	....	8.3
Vincennes Packing Corp	324a	4967	Crothersville	found	2.13	....	....	2.2	16 4	1.0	....	8.2
Worthington Grain Co.	324a	5290	Worthington	found	2.24	....	....	2.3	16 0	0 6	....	8.2
E. D. Wyatt	324a	5311	Alexandria	found	2.13	....	....	2.2	16 2	0.8	....	8.2
Hobbs Grain Co.	324a	5312	Hobbs	found	2.17	....	....	2.2	17.3	0.7	....	8.0
Floyd E. Gladish[18]	324a	5463	Petersburg	found	1 97	....	....	2.0	17.2	....	....	8.7
Elmer Kemick	324a	5972	Scottsburg	found	1 89	....	....	2.2	16.6	0.6	....	8.4
N. Reising & Sons	324a	5994	Poseyville	found	2 08	....	....	2.2	16.6	0.6	....	8.0
Floyd E. Gladish	324a	6004	Petersburg	found	2.04	....	....	2.2	16.1	1.1	....	8.7
Armour's Big Crop 4-16-4 Fertilizer	325a	....	....	guaranteed	....	....	....	4.0	16 0	....	....	4 0
C. F. Cripe Elevator	325a	4782	New Waverly	found	3.98	....	....	4.2	17.7	0.3	....	4 3
Clay Syler	325a	5042	North Manchester	found	4 14	....	....	4 3	16 4	1 0	....	4 3
C. F. Fleck	325a	5087	Mentone	found	4 03	....	....	4.2	16.1	0.8	....	4.3
Mike Ripperger	325a	5200	Brookville	found	4 06	....	....	4.2	17.2	0.8	....	4.4
W. H. Hardy & Son	325a	5237	Anderson	found	3.86	....	....	4.0	16.4	0.4	....	4.3
John Gienger & Co.	325a	5631	Jeffersonville	found	3 89	....	....	4.1	16.2	0.9	....	4.3
Etna Lumber & Elevator	325a	5667	Atwood	found	3 89	....	....	4.1	17.6	0.7	....	4.2
Chas. Daniels[19]	325a	5922	Anderson	found	3 92	....	....	4.1	16.1	0.7	....	4.5
N. Reising & Sons	325a	5999	Poseyville	found	3 98	....	....	4.0	16.2	1.2	....	4.5
Armour's Big Crop 3-18-3 Fertilizer	326a	....	....	guaranteed	....	....	....	3.0	18.0	....	....	3.0
Maxwell-Marshall Hardware	326a	5141	Martinsville	found	3 23	....	....	3.4	19.5	0.6	....	3.6
Armour's Big Crop High Grade Burley Tobacco Grower 4-12-8	327a	....	....	guaranteed	....	....	....	4.0	12.0	....	....	8.0
W. Trow & Co.	327a	5408	Madison	found	3.23	....	....	4.0	12.1	1.1	....	8.1
Armour's Big Crop 4-12-8 Fertilizer	328a	....	....	guaranteed	....	....	....	4.0	12.0	....	....	8.0
Vincennes Packing Corp	328a	4972	Seymour	found	4.00	....	....	4.2	12.0	0.9	....	8.5
W. H. Hardy & Son	328a	5240	Anderson	found	4.23	....	....	4.3	12.4	....	....	8.5
Armour's Big Crop 3-18-9 Fertilizer	361a	....	....	guaranteed	....	....	....	3.0	18 0	....	....	9.0
W. C. Smock & Co.	361a	4766	Burrows	found	3.15	....	....	3.3	18 2	2.3	....	9.2
Logansport Elevator Co.	361a	4777	Logansport	found	2 95	....	....	3.1	18.7	0.8	....	10.0
J. W. Reed	361a	4789	Mulberry	found	2 90	....	....	3 1	20.1	0.1	....	9.2
Bluffton Milling Co.	361a	4835	Bluffton	found	2.90	....	....	3 1	18.6	0 8	....	9.4
Clay Syler	361a	5041	North Manchester	found	3.06	....	....	3 2	18 7	1 1	....	9 2
C. F. Fleck[21]	361a	5089	Mentone	found	3 06	....	....	3 2	18 2	0 5	....	9 4
Milford Grain & Milling Co.	361a	5103	Milford	found	3 08	....	....	3 2	18 6	1.4	....	9.6

H. B. Fox[20]	361a	5337	Remington	found	2.99			3.1	17.8	1.2		9.3
Farmers Mill & Elevator Co.	361a	5447	Veedersburg	found	3.05			3.2	18.2	0 4		9.8
J. W. Reed	361a	5502	Mulberry	found	3.19			3.4	18.0	1.3		9.6
Bashore Feed Store	361a	5658	Warsaw	found	3.10			3.3	18.7	0.5		9.5
Etna Green Lumber & Elevator	361a	5662	Etna Green	found	2.96			3.2	19.4	0.3		9.5
C. F. Fleck	361a	5693	Mentone	found	3.04			3.2	18 7	0.6		9.1
Squire E. Lee	361a	5771	Lebanon	found	2.97			3.2	18 3	0.9		9.0
Armour's Big Crop 3-15-12 Fertilizer	362a			guaranteed				3.0	15.0			12.0
J. W. Reed	362a	4785	Mulberry	found	3.06			3.2	16.3	0.4		12.4
Logansport Elevator, North Side	362a	4790	Logansport	found	3.02			3.2	16.2			13.2
Armour's Big Crop 0-21-9 Fertilizer	363a			guaranteed					21.0			9.0
W. C. Smock & Co.[21]	363a	4780	Burrows	found					22.4	1.1		9.1
J. W. Reed	363a	4784	Mulberry	found					21.1	1.2		10.2
W. C. Smock & Co.	363a	5723	Burrows	found					21.4	1.0		9.8
Armour's Big Crop 0-8-32 Fertilizer	364a			guaranteed					8.0			32.0
R. C. Fretz Feed Store	364a	5029	Waterloo	found					8.2	0.8		32.0
Armour's Big Crop 5-15-5	542a			guaranteed				5.0	15 0			5.0
Snider Packing Corp	542a	4878	Marion	found	4.86			5.1	15 4	1.0		5.5
N. P. K. 9-27-9 Fertilizer	582a			guaranteed				9.0	27.0			9.0
Bluffton Milling Co.	582a	4836	Bluffton	found	9.06			9.4	28.7	0.9		8.7
Lewis J. Withrow	582a	5318	Odell	found	8.73			8.8	26.8	0.6		9.4
J. W. Mayotte[22]	582a	5343	Remington	found	8.83			9.0	26.5	1.0		9.4
N. P. K. 9-18-18 Fertilizer	583a			guaranteed				9.0	18.0			18.0
W. H. Hardy & Son	583a	5241	Anderson	found	9.13			9.2	19 0	1.0		18.3
Armour's Big Crop 2-8-16	621a			guaranteed				2.0	8.0			16.0
Vincennes Packing Corp	621a	4689	Vincennes	found	1.55			1.8	9 1			16.5
Armour's Big Crop Bone Meal 2-24	681a			guaranteed				2 0			24 0	
Etna Green Lumber & Elevator Co.	681a	5660	Etna Green	found	0.32	0.90	0.68	1.9			30.8	
Elmer Kemick	681a	5970	Scottsburg	found	0 39	1.95	0.76	3.1			27.0	
Tuscarora 2-12-6 Fertilizer	799a			guaranteed				2.0	12.0			6 0
Logansport Elevator Co.	799a	4768	Logansport	found	2.14			2 3	12.0	1.3		6.7
Logansport Elevator Co., North Side	799a	4781	Logansport	found	2.14			2.3	13.2	0.4		6.3
Hobbs Grain Co.[23]	799a	5305	Hobbs	found	2.13			2.2	11.8	0 9		6.0
E. D. Wyatt	799a	5316	Alexandria	found	2.06			2.2	13.5	0.7		6.0
W. C. Smock & Co.	799a	5717	Burrows	found	1.92			2.0	13.3	0.7		6.3
Squire E. Lee	799a	5770	Lebanon	found	2.06			2.2	12.5	0 8		6.0
Hobbs Grain Co.	799a	5789	Hobbs	found	2.07			2.2	12.5	0.5		6.0
Wyatt Coal & Ice Co.	799a	5930	Alexandria	found	1.99			2.2	12.2	0 5		6 0
Tuscarora 2-12-2 Fertilizer	800a			guaranteed				2.0	12 0			2.0
C. F. Cripe Elevator	800a	4764	New Waverly	found	1.99			2.2	12.4	0 8		2.3
Kraus & Apfelbaum[24]	800a	5123	Argos	found	2.04			2.2	12 4	0.6		2.3
Squire E. Lee	800a	5774	Lebanon	found	2.03			2.2	12 0	0 8		2.0
Tuscarora 0-8-24 Fertilizer	803a			guaranteed					8.0			24.0
C. F. Cripe Elevator[24]	803a	4770	New Waverly	found					9.0	0.6		24.8
Tuscarora 20% Superphosphate	804a			guaranteed					20.0			
W. C. Smock & Co.	804a	5720	Burrows	found					20.7	0 9		
Squire E. Lee	804a	5773	Lebanon	found					20.9	0.9		

Where 60.0 per cent or more of the total nitrogen guaranteed was found to be water soluble, the active and inactive insoluble organic was not determined.

Percentages appearing in bold type in the "Inactive water insoluble organic" column denote inferior nitrogen.

[18] Sample received in the spring.

[19] Purchased from W. H. Hardy & Son.

[20] Purchased from Frank Melrose.

[21] Sample received in the spring.

[22] Purchased from Frank Melrose.

[23] Sample received in the spring.

[24] Not tagged. Labels furnished.

TABLE XI.—Report of Inspection of Fertilizer Collected in 1930—Continued

Labels and names of persons from whom samples were secured	Official No.	Inspection No. H. H.	Samples taken at		Nitrogen (N)				Phosphoric acid (P_2O_5)			Potash (K_2O), soluble in water, per cent
					Water soluble as nitrates, ammonia salts and organic, per cent	Active water insoluble organic, per cent	Inactive water insoluble organic, per cent	Total per cent	Soluble and reverted (available), per cent	Insoluble, per cent	Total per cent	
The Barrett Company,												
New York, N. Y.												
Arcadian Sulphate of Ammonia	7285			guaranteed				20.7				
Farmers Co-operative Co.	7285	4799	Cicero	found				21.1				
Arcadian Sulphate of Ammonia	721a			guaranteed				20.5				
Ort & Co.	721a	4646	Churubusco	found				20.8				
The Buhner Fertilizer Company,												
Seymour, Ind.												
16% Superphosphate	6696			guaranteed					16.0			
The Buhner Fertilizer Co.	6696	4683	Seymour	found					16.0	0.8		
J. H. Becker & Son	6696	4693	Corydon	found					16.3	0.4		
Ground Bone	6742			guaranteed				2.4			24.0	
Geo. Bersch	6742	6024	Madison	found	0.87	1.65	0.58	3.1			25.2	
Buhner's 20% Superphosphate	9195			guaranteed					20.0			
Crabbs Reynolds Taylor Co.	9195	5758	Lafayette	found					21.6	0.2		
Fruit Growers Supply Co.	9195	5793	Franklin	found					20 3	0.9		
Crabbs Reynolds Taylor Co.	9195	5830	Crawfordsville	found					20.4	0.4		
Buhner's Sulphate of Ammonia	9808			guaranteed				20.5				
Fruit Growers Supply Co.	9808	5370	Franklin	found				21.3				
Buhner's 0-14-6	9928			guaranteed					14.0			6.0
Wm. B. Bunner[25]	9928	4900	Grandview	found					13.0	1.3		6.1
Crabbs Reynolds Taylor Co.	9928	5759	Lafayette	found					14.8			6.0
Buhner's 0-20-20	9930			guaranteed					20.0			20.0
Crabbs Reynolds Taylor Co.[26]	9930	5427	Lafayette	found					18.8	1.5		15.6
Buhner's 0-10-10	9931			guaranteed					10.0			10.0
The Buhner Fertilizer Co.	9931	4681	Seymour	found					10.5	3.0		9.7
J. H. Becker & Sons[27]	9931	4709	Corydon	found					9.8	2.5		7.5
W. L. Denny	9931	5372	Bellview	found					10.2	0.8		10.0
Anderson Mercantile Co.	9931	5923	Anderson	found					10.1	0.7		10.0
Sheep Manure	71a			guaranteed				1.4			1.2	3.0
Everitt Seed Store[28]	71a	5227	Indianapolis	found	0.53	0.32	1.25	2.1			1.6	1.3
Buhner's 2-12-6	287a			guaranteed				2.0	12.0			6.0
D. R. Dunlevy & Son[29]	287a	4711	Henryville	found	1.71			2.2	12.6	1.4		4.7
Victoria Mill & Elevator Co.	287a	4721	Jasper	found	2.07			2.6	13 6			6.0
Wm. Bunner	287a	4907	Grandview	found	1.60			2.1	11 8	1.9		7.0
Lemon Milling Co.[32]	287a	4956	Bedford	found	1.75			2.2	12.3	0.1		6.2

J. R. Serber[30]	287a	5276	Clay City	found	1.68			2.0	10.6	2.0		6.8
Swain & Breeding	287a	5366	Edinburg	found	1.92			2.2	12.2	2.7		5.7
Fruit Growers Supply Co.	287a	5369	Franklin	found	1.61			2.0	11.7	2.4		6.0
Crabbs Reynolds Taylor Co[31]	287a	5426	Lafayette	found	1.65			2.0	12.3	2.1		5.0
Seafield Grain Co.	287a	5653	Seafield	found	2.14			2.5	12.5	1.0		6.5
Crabbs Reynolds Taylor Co.	287a	5757	Lafayette	found	1.83			2.2	13.0	0.2		7.1
Lemon Milling Co.	287a	5952	Bedford	found	1.79			2.2	12.2	1.3		6.5
Geo. Bersch	287a	5981	Madison	found	1.61			2.2	12.3	1.1		6.5
Aurora Flour & Feed Co.	287a	6047	Dillsboro	found	1.91			2.4	12.7	0.6		6.5
Buhner's 2-14-4	288a			guaranteed				2.0	14.0			4.0
The Buhner Fertilizer Co.	288a	4685	Seymour	found	1.77			2.3	13.0	0.7		4.7
Farmers Co-operative Grain Co.	288a	4869	Centerville	found	2.18			2.4	13.2	0.5		4.3
Geo. Bersch	288a	5419	Madison	found	1.40			2.1	13.5	0.5		4.8
Fruit Growers Supply Co.	288a	5800	Franklin	found	1.79			2.1	14.7	0.9		4.3
Buhner's 2-8-4	289a			guaranteed				2.0	8.0			4.0
J. P. Allen	289a	4822	Farmersburg	found	1.16			1.7	7.8	2.6		5.3
O. L. Cauble Hardware	289a	4980	Pekin	found	1.35			1.8	8.4	2.4		4.7
Cauble Grain Co.	289a	4995	Salem	found	1.38			1.8	8.7	1.9		4.7
Anderson Mercantile Exchange	289a	5183	Anderson	found	1.37			1.9	8.6	0.6		4.6
Swain & Breeding	289a	5360	Edinburg	found	1.45			1.8	8.6	0.6		3.8
Geo. Bersch	289a	5418	Madison	found	1.47			2.0	7.7	1.8		3.8
Richey Implement Store	289a	5422	Osgood	found	1.58			2.0	8.0	1.8		4.1
Reutepohler Hardware Co.	289a	5466	Huntingburg	found	1.68			2.1	10.5	1.7		4.2
L. N. Jobe & Son	289a	6031	English	found	1.64			2.2	8.3	2.5		4.3
Buhner's 4-10-6	291a			guaranteed				4.0	10.0			6.0
D. R. Dunlevy & Son	291a	4688	Henryville	found	2.74			3.8	10.1	1.7		6.0
J. H. Becker & Son[33]	291a	4708	Corydon	found	2.50			3.2	10.9	2.2		5.4
N. Reising & Sons	291a	4898	Poseyville	found	3.13			4.1	9.9	1.1		5.7
Cauble Grain Co.	291a	4992	Salem	found	3.64			4.2	10.8	0.7		6.8
Geo. Bersch	291a	5420	Madison	found	3.75			4.1	9.5	1.3		6.5
Buhner's 4-24-12	292a			guaranteed				4.0	24.0			12.0
J. P. Allen[34]	292a	4839	Farmersburg	found	3.62			4.0	20.2	0.6		11.3
Fruit Growers Supply Co.	292a	5361	Edinburg	found	3.69			3.9	24.3	2.0		11.2
Crabbs Reynolds Taylor Co[35]	292a	5428	Lafayette	found	2.52			2.8	27.1	1.4		12.7
Buhner's Special Crop Grower	293a			guaranteed				2.0	8.0	4.0		6.0
J. P. Allen	293a	4838	Farmersburg	found	1.17			1.8	11.0	0.6		6.8
Farmers Co-operative Grain Co.	293a	4872	Centerville	found	1.65			2.1	7.8	3.2		7.4
Anderson Mercantile Exchange	293a	5186	Anderson	found	1.14			1.8	9.3	1.6		6.4
Ernest McGee, Cartey Barnes & J. Calvin[36]	293a	5456	Greensburg	found	1.29			1.8	9.8	2.6		6.5
Reutepohler Hardware Co.	293a	5469	Huntingburg	found	1.26			2.0	9.8	2.3		6.1
Ray Ginrich[37]	293a	5760	Lafayette	found	1.50			2.0	9.6	2.6		6.1
Fruit Growers Supply Co.	293a	5803	Franklin	found	1.44			2.0	9.6	2.4		6.0
Crabbs Reynolds Taylor Co.	293a	5820	Crawfordsville	found	1.24			1.8	8.0	4.1		6.2
Crabbs Reynolds Taylor Co.	293a	5822	Crawfordsville	found	1.50			2.2	8.7	3.0		6.7

Where 60.0 per cent or more of the total nitrogen guaranteed was found to be water soluble, the active and inactive insoluble organic was not determined.

Percentages appearing in bold type in the "Inactive water insoluble organic" column denote inferior nitrogen.

[25] Refund $4.40.

[26] Refund $29.20.

[27] Refund $13.70.

[28] Refund $3.40.

[29] Refund $18.20.

[30] Refund $10.80.

[31] Refund $10.00. Sample received in the spring.

[32] Sample received in the spring.

[33] Refund $5.04.

[34] Refund $12.06.

[35] Not tagged. Labels furnished. Refund $7.58.

[36] Purchased from Iva A. Moore.

[37] Purchased from Crabbs Reynolds Taylor Co.

TABLE XI.—Report of Inspection of Fertilizer Collected in 1930—Continued

Labels and names of persons from whom samples were secured	Official No.	Inspection No. H. H.	Samples taken at		Nitrogen (N)				Phosphoric acid (P_2O_5)			Potash (K_2O), soluble in water, per cent
					Water soluble as nitrates, ammonia salts and organic, per cent	Active water insoluble organic, per cent	Inactive water insoluble organic, per cent	Total per cent	Soluble and reverted (available), per cent	Insoluble, per cent	Total per cent	
Anderson Mercantile Co.	293a	5928	Anderson	found	1.40	.....	.....	2.0	8.7	3.7	.....	6.0
Milt Wilson	293a	5998	Washington	found	1.26	.....	.....	1.9	10.0	3.2	.....	6.0
Geo. Bersch	293a	6016	Madison	found	1.22	.....	.....	1.8	8.7	3.3	.....	6.7
Buhner's 3-8-6	389a	.....		guaranteed	.....	.....	.....	3.0	8.0	.....	.....	6.0
The Buhner Fertilizer Co.	389a	4682	Seymour	found	1.83	.....	.....	2.6	10.7	0.1	.....	6.4
Buhner's Crop Grower	391a	.....		guaranteed	.....	.....	.....	2.0	8.0	4.0	.....	2.0
O. L. Cauble Hardware	391a	4983	Pekin	found	1.86	.....	.....	2.0	8.4	3.3	.....	2.7
Anderson Mercantile Exchange[38]	391a	5182	Anderson	found	1.18	.....	.....	1.8	10.5	0.8	.....	2.6
Crabbs Reynolds Taylor Co.	391a	5895	Crawfordsville	found	1.50	.....	.....	2.2	9.1	3.2	.....	2.7
Anderson Mercantile Exchange	391a	5921	Anderson	found	1.44	.....	.....	2.0	11.0	1.3	.....	2.6
N. Reising & Sons	391a	6006	Poseyville	found	1.24	.....	.....	1.8	9.1	3.9	.....	2.5
Cauble Grain Co.	391a	6040	Salem	found	1.33	.....	.....	2.0	8.1	4.1	.....	2.0
Buhner's 2-12-2	392a	.....		guaranteed	.....	.....	.....	2.0	12.0	.....	.....	2.0
D. R. Dunlevy & Son	392a	4713	Henryville	found	1.61	.....	.....	2.0	12.0	0.5	.....	2.6
Schnellville Flour Mill	392a	4736	Schnellville	found	1.48	.....	.....	2.0	11.5	2.3	.....	2.1
Dr. Freeland[39]	392a	4936	Bedford	found	1.61	.....	.....	2.0	12.0	0.5	.....	2.5
Lemon Milling Co.	392a	4947	Bedford	found	1.71	.....	.....	2.2	12.3	0.9	.....	2.4
Calvin Bros.	392a	5142	Nashville	found	1.53	.....	.....	2.0	11.8	0.5	.....	3.2
Anderson Mercantile Exchange	392a	5184	Anderson	found	1.53	.....	.....	2.0	12.0	0.9	.....	2.6
Reutepohler Hardware Co.	392a	5467	Huntingburg	found	1.85	.....	.....	2.2	12.7	2.2	.....	2.5
Ragsdale & Owen	392a	5957	Bedford	found	2.04	.....	.....	2.5	12.4	0.4	.....	2.7
Buhner's 0-8-24 Fertilizer	653a	.....		guaranteed	.....	.....	.....	.....	8.0	.....	.....	24.0
A. C. Warren[40]	653a	5476	Monon	found	.....	.....	.....	.....	8.1	2.4	.....	21.9
Buhner's 1-10-3	733a	.....		guaranteed	.....	.....	.....	1.0	10.0	.....	.....	3.0
The Buhner Fertilizer Co.	733a	4684	Seymour	found	0.73	.....	.....	1.1	10.0	1.0	.....	2.8
Anderson Mercantile Exchange	733a	5185	Anderson	found	0.86	.....	.....	1.2	10.0	1.8	.....	3.1
Reutepohler Hardware Co.	733a	5468	Huntingburg	found	0.95	.....	.....	1.2	10.0	1.5	.....	3.0
Buhner's 6-8-5	860a	.....		guaranteed	.....	.....	.....	6.0	8.0	.....	.....	5.0
Geo. Bersch[41]	860a	5416	Madison	found	4.12	.....	.....	4.9	9.6	0.4	.....	5.5
Clendenin and Company, Richmond, Indiana.												
Flowers, Garden and Lawn Fertilizer	644a	.....		guaranteed	.....	.....	.....	4.0	7.0	.....	.....	8.0
Clendenin & Co.[42]	644a	4856	Richmond	found	3.15	.....	.....	3.8	6.8	2.2	.....	6.6
Two-Twelve-Two	662a	.....		guaranteed	.....	.....	.....	2.0	12.0	.....	.....	2.0
Clendenin & Co.[43]	662a	4862	Richmond	found	1.62	.....	.....	1.8	10.6	2.5	.....	3.0
Clendenin & Co.[44]	662a	5499	Richmond	found	1.12	.....	.....	1.4	7.0	3.9	.....	1.5

Two-Twelve-Six	663a	......		guaranteed	......	......	......	2.0	12.0	......	......	6.0
Clendenin & Co.[45]	663a	4859	Richmond	found	1.86	......	......	2.2	12.5	0.3	......	3.0
Clendenin Fertilizer Company, Richmond, Indiana.												
Truck and Tobacco Grower	4652	......		guaranteed	......	......	......	1.0	6.0	......	......	8.0
Clendenin Fertilizer Co.	4652	4857	Richmond	found	0.62	......	......	0.9	6.7	1.5	......	7.2
Superphosphate	6609	......		guaranteed	......	......	......	......	16.0	......	......	......
Clendenin & Co.	6609	4863	Richmond	found	......	......	......	......	19.6	......	......	......
Consolidated Chemical Company, Louisville, Kentucky.												
Camel Brand Ten-Ten Fertilizer	8822	......		guaranteed	......	......	......	......	10.0	......	......	10.0
Keiser & Schultz	8822	5151	Crown Point	found	......	......	......	......	10.4	0.6	......	10.5
Camel Brand Twenty-Twenty Fertilizer	9902	......		guaranteed	......	......	......	......	20.0	......	......	20.0
Keiser & Schultz[46]	9902	5155	Crown Point	found	......	......	......	......	18.1	0.4	......	20.5
Camel Brand 40% Superphosphate	47a	......		guaranteed	......	......	......	......	40.0	......	......	......
Burton & Johnson Hardware	47a	4929	Orleans	found	......	......	......	......	40.8	0.9	......	......
Camel Brand One-Eight-Three Fertilizer	169a	......		guaranteed	......	......	......	1.0	8.0	......	......	3.0
Campbell Bros.	169a	5285	Fillmore	found	1.11	......	......	1.5	10.4	0.6	......	3.0
Camel Brand Indiana Special	171a	......		guaranteed	......	......	......	2.0	12.0	......	......	2.0
Burton & Johnson Hardware	171a	4993	Orleans	found	2.17	......	......	2.4	13.6	0.5	......	2.2
Keiser & Schultz	171a	5158	Crown Point	found	2.35	......	......	2.6	13.3	0.1	......	2.2
I. H. Beatty	171a	5272	Clay City	found	2.11	......	......	2.3	11.2	0.9	......	3.4
Campbell Bros.	171a	5297	Fillmore	found	2.05	......	......	2.4	12.3	0.5	......	2.6
Camel Brand A-1 Grain Grower	173a	......		guaranteed	......	......	......	2.0	12.0	......	......	6.0
S. J. Polklein	173a	4910	Boonville	found	1.76	......	......	2.2	13.7	......	......	6.0
Keiser & Schultz	173a	5144	Crown Point	found	1.89	......	......	2.3	13.7	0.4	......	6.5
I. H. Beatty	173a	5271	Clay City	found	2.36	......	......	2.5	12.0	1.1	......	6.3
Campbell Bros.[47]	173a	5287	Greencastle	found	1.89	......	......	2.1	13.1	0.5	......	2.4
Camel Brand Phosphate & Potash	679a	......		guaranteed	......	......	......	......	12.0	......	......	6 0
Keiser & Schultz	679a	5143	Crown Point	found	......	......	......	......	13.3	0.4	......	6.0
Darling and Company, Chicago, Ill.												
Darling's 16% Superphosphate	6372	......		guaranteed	......	......	......	......	16.0	......	......	......
Frank Strock	6372	5560	Hudson	found	......	......	......	......	16 5	0.5	......	......
J. Gelzleichter & Son	6372	5609	Huntington	found	......	......	......	......	16.7	0.3	......	......
Home Grain Co.	6372	5712	LaGrange	found	......	......	......	......	16.2	1.0	......	......
Darling's Muriate of Potash	8024	......		guaranteed	......	......	......	......	......	......	......	50.0
Phillips Bros.	8024	5386	Star City	found	......	......	......	......	......	......	......	50.3
Darling's 20% Superphosphate	9017	......		guaranteed	......	......	......	......	20.0	......	......	......
Carroon & Company	9017	5404	Fowler	found	......	......	......	......	21.0	0.4	......	......
Raber Co-operative Co.	9017	5584	Raber, mail Peabody	found	......	......	......	......	20 0	1.0	......	......

Where 60.0 per cent or more of the total nitrogen guaranteed was found to be water soluble, the active and inactive insoluble organic was not determined.

Percentages appearing in bold type in the "Inactive water insoluble organic" column denote inferior nitrogen.

[38] Sample received in the spring.

[39] Purchased from Ragsdale & Owen.

[40] Not tagged. Labels furnished. Refund $2.10.

[41] Refund $4.18.

[42] Refund $1.95.

[43] Refund $6.72.

[44] Refund $13.09.

[45] Refund $7.50.

[46] Refund $1.78.

[47] Refund $43.20.

TABLE XI.—Report of Inspection of Fertilizer Collected in 1930—Continued

Labels and names of persons from whom samples were secured	Official No.	Inspection No. H. H.	Samples taken at		Nitrogen (N)				Phosphoric acid (P_2O_5)			Potash (K_2O), soluble in water, per cent
					Water soluble as nitrates, ammonia salts and organic, per cent	Active water insoluble organic, per cent	Inactive water insoluble organic, per cent	Total per cent	Soluble and reverted (available), per cent	Insoluble, per cent	Total per cent	
J. Gelzleichter & Son	9017	5616	Huntington	found	.....	.....	.....	.....	20.5	0.6	.....	.....
Geo. Steckley	9017	5705	Kendallville	found	.....	.....	.....	.....	21.6	1.2	.....	.....
Darling's Fourteen-Four	9022	.....		guaranteed	.....	.....	.....	.....	14.0	0.5	.....	4.0
Raber Co-operative Co.	9022	5579	Raber, mail Peabody	found	.....	.....	.....	.....	14.5	0.9	.....	4.0
Darling's Ten-Ten	9462	.....	.....	guaranteed	.....	.....	.....	.....	10.0	0.5	.....	10.0
Carroon Canning Co.	9462	5406	Fowler	found	.....	.....	.....	.....	10.9	1.0	.....	10.0
W. L. Denny[48]	9462	5409	Bellview	found	.....	.....	.....	.....	10.7	1.0	.....	9.8
Darling's Sulphate of Ammonia	9758	.....	.....	guaranteed	.....	.....	.....	20.5	.....	.....	.....	.....
H. O. Greene	9758	5133	Goshen	found	.....	.....	.....	20.9	.....	.....	.....	.....
Darling's Big Harvest	376a	.....	.....	guaranteed	.....	.....	.....	2.0	12.0	0.5	.....	2.0
Heldt & Voelker Co.	376a	4886	Evansville	found	1.84	.....	.....	2.2	12.1	1.4	.....	2.3
Boonville Milling Co.	376a	4890	Boonville	found	1.71	.....	.....	2.1	12.1	1.5	.....	2.1
The Heldt Co.	376a	5987	Evansville	found	2.07	.....	.....	2.3	12.0	1.5	.....	2.5
Darling's Sure Winner	378a	.....	.....	guaranteed	.....	.....	.....	1.0	10.0	0.5	.....	4.0
Frank Strock	378a	5558	Hudson	found	0.98	.....	.....	1.1	10.7	0.6	.....	4.1
J. Gelzleichter & Son	378a	5619	Huntington	found	0.96	.....	.....	1.1	10.0	0.9	.....	4.3
Darling's Crop King	379a	.....	.....	guaranteed	.....	.....	.....	2.0	12.0	0.5	.....	6.0
The Heldt Co.[49]	379a	4891	Evansville	found	1.76	.....	.....	2.1	11.8	1.7	.....	6.1
C. B. Way	379a	5167	LaPorte	found	2.07	.....	.....	2.2	13.6	.....	.....	6.4
Adam Leohr	379a	5282	Coal City	found	2.02	.....	.....	2.1	12.0	1.7	.....	6.5
W. L. Denny[49]	379a	5375	Bellview	found	2.23	.....	.....	2.3	12.0	1.8	.....	5.8
Carroon & Co.	379a	5403	Fowler	found	2.20	.....	.....	2.3	13.0	1.1	.....	6.5
Weinkauf Elevator	379a	5549	Hamlet	found	1.89	.....	.....	2.1	12.0	0.9	.....	6.6
Raber Co-operative Co.	379a	5580	Raber, mail Peabody	found	2.07	.....	.....	2.2	14.8	1.1	.....	6.3
Farmers Mill & Elevator Co.	379a	5583	Columbia City	found	1.93	.....	.....	2.1	12.0	1.0	.....	6.2
J. Gelzleichter & Son	379a	5606	Huntington	found	1.83	.....	.....	2.0	12.6	0.7	.....	6.2
Geo. Steckley	379a	5706	Kendallville	found	2.09	.....	.....	2.3	12.3	1.6	.....	6.7
Hosea Stewart	379a	5834	Farmersburg	found	2.19	.....	.....	2.4	12.1	1.8	.....	6.3
The Heldt Co.	379a	6038	Evansville	found	1.86	.....	.....	2.0	12.4	1.3	.....	6.9
Pieper & Smith	379a	6050	Dillsboro	found	1.92	.....	.....	2.2	13.9	0.6	.....	6.5
Darling's Bumper Crop	380a	.....	.....	guaranteed	.....	.....	.....	2.0	16.0	0.5	.....	2.0
The Heldt Co.[49]	380a	4887	Evansville	found	1.90	.....	.....	2.2	15.3	1.0	.....	4.6
Walter A. Shaffer	380a	5689	Bourbon	found	1.92	.....	.....	2.1	16.5	1.5	.....	2.6
Home Grain Co.	380a	5704	LaGrange	found	2.06	.....	.....	2.2	16.7	1.3	.....	2.8

								2.0	16.0	0.5	.....	6.0
				found	2.08	.....	.....	2.5	16.0	0.9	.....	6.2
	381a	5710	Kendallville	found	2.16	.....	.....	2.4	17.6	1.3	.....	7.8
Darling's Tomato Grower 2-12-6	382a	.....	.....	guaranteed	.....	.....	.....	2.0	12.0	0.5	.....	6.0
Boonville Milling Co.	382a	4902	Boonville	found	1.89	.....	.....	2.2	12.6	1.7	.....	6.2
Darling's Four-Twenty-four-Four	691a	.....	.....	guaranteed	.....	.....	.....	4.0	24.0	0.5	.....	4.0
J. Gelzleichter & Son[50]	691a	5618	Huntington	found	3.55	.....	.....	3.8	21.7	0.5	.....	4.2
Darling's Four-Twenty-four-Twelve	852a	.....	.....	guaranteed	.....	.....	.....	4.0	24.0	0.5	.....	12.0
Emmerson Waller[51]	852a	5398	Fowler	found	3.55	.....	.....	3.9	22.0	0.8	.....	12.8
Diamond Fertilizer Company, Sandusky, Ohio.												
Diamond Potash Mixture	8465			guaranteed	.....	.....	.....	.....	10.0	1.0	.....	10.0
Berne Equity Exchange	8465	4884	Berne	found	.....	.....	.....	.....	10.0	.....	.....	10.3
Diamond 20% Superphosphate	8515	.....	.....	guaranteed	.....	.....	.....	.....	20.0	1.0	.....	.....
Berne Equity Exchange	8515	4881	Berne	found	.....	.....	.....	.....	21.2	0.3	.....	.....
Diamond Phosphate & Potash	9238	.....	.....	guaranteed	.....	.....	.....	.....	14.0	0.5	.....	4.0
Burk Elevator Co.	9238	4927	Decatur	found	.....	.....	.....	.....	14.1	0.7	.....	4.4
Diamond Two-Twelve-Six	495a	.....	.....	guaranteed	.....	.....	.....	2.0	12.0	.....	.....	6.0
Berne Equity Exchange	495a	4999	Berne	found	1.86	.....	.....	2.0	12.3	0.5	.....	6.0
Burk Elevator Co.	495a	5000	Decatur	found	1.98	.....	.....	2.2	12.2	0.3	.....	6.0
Diamond Two-Twelve-Two	496a	.....	.....	guaranteed	.....	.....	.....	2.0	12.0	.....	.....	2.0
Burk Elevator Co.	496a	5004	Decatur	found	1.92	.....	.....	2.2	12.0	0.8	.....	2.2
Diamond Two-Eight-Ten	498a	.....	.....	guaranteed	.....	.....	.....	2.0	8.0	.....	.....	10.0
Berne Equity Exchange	498a	4926	Berne	found	1.92	.....	.....	2.1	8.0	0.4	.....	10.5
Dockwiler & Kingsbury Fertilizer Company, Indianapolis, Ind.												
D. & K. 0-10-10	5362			guaranteed	.....	.....	.....	.....	10.0	.....	.....	10.0
Goodrich Bros.[52]	5362	5208	Gadsden	found	.....	.....	.....	.....	9.2	2.0	.....	9.1
16% Superphosphate	6259	.....	.....	guaranteed	.....	.....	.....	.....	16.0	.....	.....	.....
Mexico Elevator Co.	6259	5735	Mexico	found	.....	.....	.....	.....	21.0	0.7	.....	.....
Ellis Feed Store	6259	5823	Greencastle	found	.....	.....	.....	.....	16.7	0.9	.....	.....
D. & K. 20% Superphosphate	7466	.....	.....	guaranteed	.....	.....	.....	.....	20.0	.....	.....	.....
Mexico Elevator Co.	7466	5730	Mexico	found	.....	.....	.....	.....	20.9	0.3	.....	.....
D. & K. 1-10-10	9340	.....	.....	guaranteed	.....	.....	.....	0.8	10.0	.....	.....	10.0
Gibson Gray[53]	9340	5203	Fairland	found	0.80	.....	.....	0.9	9.7	1.6	.....	10.0
D. & K. 2-20-10	602a	.....	.....	guaranteed	.....	.....	.....	2.0	20.0	.....	.....	10.0
A. W. Apple[53]	602a	5213	Oaklandon	found	1.97	.....	.....	2.1	19.4	2.0	.....	10.0
D. & K. 4-24-4	604a	.....	.....	guaranteed	.....	.....	.....	4.0	24.0	.....	.....	4.0
Dockwiler & Kingsbury Co.	604a	5209	Indianapolis	found	3.88	.....	.....	4.1	23.7	2.0	.....	4.0
C. F. Cripe	604a	5531	New Waverly	found	3.59	.....	.....	3.8	24.0	0.7	.....	4.5
Mexico Elevator Co.	604a	5734	Mexico	found	3.68	.....	.....	4.1	24.0	1.2	.....	4.4
D. & K. 4-24-12	605a	.....	.....	guaranteed	.....	.....	.....	4.0	24.0	.....	.....	12.0
Elmer Rode & A. R. Anderson[54]	605a	5211	Indianapolis	found	4.08	.....	.....	4.3	21.6	1.9	.....	13.0
Mexico Elevator Co.	605a	5736	Mexico	found	3.74	.....	.....	4.0	24.6	0.4	.....	13.4

Where 60.0 per cent or more of the total nitrogen guaranteed was found to be water soluble, the active and inactive insoluble organic was not determined.
Percentages appearing in bold type in the "Inactive water insoluble organic" column denote inferior nitrogen.

[48] Sample to manufacturer.

[49] Sample to manufacturer.

[50] Refund $6.64.

[51] Not tagged. Labels furnished. Sample to manufacturer. Refund $28.80. Purchased from Carroon Canning Co.

[52] Refund $2.55. Sampled on truck at Indianapolis.

[53] Sampled on truck at Indianapolis.

[54] Refund $5.76.

TABLE XI.—Report of Inspection of Fertilizer Collected in 1930—Continued

Labels and names of persons from whom samples were secured	Official No.	Inspection No. H. H.	Samples taken at		Nitrogen (N) Water soluble as nitrates, ammonia salts and organic, per cent	Nitrogen (N) Active water insoluble organic, per cent	Nitrogen (N) Inactive water insoluble organic, per cent	Nitrogen (N) Total per cent	Phosphoric acid (P₂O₅) Soluble and reverted (available), per cent	Phosphoric acid (P₂O₅) Insoluble, per cent	Phosphoric acid (P₂O₅) Total per cent	Potash (K₂O), soluble in water, per cent
City Trust Co., Farm Dept.	605a	5751	Lafayette	found	3.89	.....	.....	4.1	24.5	0.3	.....	12.3
Walter Coble	605a	5765	Delphi	found	3.83	.....	.....	4.0	24.9	0.4	.....	12.6
D. & K. 4-16-4	606a	.....	.....	guaranteed	.....	.....	.....	4.0	16.0	.....	.....	4.0
J. B. Etter	606a	5207	Indianapolis	found	3.61	.....	.....	3.8	15.6	2.0	.....	4.6
W. H. Hardy & Son	606a	5242	Anderson	found	4.39	.....	.....	4.5	16.1	0.9	.....	4.2
C. F. Cripe	606a	5626	New Waverly	found	3.62	.....	.....	3.8	16.0	1.3	.....	4.1
D. & K. 2-16-8	607a	.....	.....	guaranteed	.....	.....	.....	2.0	16.0	.....	.....	8.0
W. H. Hardy & Son[55]	607a	5217	Anderson	found	1.96	.....	.....	2.1	15.1	1.9	.....	8.8
Goodrich Bros. Co.	607a	5254	Winchester	found	2.43	.....	.....	2.6	16.2	1.1	.....	8.8
C. F. Cripe	607a	5517	New Waverly	found	2.22	.....	.....	2.4	16.1	.....	.....	8.4
D. & K. 2-12-6	608a	.....	.....	guaranteed	.....	.....	.....	2.0	12.0	.....	.....	6.0
W. S. Wisehart	608a	4864	Millville	found	1.66	.....	.....	2.0	15.8	0.4	.....	6.4
Alonzo Michall & Jacob Scott[56]	608a	5204	Indianapolis	found	1.11	.....	.....	1.3	12.7	1.8	.....	5.6
Harley Hall[57]	608a	5214	Lewisville	found	1.76	.....	.....	1.9	10.7	2.6	.....	6.2
Ellis & Co.[58]	608a	5215	Greencastle	found	1.73	.....	.....	1.8	12.0	2.3	.....	5.5
W. H. Hardy & Son	608a	5243	Anderson	found	1.89	.....	.....	2.0	12.8	0.9	.....	6.6
Goodrich Bros. Co.	608a	5249	Winchester	found	1.87	.....	.....	2.0	13.7	0.7	.....	6.5
Marshall Cement & Grain Co.	608a	5295	Greencastle	found	1.86	.....	.....	2.0	12.9	1.1	.....	6.3
Kiefer Feed & Supply Co.	608a	5307	Elwood	found	1.93	.....	.....	2.1	12.2	2.5	.....	6.1
Farmers Co-operative Elevator	608a	5655	Wolcott	found	2.03	.....	.....	2.1	12.0	1.0	.....	6.0
Virgil Niles[59]	608a	5908	Greenfield	found	1.82	.....	.....	2.0	11.1	1.0	.....	6.0
Mrs. A. O. Moore[60]	608a	5910	Carthage	found	1.86	.....	.....	2.0	11.5	1.3	.....	6.1
D. & K. 2-12-2	609a	.....	.....	guaranteed	.....	.....	.....	2.0	12.0	.....	.....	2.0
Maxwell Grain Co.[61]	609a	5210	Maxwell	found	1.79	.....	.....	2.0	11.8	2.4	.....	2.0
Goodrich Bros. Co.	609a	5253	Winchester	found	1.69	.....	.....	2.0	12.1	1.5	.....	2.6
Ellis Feed Store	609a	5896	Greencastle	found	1.62	.....	.....	1.9	12.5	1.9	.....	2.1
D. & K. 1-10-5	610a	.....	.....	guaranteed	.....	.....	.....	1.0	10.0	.....	.....	5.0
C. J. Meyer	610a	5219	Indianapolis	found	1.05	.....	.....	1.4	10.4	1.2	.....	4.6
D. & K. 0-21-9	673a	.....	.....	guaranteed	.....	.....	.....	.....	21.0	.....	.....	9.0
C. W. Billingsby[62]	673a	5222	Shelbyville	found	.....	.....	.....	.....	21.0	2.7	.....	7.9
D. & K. 0-14-6	674a	.....	.....	guaranteed	.....	.....	.....	.....	14.0	.....	.....	6.0
Dockweiler & Kingsbury Co.	674a	5205	Indianapolis	found	.....	.....	.....	.....	13.8	2.0	.....	5.6
Boson Bros.	674a	5218	Indianapolis	found	.....	.....	.....	.....	14.6	1.2	.....	6.0

New Albany, Ind.												
Climax Superphosphate	487a			guaranteed					16.0	1.0		
Hayes & Dodds	487a	4994	Campbellsburg	found					17.0	0.9		
Everitt Seed Store,												
Indianapolis, Ind.												
Ev-Er-It 5-10-5	796a			guaranteed				5.0	10.0			5.0
Everitt Seed Store	796a	5225	Indianapolis	found	4.73			5.0	10.0	0.8		4.6
Falls City Fertilizer Company,												
New Albany, Ind.												
Falls City Brand Ten-Ten Hummer	7481			guaranteed					10.0			10.0
O. F. Parker	7481	5322	Rensselaer	found					10.3	0.2		10.0
Wolcott Grain Co.	7481	5336	Wolcott	found					10.8	0.5		10.0
Falls City Brand "Twelve-Twelve"	8668			guaranteed					12.0	1.0		12.0
O. F. Parker	8668	5327	Pleasant Ridge	found					12.5	0.6		12.0
E. J. Randle	8668	5328	Moody Station	found					12.3	1.0		**11.7**
Wolcott Grain Co.	8668	5344	Wolcott	found					12.8	2.0		12.4
Falls City Twenty-Twenty	853a			guaranteed					20.0	1.0		20.0
Gilbert Barker	853a	5440	Ripley	found					20.6	0.5		19.8
Farmers Fertilizer Company,												
Seymour, Ind.												
Nitrate of Soda	7677			guaranteed				15.0				
Fruit Growers Supply Co.	7677	5374	Franklin	found				16.2				
Farmers Grain Dealers Association of Indiana,												
Indianapolis, Ind.												
Farmers Elevator 0-8-24	9833			guaranteed					8.0	1.0		24.0
Co-operative Elevator Co.	9833	5126	Francesville	found					8.1	0.3		26.5
Farmers Elevator 0-10-10	9834			guaranteed					10.0	1.0		10.0
Farmers Co-operative Co.	9834	5341	Wolcott	found					10.1	1.6		11.5
Farmers Co-operative Elevator	9834	5567	Knox	found					10.8	0.6		10.0
Farmers Elevator 0-12-12	9835			guaranteed					12.0	1.0		12.0
Co-operative Elevator Co.	9835	5127	Francesville	found					13.8	0.1		12.0
Burns & Slatton[63]	9835	5231	Chalmers	found					12.3	1.6		12.0
Farmers Co-operative Co.	9835	5634	Knox	found					12.1	0.9		12.0
Farmers Elevator 0-20-20	9836			guaranteed					20.0	1.0		20.0
Farmers Co-operative Elevator	9836	5128	Francesville	found					20.2	0.8		20.0
Lafayette Co-operative Elevator	9836	5319	Lafayette	found					21.8	0.7		20.0
Farmers Co-operative Co.	9836	5339	Wolcott	found					20.0	1.2		20.0
Farmers Co-operative Co.	9836	5636	Knox	found					20.0	0.7		20.1
20% Superphosphate	9838			guaranteed					20.0	1.0		
Huntington Equity Exchange	9838	5607	Huntington	found					20.1	0.8		

Where 60.0 per cent or more of the total nitrogen guaranteed was found to be water soluble, the active and inactive insoluble organic was not determined.

Percentages appearing in bold type in the "Inactive water insoluble organic" column denote inferior nitrogen.

[55] Refund $21.60. Sampled on truck at Indianapolis.

[56] Refund $13.30.

[57] Refund $6.24. Sampled on truck at Indianapolis.

[58] Sampled on truck at Indianapolis.

[59] Purchased from Reeves Grain & Supply Co. Refund $1.08.

[60] Purchased from Reeves Grain & Supply Co.

[61] Sampled on truck at Indianapolis.

[62] Refund $2.20. Sampled on truck at Indianapolis.

[63] Purchased from Chalmers Grain Co.

TABLE XI.—Report of Inspection of Fertilizer Collected in 1930—Continued

Labels and names of persons from whom samples were secured	Official No.	Inspection No. H. H.	Samples taken at		Nitrogen (N)				Phosphoric acid (P₂O₅)			Potash (K₂O), soluble in water, per cent
					Water soluble as nitrates, ammonia salts and organic, per cent	Active water insoluble organic, per cent	Inactive water insoluble organic, per cent	Total per cent	Soluble and reverted (available), per cent	Insoluble, per cent	Total per cent	
Farmers Elevator 2-12-6	429a	.....	.....	guaranteed	.....	.....	.....	2.0	12.0	0.5	.....	6.0
Huntington Equity Exchange	429a	5623	Huntington	found	1.64	.....	.....	2.2	12.2	2.4	.....	6.1
Farmers Co-operative Co.	429a	5633	Knox	found	1.43	.....	.....	2.0	12.4	1.8	.....	5.5
Crabbs Reynolds Taylor Co.	429a	5654	Reynolds	found	1.74	.....	.....	2.2	12.1	1.4	.....	6.4
Farmers Co-operative Co.	429a	5818	Linden	found	1.72	.....	.....	2.3	11.4	2.5	.....	6.6
Farmers Elevator 4-24-12	431a	.....	.....	guaranteed	.....	.....	.....	4.0	24.0	0.5	.....	12.0
Chalmers Grain Co.	431a	5232	Chalmers	found	3.30	.....	.....	4.0	23.4	0.7	.....	13.5
Lafayette Co-operative Elevator Co.[64]	431a	5320	Lafayette	found	3.23	.....	.....	4.0	22.5	0.8	.....	11.3
Farmers Co-operative Co.	431a	5819	Linden	found	3.86	.....	.....	4.0	24.1	1.5	.....	12.6
Farmers Elevator 4-24-4	432a	.....	.....	guaranteed	.....	.....	.....	4.0	24.0	0.5	.....	4.0
Medaryville Co-operative Co.	432a	5130	Medaryville	found	3.33	.....	.....	4.0	24.1	1.4	.....	4.6
Huntington Equity Exchange[65]	432a	5620	Huntington	found	2.93	.....	.....	3.8	22.1	1.9	.....	4.9
Federal Chemical Company, Inc., Louisville, Kentucky.												
Daybreak 16% Superphosphate	5016	.....	.....	guaranteed	.....	.....	.....	.....	16.0	.....	.....	.....
O. S. Clay	5016	5919	Waldron	found	.....	.....	.....	.....	16.4	3.1	.....	.....
Pure Bone	5657	.....	.....	guaranteed	.....	.....	.....	1.0	.....	.....	30.0	.....
Farmers Co-operative Co.	5657	4800	Cicero	found	0.67	.....	.....	2.5	.....	.....	28.0	.....
Lloyd Starnes	5657	5847	Ellettsville	found	0.63	.....	.....	2.1	.....	.....	30.0	.....
Ten-Ten Potash Fertilizer	7904	.....	.....	guaranteed	.....	.....	.....	.....	10.0	.....	.....	10.0
R. C. Fretz Feed Store	7904	5027	Waterloo	found	.....	.....	.....	.....	10.0	1.0	.....	10.1
E. G. Reece Canning Co.[66]	7904	5072	Waldron	found	.....	.....	.....	.....	9.9	1.4	.....	8.7
Columbus Products Co.	7904	5081	Shelbyville	found	.....	.....	.....	.....	10.9	1.4	.....	10.0
Oscar Strole	7904	5355	Brook	found	.....	.....	.....	.....	9.8	1.3	.....	10.3
Chas. F. Battleday	7904	5431	Rensselaer	found	.....	.....	.....	.....	9.7	2.1	.....	9.6
O. S. Clay	7904	5888	Waldron	found	.....	.....	.....	.....	12.5	1.4	.....	13.1
Official Formula 0-8-24	8577	.....	.....	guaranteed	.....	.....	.....	.....	8.0	.....	.....	24.0
R. C. Fretz Feed Store	8577	5021	Waterloo	found	.....	.....	.....	.....	8.7	0.8	.....	24.0
Noah Yoder[67]	8577	5432	Rensselaer	found	.....	.....	.....	.....	7.8	1.4	.....	23.4
20% Superphosphate	8608	.....	.....	guaranteed	.....	.....	.....	.....	20.0	.....	.....	.....
Rich Valley Co-operative Elevator Co.	8608	5521	Rich Valley	found	.....	.....	.....	.....	21.2	1.6	.....	.....
Kraus & Apfelbaum	8608	5595	Auburn	found	.....	.....	.....	.....	21.1	0.7	.....	.....
Chrisner Bros.	8608	5708	Topeka	found	.....	.....	.....	.....	20.0	1.5	.....	.....
	8608	5769	West Point	found	.....	.....	.....	.....	21.1	1.3	.....	.....
				found	.....	.....	.....	.....	21.2	2.1	.....	.....

Official Formula 0-12-6	8773			guaranteed					12.0			6.0
W. W. Spain	8773	5977	Rockport	found					12.0	1.3		6.8
Twelve-Twelve Potash Formula	9773			guaranteed					12.0			12.0
Gilbert McCombs & Lafayette Life Insurance Co.	9773	5235	Monticello	found					12.3	1.5		12.0
Twenty-Twenty Potash Formula	9780			guaranteed					20.0			20.0
R. C. Fretz Feed Store	9780	5022	Waterloo	found					20.0	1.0		20.2
Chas. T. Battleday[68]	9780	5430	Rensselaer	found					**19.1**	1.2		20.3
Official Formula 3-8-6	395a			guaranteed				3.0	8.0			6.0
Columbus Products Co.[69]	395a	5080	Shelbyville	found	1.75			2.3	9.4	1.4		5.3
Special Tobacco Grower 2-8-6	398a			guaranteed				2.0	8.0			6.0
McElhinney Feed Store	398a	4673	Bloomington	found	1.51			2.1	9.0	0.1		6.0
Vegetable Grower	399a			guaranteed				2.0	8.0			6.0
Almond E. Wickard	399a	4852	Greenfield	found	1.96			2.2	8.7	1.0		6.6
E. G. Reece Canning Co.	399a	5070	Waldron	found	1.62			2.2	9.2	1.0		6.7
McElhinney Feed Store	399a	5850	Bloomington	found	1.67			2.2	8.6	1.0		5.6
Official Formula 2-14-4	401a			guaranteed				2.0	14.0			4.0
B. S. Bohannon	401a	5968	Osgood	found	1.33			2.0	15.2	0.6		4.1
Fox Formula	408a			guaranteed				1.0	11.0			3.0
W. O. Springer & Sons	408a	5798	Bargersville	found	0.88			1.3	11.4	1.7		3.0
Standard Crop Grower 1-8-4	411a			guaranteed				1.0	8.0			4.0
V. H. Bulleit & Son	411a	4698	Corydon	found	1.62			2.3	8.5	1.0		4.2
E. G. Reece Canning Co.	411a	5065	Waldron	found	0.75			1.1	8.0	1.5		4.4
Almond E. Wickard	411a	5906	Greenfield	found	1.40			2.1	11.8	1.1		5.5
O. S. Clay	411a	5914	Waldron	found	0.78			1.2	8.2	1.3		4.1
Loam Land Fertilizer	412a			guaranteed				2.0	12.0			2.0
Farmers Co-operative Co.	412a	4797	Cicero	found	1.80			2.5	13.6	0.5		2.2
Berne Grain & Hay Co.	412a	4876	Berne	found	1.45			2.1	12.1	1.3		2.1
Boonville Implement Co.	412a	4894	Boonville	found	1.40			2.2	14.4	1.5		2.8
R. C. Fretz Feed Store[70]	412a	5028	Waterloo	found	1.50			2.1	12.2	1.6		2.4
E. G. Reece Canning Co.	412a	5069	Waldron	found	1.75			2.4	12.9	1.5		2.0
Columbus Products Co.	412a	5084	Shelbyville	found	1.61			2.2	12.2	1.4		2.2
Fred Bay & W. Brummett	412a	5135	Helmsburg	found	1.52			2.1	12.9	1.2		2.1
Rich Valley Co-operative Elevator Co.	412a	5511	Rich Valley	found	1.68			2.3	12.0	1.6		2.1
R. C. Fretz Feed Store	412a	5588	Waterloo	found	1.54			2.1	12.7	1.2		2.1
Mayer Grain Co.	412a	5592	Churubusco	found	1.40			2.1	12.4	1.3		2.3
Atlanta Grain Co.	412a	5786	Atlanta	found	1.67			2.3	12.0	1.4		2.3
Edmondson Hardware	412a	5854	Clayton	found	1.46			2.1	12.0	0.9		2.1
B. S. Bohannon	412a	5960	Osgood	found	1.57			2.2	12.3	0.8		2.2
Pierceville Mill & Elevator Co.	412a	6019	Pierceville	found	1.51			2.1	12.1	1.6		2.1
Old Reliable	413a			guaranteed				2.0	10.0			4.0
Osgood Milling Co.	413a	5423	Osgood	found	1.47			2.2	10.4	2.0		4.0
Official Formula 2-12-6	414a			guaranteed				2.0	12.0			6.0
McElhinney Feed Store[70]	414a	4672	Bloomington	found	1.29			2.1	13.2	1.0		6.0
V. H. Bulleit & Son	414a	4694	Corydon	found	1.40			2.2	12.4	1.1		6.0
Farmers Co-operative Co.	414a	4798	Cicero	found	1.38			2.2	11.8	0.4		6.1
C. E. Alfrey	414a	4825	Millgrove	found	1.44			2.2	11.3	1.0		6.0
Cartwright & Headington	414a	4830	Portland	found	1.41			2.2	12.8	0.5		6.0

Where 60.0 per cent or more of the total nitrogen guaranteed was found to be water soluble, the active and inactive insoluble organic was not determined.

Percentages appearing in bold type in the "Inactive water insoluble organic" column denote inferior nitrogen.

[64] Refund $4.36.

[65] Refund $4.07.

[66] Refund $3.02.

[67] Purchased from Chas. T. Battleday.

[68] Refund $4.86.

[69] Refund $11.57.

[70] Sample received in the spring.

TABLE XI.—Report of Inspection of Fertilizer Collected in 1930—Continued

Labels and names of persons from whom samples were secured	Official No.	Inspection No. H. H.	Samples taken at		Nitrogen (N)				Phosphoric acid (P₂O₅)			Potash (K₂O), soluble in water, per cent
					Water soluble as nitrates, ammonia salts and organic, per cent	Active water insoluble organic, per cent	Inactive water insoluble organic, per cent	Total per cent	Soluble and reverted (available), per cent	Insoluble, per cent	Total per cent	
Almond E. Wickard	414a	4877	Greenfield	found	1.49	......	......	2.4	12.4	0.9	......	6.0
Berne Grain & Hay Co.	414a	4882	Berne	found	1.44	......	......	2.1	12.2	0.9	......	5.4
Boonville Implement Co.[70]	414a	4889	Boonville	found	1.51	......	......	2.3	11.5	1.3	......	6.4
Morgan Packing Co.	414a	4958	Scottsburg	found	1.43	......	......	2.2	13.6	0.3	......	6.0
Princeton Canning Co.	414a	4959	Brownsburg	found	1.31	......	......	2.1	12.8	0.4	......	6.0
Jesse Meyers[71]	414a	4960	Jamestown	found	1.41	......	......	2.1	12.0	0.1	......	6.0
Morgan Packing Co.	414a	4962	Ewing	found	1.55	......	......	2.2	12.0	0.3	......	6.3
Morgan Packing Co.	414a	4965	Austin	found	1.51	......	......	2.2	12.3	1.0	......	6.1
Morgan Packing Co.	414a	4968	Austin	found	1.50	......	......	2.2	13.2	0.9	......	6.0
William Judd	414a	4970	Cortland	found	1.61	......	......	2.3	13.0	1.6	......	6.1
T. J. Shepherd & Son	414a	4988	Orleans	found	1.48	......	......	2.2	12.9	0.9	......	6.0
R. C. Fretz Feed Store[72]	414a	5030	Waterloo	found	1.54	......	......	2.3	12.7	0.9	......	6.3
Columbus Products Co.	414a	5076	Shelbyville	found	1.35	......	......	2.0	12.4	0.8	......	5.8
Columbus Products Co.	414a	5082	Shelbyville	found	1.50	......	......	2.2	12.2	0.9	......	6.3
J. A. Carter & Son	414a	5283	Hillisburg	found	1.47	......	......	2.0	12.2	1.3	......	6.0
Tipton Hatchery[72]	414a	5309	Tipton	found	1.51	......	......	2.1	12.1	1.1	......	5.8
Lee Coal & Feed Co.	414a	5313	Alexandria	found	1.61	......	......	2.0	12.0	0.8	......	6.0
Rich Valley Co-operative Elevator Co.	414a	5520	Rich Valley	found	1.49	......	......	2.1	12.9	1.3	......	5.7
Kraus & Apfelbaum	414a	5594	Auburn	found	1.33	......	......	2.1	12.7	1.2	......	6.1
R. C. Fretz Feed Store	414a	5597	Waterloo	found	1.44	......	......	2.1	12.9	0.9	......	5.6
Mayer Grain Co.	414a	5694	Fulton	found	1.58	......	......	2.2	12.0	1.3	......	6.0
W. C. Miller	414a	5700	Akron	found	1.56	......	......	2.2	12.4	1.3	......	6.4
S. C. Hershberg	414a	5715	Shipshewana	found	1.74	......	......	2.3	12.4	1.7	......	5.5
Tipton Hatchery	414a	5781	Tipton	found	1.39	......	......	2.1	12.4	1.3	......	6.2
W. O. Springer & Son	414a	5797	Bargersville	found	1.50	......	......	2.2	12.0	1.4	......	6.0
McElhinney Feed Store	414a	5849	Bloomington	found	1.58	......	......	2.3	12.3	1.6	......	6.1
Edmondson Hardware[73]	414a	5869	Clayton	found	1.37	......	......	2.1	10.6	1.4	......	6.0
B. S. Bohannon	414a	5959	Osgood	found	1.89	......	......	2.1	12.7	0.8	......	6.0
Boonville Implement Co.	414a	5978	Boonville	found	1.23	......	......	2.1	12.0	1.6	......	6.4
Bob's Hardware	414a	5985	Elberfeld	found	1.51	......	......	2.2	11.7	1.6	......	6.5
Carl Stephens	414a	5993	New Harmony	found	1.51	......	......	2.2	12.9	1.1	......	6.0
Joe Dauby & Sons	414a	5996	Tell City	found	1.54	......	......	2.2	12.8	1.3	......	5.8
Wyatt Feed & Elevator Store	414a	6002	Petersburg	found	1.50	......	......	2.2	12.9	1.5	......	6.2
Pierceville Mill & Elevator Co.	414a	6020	Pierceville	found	1.48	......	......	2.2	11.9	1.2	......	6.2
Indiana Special	572a	......	......	guaranteed	......	......	......	1.0	11.0	......	......	5.0
Cartwright & Headington	572a	4824	Portland	found	0.78	......	......	1.2	10.8	1.2	......	5.6
Almond E. Wickard[75]	572a	4855	Greenfield	found	1.36	......	......	1.7	11.8	0.5	......	5.3

T. J. Shephard & Son	572a	4989	Orleans	found	0.94	......	......	1.3	11.5	1.3	......	5.2
E. G. Reece Canning Co	572a	5064	Waldron	found	0.81	......	......	1.1	11.7	1.7	......	5.5
Columbus Products Co	572a	5078	Shelbyville	found	0 95	......	......	1.3	11.0	0.7	......	5.4
Columbus Products Co	572a	5083	Shelbyville	found	0.78	......	......	1.2	11.2	1.5	......	5.4
Oscar Strole[74]	572a	5351	Brook	found	0.89	......	......	1.2	**10.1**	1.1	......	5.3
Mayer Grain Co	572a	5698	Fulton	found	0.84	......	......	1.1	11.3	1.6	......	5.4
Almond E. Wickard	572a	5909	Greenfield	found	0.81	......	......	1.2	**10.6**	2.0	......	5.2
B. S. Bohannon	572a	5967	Osgood	found	0.91	......	......	1.3	12.0	1.2	......	5.0
Wm. Snider	572a	6028	Marengo	found	0.82	......	......	1.2	12.1	1.9	......	5.3
Eagle Corn and Wheat Grower 2-8-2	612a	......	......	guaranteed	......	......	......	2.0	8 0	......	......	2.0
McElhinney Feed Store[75]	612a	4675	Bloomington	found	1.48	......	......	2.1	9.6	0.1	......	2.5
McElhinney Feed Store[76]	612a	5846	Bloomington	found	1.63	......	......	2.2	8.5	1.4	......	2.2
High Grade Truck and Tomato 2-8-10	631a	......	......	guaranteed	......	......	......	2.0	8.0	......	......	10.0
Fred Bay & W. Brummett	631a	5137	Helmsburg	found	1.74	......	......	2.2	8.9	0.6	......	10.0
Double Duty	716a	......	......	guaranteed	......	......	......	4.0	12.0	......	......	4.0
Morgan Packing Co	716a	4973	Austin	found	3.27	......	......	4.2	11.4	1.4	......	4.0
Globe Formula 1-12-3	727a	......	......	guaranteed	......	......	......	1.0	12 0	......	......	3.0
V. H. Bulleit & Son[75]	727a	4696	Corydon	found	0.99	......	......	1.4	12.9	0.8	......	3.2
Berne Grain & Hay Co	727a	4883	Berne	found	0.92	......	......	1.4	13.2	0.6	......	3.3
S. P. Hershberger	727a	5701	Shipshewana	found	0.88	......	......	1.2	12 3	1.6	......	3.1
T. J. Shephard & Son	727a	5949	Orleans	found	0.98	......	......	1.3	12.2	1.4	......	3.2
W. W. Spain	727a	5995	Rockport	found	0.78	......	......	1.2	12.5	2.0	......	3.0
V. H. Bulleit & Son	727a	6030	Corydon	found	0.78	......	......	1.2	12 5	1.8	......	3.4
Daybreak Formula 1-12-3	729a	......	......	guaranteed	......	......	......	1 0	12.0	......	......	3.0
E. G. Reece Canning Co	729a	5066	Waldron	found	1.18	......	......	1.6	13.2	1.0	......	3.0
W. C. Miller Hardware	729a	5697	Akron	found	0.95	......	......	1.3	12.8	1.5	......	3.2
O. K. Formula 1-12-3	730a	......	......	guaranteed	......	......	......	1.0	12.0	......	......	3.0
Kraus & Apfelbaum	730a	5600	Auburn	found	0.71	......	......	1.1	12.1	1.6	......	3.4
Standard Crop and Tobacco Grower 2-8-4	773a	......	......	guaranteed	......	......	......	2.0	8.0	......	......	4.0
E. G. Reece Canning Co	773a	5063	Waldron	found	1.63	......	......	2.3	9.0	0.7	......	4.2
E. G. Reece Canning Co	773a	5068	Waldron	found	1.53	......	......	2.2	9.2	1.0	......	4.6
Fertilizer Products Company, Chicago, Ill.												
Sheep Manure	70a	......	......	guaranteed	......	......	......	1.8	......	......	1.0	1 8
Chance Bros.[77]	70a	4655	Connersville	found	0.22	0.55	**1.13**	1.9	......	......	1.8	2.8
Globe Fertilizer Company, Louisville, Kentucky.												
Globe 16% Superphosphate	3608	......	......	guaranteed	......	......	......	......	16.0	......	......	......
V. H. Bulleit & Son	3608	4701	Corydon	found	......	......	......	......	16.5	0.9	......	......
Groves Chemical Company, Columbus, Ohio.												
Black Soil Special 10-10	8517	......	......	guaranteed	......	......	......	......	10.0	......	......	10.0
Gerald McDonald	8517	5669	Milford	found	......	......	......	......	10 6	1.3	......	10.0

Where 60.0 per cent or more of the total nitrogen guaranteed was found to be water soluble, the active and inactive insoluble organic was not determined.

Percentages appearing in bold type in the "Inactive water insoluble organic" column denote inferior nitrogen.

[71] Purchased from Princeton Canning Co.

[72] Sample received in the spring.

[73] Refund $13.44.

[74] Refund $2.70.

[75] Sample received in the spring.

[76] Not tagged. Labels furnished.

[77] Not tagged. Labels furnished.

Table XI.—Report of Inspection of Fertilizer Collected in 1930—Continued

Labels and names of persons from whom samples were secured	Official No.	Inspection No. H. H.	Samples taken at		Nitrogen (N)				Phosphoric acid (P_2O_5)			
					Water soluble as nitrates, ammonia salts and organic, per cent	Active water insoluble organic, per cent	Inactive water insoluble organic, per cent	Total per cent	Soluble and reverted (available), per cent	Insoluble, per cent	Total per cent	Potash (K_2O), soluble in water, per cent
20% Superphosphate	8832			guaranteed					20 0	1.0		
Fayette Grain Co.	8832	5198	Connersville	found					23.1	0.6		
W. F. Eberhart	8832	5611	Huntington	found					21.6	0.3		
Complete Bone Mixture	531a			guaranteed				2.0	8.0	8.0		2.0
Alpha Miller	531a	5110	Wakarusa	found	1.42			1.9	9.8	6.2		5.0
Campbell Bros.	531a	5298	Greencastle	found	1.58			2.0	9.8	8 2		2.0
Plymouth Farmers Supply Co.	531a	5677	Plymouth	found	1.51			2.1	8.8	9.7		2.0
Reynolds Brooks Hardware Co.	531a	5942	Loogootee	found	1.48			2.0	12 5	4 7		2.1
Clover Leaf Special	533a			guaranteed				2 0	12.0	1.0		2 0
Ben J. Struewing[78]	533a	4753	Batesville	found	1.75			2.1	10.9	2.2		2.3
Fayette Grain Co.	533a	5177	Connersville	found	1.74			2.1	12 0	1.4		2.0
Campbell Bros[79]	533a	5286	Greencastle	found	1.89			2.1	12.5	0.9		1.8
E. F. Seagley & Sons	533a	5569	Ashley	found	1.54			2.0	12.5	1.5		2.0
Gerald McDonald	533a	5666	Milford	found	1.61			2.1	12.2	1.7		2.1
Geo. L. Protsman & Son[80]	533a	5682	Plymouth	found	1.64			2.1	11.4	2.7		2.3
Campbell Bros.	533a	5821	Greencastle	found	1.48			1.9	11.8	2.1		2.0
Fayette Grain Co.	533a	6045	Connersville	found	1.47			2.1	12.2	1.7		2.0
Pieper & Smith	533a	6046	Dillsboro	found	1.57			2.2	11.9	2.6		2.1
Martin Turner	533a	6051	E. Enterprise	found	1.68			2.1	13.2	1.0		2.0
Tobacco Grower 2-14-4	534a			guaranteed				2 0	14.0	1.0		4 0
Gerald McDonald	534a	5672	Milford	found	1.68			2.0	16.0	0.8		4.1
Potato Special 2-8-10	535a			guaranteed				2.0	8 0	1.0		10 0
Alpha Miller	535a	5113	Wakarusa	found	1.79			2.1	8.1	1.3		10.0
Burnettsville Elevator Co.	535a	5390	Burnettsville	found	1.82			2.0	7.6	1.2		10.5
Tomato Grower 2-12-6	536a			guaranteed				2.0	12 0			6.0
Ben J. Struewing[81]	536a	4744	Batesville	found	1.97			2.4	12.1	1.6		6.3
Fayette Grain Co.	536a	5197	Connersville	found	1.71			2.1	12.8	1.4		6.1
W. F. Eberhart[82]	536a	5608	Huntington	found	1.75			2.1	11.0	2.2		6.3
Geo. L. Protsman & Son[81]	536a	5685	Plymouth	found	1.71			2.1	12.9	1.4		6 2
Walter C. Williams[83]	536a	5931	Muncie	found	1.69			2.0	13.4	0.9		5.8
R. Creigmile[84]	536a	6017	Osgood	found	1.68			2.1	12.0	1.9		6.0
Pieper & Smith	536a	6041	Dillsboro	found	1.68			2.2	12.0	2.0		6.5
Fayette Grain Co.	536a	6044	Connersville	found	1.61			2.1	12.1	1.7		6.4
Martin V. Turner	536a	6055	E. Enterprise	found	1.78			2.2	13.2	1.7		6.3
Favorite	540a			guaranteed				1.0	13.0	1.0		5.0
Ben J. Struewing	540a	4745	Batesville	found	0 74			1 1	12.8	1.4		5.2
Alpha Miller	540a	5114	Wakarusa	found	1.02			1.3	13.8	0.5		5.0

Campbell Bros.[85]	540a	5294	Greencastle	found	0.83			1.0	14.5	0.8		4.7
Campbell Bros.	540a	5826	Greencastle	found	0.82			1.1	13.2	1.9		5.0
Wm. Stephenson[86]	540a	5932	Muncie	found	0.92			1.1	13.5	1.7		5.2
Reynolds Brooks Hardware Co.	540a	5948	Loogootee	found	0.85			1.2	13.0	2.2		5.1
Pieper & Smith	540a	6049	Dillsboro	found	0.81			1.2	13.4	1.8		4.7
Martin V. Turner	540a	6056	E. Enterprise	found	0.70			1.1	13.6	2.2		4.9
Potash Special	656a			guaranteed					12.0	1.0		12.0
Anton Prohosky	656a	5399	Goodland	found					12.4	1.8		11.2
Ideal Brand	795a			guaranteed				1.0	11.0	1.0		4.0
Ben J. Struewing	795a	4749	Batesville	found	0.73			1.1	11.0	1.7		4.0
Pieper & Smith	795a	6042	Dillsboro	found	0.63			1.1	11.1	1.9		4.2
Hopkins Fertilizer Company, New Albany, Ind.												
Hopkins Old Time Ten-Ten	9492			guaranteed					10.0	1.0		10.0
Gilbert Combs	9492	5301	Bloomfield	found					10.8	1.1		9.9
W. L. Denny	9498	5371	Wirt	found					10.4	0.6		10.0
Ladoga Canning Co.	9492	5396	Brookston	found					10.7	0.3		9.7
Old Time Mix with Bone Tankage	447a			guaranteed				2.0	6.0	6.0		3.0
V. H. Bulleit & Son	447a	4695	Corydon	found	1.09	0.83	0.38	2.3	8.6	3.9		3.2
A. M. Bohnert & Son[85]	447a	4724	Jasper	found	0.80	0.97	0.53	2.3	8.1	4.8		3.3
V. T. Reid Hardware	447a	4975	Salera	found	1.30			2.2	6.9	5.7		3.2
A. M. Bohnert & Son	447a	5956	Jasper	found	1.16	0.87	0.27	2.3	8.3	5.9		3.3
North Madison Coal Co.	447a	6025	North Madison	found	1.23			2.2	10.3	4.4		3.1
Potato Grower (3-7-7)	449a			guaranteed				3.0	7.0	1.0		7.0
Gibson County Shipping Ass'n.[87]	449a	4946	Princeton	found	2.20			2.7	7.8	1.4		7.9
Sommerfield & Swanson	449a	5154	LaPorte	found	2.27			3.2	7.0	1.8		7.5
North Madison Coal Co.	449a	5417	North Madison	found	2.24			3.0	8.3	1.5		7.5
Burley Grower	450a			guaranteed				3.0	8.0	1.0		6.0
W. L. Denny	450a	5402	Wirt	found	2.40			3.1	8.9	0.4		6.6
North Madison Coal Co.	450a	5415	North Madison	found	2.22			3.2	8.1	0.4		6.7
Tomato Grower 2-12-6	451a			guaranteed				2.0	12.0	1.0		6.0
William Link[88]	451a	4885	Chrisney	found	2.11			2.5	**10.4**	3.3		6.5
S. W. Perigo & Son	451a	4905	Chandler	found	1.88			2.3	11.8	2.2		6.3
C. W. Wedeking & Co.	451a	4932	Dale	found	1.88			2.5	**10.6**	3.0		6.4
North Madison Coal Co.	451a	5414	North Madison	found	2.12			2.4	12.9	1.2		5.8
Wabash Valley Canning Co.	451a	5446	Attica	found	1.78			2.2	12.2	1.1		6.4
Two-Twelve-Six	452a			guaranteed				2.0	12.0			6.0
Math Gayer	452a	4717	Troy	found	1.85			2.2	12.0	1.9		6.2
Avilla Feed Mill	452a	4914	Avilla	found	2.05			2.4	**11.3**	2.3		6.5
Gibson County Shipping Ass'n	452a	4945	Princeton	found	1.96			2.3	12.3	2.6		6.5
C. W. Wedeking & Co.	452a	4955	Dale	found	2.00			2.3	12.2	1.7		6.4
Gilbert Combs	452a	5300	Bloomfield	found	2.10			2.3	**11.5**	2.3		6.0
Ladoga Canning Co.	452a	5381	Brookston	found	1.82			2.3	12.3	2.0		6.7

Where 60.0 per cent or more of the total nitrogen guaranteed was found to be water soluble, the active and inactive insoluble organic was not determined.

Percentages appearing in bold type in the "Inactive water insoluble organic" column denote inferior nitrogen.

[78] Sample to manufacturer. Refund $5.28.

[79] Sample received in the spring.

[80] Not tagged. Labels furnished.

[81] Not tagged. Labels furnished.

[82] Refund $8.40.

[83] Not tagged. Labels furnished. Purchased from Farmers Co-operative Co., Yorktown, Ind.

[84] Purchased from Osgood Grain Co.

[85] Sample received in the spring.

[86] Purchased from Yorktown Elevator.

[87] Refund $1.14.

[88] Refund $9.60.

TABLE XI.—Report of Inspection of Fertilizer Collected in 1930—Continued

Labels and names of persons from whom samples were secured	Official No.	Inspection No. H. H.	Samples taken at		Nitrogen (N)				Phosphoric acid (P_2O_5)			Potash (K_2O), soluble in water, per cent
					Water soluble as nitrates, ammonia salts and organic, per cent	Active water insoluble organic, per cent	Inactive water insoluble organic, per cent	Total per cent	Soluble and reverted (available), per cent	Insoluble, per cent	Total per cent	
Ladoga Canning Co.	452a	5383	Brookston	found	1.97	......	......	2.3	11.7	2.8	......	6.1
W. Trow & Co.	452a	5407	Madison	found	2.06	......	......	2.3	11.5	2.3	......	6.2
Gilbert Combs	452a	5840	Bloomfield	found	1.88	......	......	2.3	11.3	2.9	......	6.7
Sure Crop 2-10-6	453a	......	......	guaranteed	......	......	......	2.0	10.0	1.0	......	6.0
V. H. Bulleit & Son	453a	4699	Corydon	found	1.82	......	......	2.3	9.5	1.7	......	6.0
Math Gayer	453a	5979	Troy	found	1.75	......	......	2.1	10.2	0.6	......	6.3
General Crop Grower 2-12-2	454a	......	......	guaranteed	......	......	......	2.0	12.0	1.0	......	2.0
S. W. Perigo & Son[89]	454a	4892	Chandler	found	1.88	......	......	2.4	10.7	3.4	......	2.4
Avilla Feed Mill[88]	454a	4919	Avilla	found	1.75	......	......	2.3	11.0	3.5	......	2.3
Gilbert Combs[90]	454a	5292	Bloomfield	found	1.86	......	......	2.0	11.7	2.6	......	2.3
Gilbert Combs	454a	5839	Bloomfield	found	1.68	......	......	2.1	12.3	2.1	......	2.6
W. E. Price & Son	454a	5943	Montgomery	found	1.44	......	......	2.0	12.1	2.6	......	2.2
Royal Grain Grower 2-10-3	455a	......	......	guaranteed	......	......	......	2.0	10.0	1.0	......	3.0
V. H. Bulleit & Son[91]	455a	4700	Corydon	found	1.54	......	......	2.3	9.3	2.5	......	3.1
W. L. Denny	455a	5411	Wirt	found	1.19	......	......	2.0	10.7	0.3	......	3.2
T. J. Shephard & Son	455a	5945	Orleans	found	1.44	......	......	2.1	9.6	2.6	......	3.4
V. H. Bulleit & Son	455a	6032	Corydon	found	1.43	......	......	2.2	9.1	3.2	......	3.8
Red Banner Special	456a	......	......	guaranteed	......	......	......	1.0	8.0	1.0	......	3.0
Math Gayer	456a	4702	Troy	found	0.22	0.31	0.47	1.0	8.9	0.8	......	3.0
A. M. Bohnert & Son	456a	4723	Jasper	found	0.22	0.42	0.46	1.1	9.2	0.6	......	3.4
Gilbert Combs	456a	5303	Bloomfield	found	1.20	......	......	1.9	9.2	0.5	......	3.0
Indiana Special	457a	......	......	guaranteed	......	......	......	1.0	14.0	1.0	......	2.0
O. L. Cauble Hardware	457a	4981	Pekin	found	0.98	......	......	1.3	14.3	1.9	......	2.3
William Link	457a	5984	Chrisney	found	0.89	......	......	1.2	14.8	0.8	......	2.0
Wheat and Corn Grower 1-10-2	458a	......	......	guaranteed	......	......	......	1.0	10.0	1.0	......	2.0
V. H. Bulleit & Son	458a	4716	Corydon	found	0.21	0.44	0.55	1.2	10.4	0.9	......	2.1
S. W. Perigo & Son	458a	4908	Chandler	found	0.29	0.43	0.48	1.2	10.6	0.5	......	2.5
Hayes & Dodds	458a	4987	Campbellsburg	found	0.33	0.40	0.37	1.1	11.8	0.6	......	2.0
Gilbert Combs	458a	5844	Bloomfield	found	0.32	0.43	0.45	1.2	10.8	1.0	......	2.5
Climax Superphosphate	486a	......	......	guaranteed	......	......	......	......	16.0	1.0	......	......
Gilbert Combs[91]	486a	5293	Bloomfield	found	......	......	......	......	17.6	0.3	......	......
Gilbert Combs	486a	5845	Bloomfield	found	......	......	......	......	16.0	1.0	......	......
Hutchins Bros. Mineral Works, Hillsboro, Ind.												
H. B. 2-12-6	616a	......	......	guaranteed	......	......	......	2.0	12.0	......	......	6.0
Hutchins Bros. Mineral Works	616a	5470	Hillsboro	found	2.09	......	......	2.3	13.3	1.3	......	6.1

Indiana Consumers Gas and Byproducts Company, Terre Haute, Ind.												
Sulphate of Ammonia	661a			guaranteed				20.5				
Indiana Consumers Gas & Byproducts Co.[91]	661a	4813	Terre Haute	found				21.0				
Indiana Consumers Gas & Byproducts Co.	661a	5500	Terre Haute	found				21.0				
Indiana Farm Bureau Co-operative Association, Indianapolis, Ind.												
Farm Bureau 0-8-24	9082			guaranteed					8.0			24.0
Mt. Ayr Grain Co.	9082	5329	Mt. Ayr, mail Parr	found					8.5	0.2		24.2
Jasper County Farm Bureau	9082	5335	Parr	found					8.1	0.9		23.6
S. B. Snedeker	9082	5340	McCoysburg	found					8.7	0.4		23.9
Farm Bureau 0-20-0	9084			guaranteed					20.0			
Knox County Farm Bureau	9084	4712	Vincennes	found					20.1	1.4		
Howard County Farm Bureau	9084	4792	Kokomo	found					21.5	0.1		
Tri-County Farm Bureau Co-op. Ass'n	9084	4895	Chandler	found					20.6	1.4		
Tri-County Farm Bureau Co-op. Ass'n	9084	4896	Evansville	found					20.9	1.4		
W. F. Wright	9084	4940	French Lick	found					20.4	1.1		
LaGrange County Farm Bureau[92]	9084	5005	LaGrange	found					20.0	0.9		
Steuben Grain Co.	9084	5017	Pleasant Lake	found					20.2	0.9		
Elkhart County Farm Bureau	9084	5102	Goshen	found					20.5	1.0		
E. S. Lochner[93]	9084	5256	Monroe	found					20.8	0.7		
LaGrange County Farm Bureau	9084	5484	LaGrange	found					21.1	0.4		
Morgan County Farm Bureau	9084	5488	Mooresville	found					21.6	0.8		
Wabash County Farm Bureau	9084	5491	Wabash	found					21.0	1.2		
Owen County Farm Bureau	9084	5498	Spencer	found					20.1	1.4		
Wabash County Farm Bureau	9084	5535	LaGro	found					20.0	0.3		
Steuben County Farm Bureau	9084	5582	Pleasant Lake	found					20.0	0.2		
DeKalb County Farm Bureau	9084	5593	Auburn	found					20.5			
Wabash County Farm Bureau	9084	5604	Spiker, mail Wabash	found					20.3	0.1		
Noble County Farm Bureau	9084	5663	Albion	found					20.1	0.6		
Kendallville Shipping Ass'n	9084	5702	Kendallville	found					20.0	0.5		
Miami County Farm Bureau	9084	5740	Peru	found					20.1	0.3		
Tipton County Farm Bureau	9084	5790	Tipton	found					20.0	0.6		
Shelby County Farm Bureau	9084	5814	Shelbyville	found					20.0	0.4		
Shelby County Farm Bureau	9084	5817	Rays Crossing	found					20.2	0.4		
Hancock County Co-operative Ass'n	9084	5911	Greenfield	found					20.0	0.4		
Shelby County Farm Bureau	9084	5915	Waldron	found					20.1	0.2		
Grant County Farm Bureau	9084	5926	Marion	found					20.1	0.6		
Farm Bureau 0-16-0	9085			guaranteed					16.0			
Farmers Elevator & Supply Co.	9085	4803	Crawfordsville	found					18.3	0.2		
Vigo County Farm Bureau	9085	4811	Terre Haute	found					16.5	1.7		
W. F. Wright	9085	4935	French Lick	found					16.0	1.4		
W. D. Coffing	9085	5449	Veedersburg	found					17.2	1.3		
Steuben County Farm Bureau	9085	5562	Angola	found					17.4	0.2		
Farm Bureau 0-12-12	9086			guaranteed					12.0			12.0
C. L. Borgman	9086	4741	Aurora	found					12.9	0.1		13.6

Where 60.0 per cent or more of the total nitrogen guaranteed was found to be water soluble, the active and inactive insoluble organic was not determined.

Percentages appearing in bold type in the "Inactive water insoluble organic" column denote inferior nitrogen.

[89] Refund $9.36.

[90] Sample received in the spring.

[91] Sample received in the spring.

[92] Sample received in the spring.

[93] Purchased from Adams Co. Farm Bureau.

TABLE XI.—Report of Inspection of Fertilizer Collected in 1930—Continued

Labels and names of persons from whom samples were secured	Official No.	Inspection No. H. H.	Samples taken at		Nitrogen (N)				Phosphoric acid (P_2O_5)			Potash (K_2O), soluble in water, per cent
					Water soluble as nitrates, ammonia salts and organic, per cent	Active water insoluble organic, per cent	Inactive water insoluble organic, per cent	Total per cent	Soluble and reverted (available), per cent	Insoluble, per cent	Total per cent	
Cass County Farm Bureau	9086	4769	Logansport	found	......	......	......	......	13.1	1.0	......	12.0
Carroll County Farm Bureau	9086	4787	Delphi	found	......	......	......	......	14.6	1.3	......	12.1
Wayne County Farm Bureau	9086	4871	Richmond	found	......	......	......	......	13.1	1.0	......	12.0
Tri-County Farm Bureau Co-op. Ass'n	9086	4893	Chandler	found	......	......	......	......	12.5	2.3	......	12.6
Tri-County Farm Bureau Co-op. Ass'n	9086	4897	Evansville	found	......	......	......	......	13.3	1.8	......	13.1
Steuben County Farm Bureau	9086	5012	Angola	found	......	......	......	......	12.3	1.0	......	12.9
S. B. Snedeker	9086	5333	McCoysburg	found	......	......	......	......	12.7	1.0	......	12.2
Porter County Farm Bureau	9086	5554	Valparaiso	found	......	......	......	......	13.2	0.7	......	12.9
LaGrange County Farm Bureau	9086	5716	LaGrange	found	......	......	......	......	13.4	0.6	......	13.8
Tipton County Farm Bureau	9086	5782	Tipton	found	......	......	......	......	13.7	1.0	......	12.2
Shelby County Farm Bureau	9086	5912	Waldron	found	......	......	......	......	12.0	0.9	......	12.7
Farm Bureau 0-10-10	9087	......	......	guaranteed	......	......	......	......	10.0	......	......	10.0
Mt. Ayr Grain Co.	9087	5330	Mt. Ayr, mail Parr	found	......	......	......	......	10.5	2.3	......	10.1
Harlan Grain Co.	9087	5354	Kentland	found	......	......	......	......	10.5	0.5	......	10.0
Sam Molder	9087	5405	Brook	found	......	......	......	......	10.6	0.1	......	10.1
Muriate of Potash	9135	......	......	guaranteed	......	......	......	......	......	......	......	50.0
LaGrange County Farm Bureau[94]	9135	4991	LaGrange	found	......	......	......	......	......	......	......	48.4
Clay County Farm Bureau[95]	9135	5835	Brazil	found	......	......	......	......	......	......	......	48.5
Knox County Farm Bureau[96]	9135	5997	Vincennes	found	......	......	......	......	......	......	......	48.3
Farm Bureau 3.6-20 Raw Bone	9181	......	......	guaranteed	......	......	......	3.6	......	......	20.0	......
Knox County Farm Bureau[97]	9181	6005	Vincennes	found	0.49	2.83	0.58	3.9	......	......	18.7	......
Nitrate of Soda	9220	......	......	guaranteed	......	......	......	12.8	......	......	......	......
Henry Mathys[98]	9220	4664	South Bend	found	......	......	......	15.0	......	......	......	......
Farm Bureau 0-20-20	9640	......	......	guaranteed	......	......	......	......	20.0	......	......	20.0
Medaryville Co-operative Co.[99]	9640	5121	Medaryville	found	......	......	......	......	19.5	0.4	......	19.1
Pete Feorge[100]	9640	5389	Star City	found	......	......	......	......	20.5	0.5	......	20.2
Medaryville Co-operative Co.	9640	5444	Medaryville	found	......	......	......	......	20.7	0.5	......	19.3
Farm Bureau Nitrate of Soda	9734	......	......	guaranteed	......	......	......	14.4	......	......	......	......
Howard County Farm Bureau	9734	4796	Kokomo	found	......	......	......	15.8	......	......	......	......
Parke County Farm Bureau	9734	4810	Rockville	found	......	......	......	15.5	......	......	......	......
W. A. Breyfogle[101]	9734	5166	Crown Point	found	......	......	......	15.9	......	......	......	......
Farm Bureau 44% Superphosphate	9942	......	......	guaranteed	......	......	......	......	44.0	1.0	......	......
Henry Mathys[102]	9942	4659	South Bend	found	......	......	......	......	45.4	0.3	......	......
Farmers Feed & Coal Co.	9942	4671	Bloomington	found	......	......	......	......	45.4	0.3	......	......
Vigo County Farm Bureau	9942	4818	Terre Haute	found	......	......	......	......	45.4	0.8	......	......
Steuben County Farm Bureau	9942	5572	Pleasant Lake	found	......	......	......	......	44.5	......	......	......

Allen County Farm Bureau	9942	5573	Wallen	found	.....	.....	.....	.....	44.5	.....	.....	.....
Howard County Farm Bureau	9942	5731	Kokomo	found	.....	.....	.....	.....	44.7	0.2	.....	.....
Farm Bureau 2-12-6	350a	.....	.....	guaranteed	.....	.....	.....	2.0	12.0	.....	.....	6.0
Farmers Marketing Ass'n	350a	4653	Columbus	found	1.81	.....	.....	2.0	13.5	1.0	.....	6.0
E. R. Erskine[102]	350a	4662	Mishawaka	found	1.95	.....	.....	2.2	13.5	1.3	.....	6.4
Farmers Feed & Coal Co.	350a	4668	Bloomington	found	1.71	.....	.....	2.0	12.8	2.9	.....	6.1
Knox County Farm Bureau	350a	4692	Vincennes	found	1.76	.....	.....	2.0	12.7	2.1	.....	6.0
Perry County Farm Bureau	350a	4710	Tell City	found	2.06	.....	.....	2.1	14.1	0.4	.....	6.0
Hancock County Farm Bureau Co-op. Ass'n., Inc.	350a	4733	Greenfield	found	1.74	.....	.....	2.0	12.7	1.6	.....	6.4
C. L. Borgman	350a	4740	Aurora	found	1.99	.....	.....	2.2	12.7	1.4	.....	7.0
Farmers Feed & Produce Co.	350a	4746	Batesville	found	1.86	.....	.....	2.1	12.7	2.7	.....	6.0
Carroll County Farm Bureau	350a	4771	Delphi	found	1.80	.....	.....	2.0	13.8	2.0	.....	6.1
Cass County Farm Bureau	350a	4773	Logansport	found	1.92	.....	.....	2.1	14.0	1.5	.....	6.0
Howard County Farm Bureau	350a	4793	Kokomo	found	1.80	.....	.....	2.0	14.5	0.5	.....	6.3
Parke County Farm Bureau	350a	4806	Rockville	found	1.75	.....	.....	2.0	12.6	2.6	.....	6.1
Jay County Farm Bureau	350a	4828	Portland	found	2.15	.....	.....	2.4	12.8	1.3	.....	5.6
Farmers Produce Co.	350a	4831	Ossian	found	1.99	.....	.....	2.2	12.9	1.7	.....	6.6
Sullivan County Farm Bureau	350a	4840	Sullivan	found	2.20	.....	.....	2.2	13.8	1.3	.....	6.0
Paul Morton	350a	4874	Lebanon	found	2.03	.....	.....	2.2	13.5	1.0	.....	6.4
Tri-County Farm Bureau	350a	4904	Evansville	found	2.00	.....	.....	2.2	13.7	1.3	.....	5.7
Spencer County Farm Bureau	350a	4911	Grandview	found	1.76	.....	.....	1.9	13.6	1.8	.....	6.0
Tri-County Farm Bureau	350a	4912	Chandler	found	1.75	.....	.....	2.0	13.3	2.1	.....	6.0
Gibson County Shipping Ass'n	350a	4949	Haubstadt	found	1.86	.....	.....	2.0	13.4	2.4	.....	6.1
Steuben County Farm Bureau	350a	5003	Angola	found	2.17	.....	.....	2.3	12.3	1.3	.....	7.2
LaGrange County Farm Bureau	350a	5009	LaGrange	found	2.08	.....	.....	2.3	12.3	2.4	.....	6.1
Steuben Grain Co.	350a	5023	Pleasant Lake	found	2.18	.....	.....	2.4	13.4	1.4	.....	6.0
Whitley County Farm Bureau Co-op. Ass'n, Inc.	350a	5033	Columbia City	found	1.99	.....	.....	2.1	13.9	2.7	.....	6.1
Shelby County Farm Bureau	350a	5075	Shelbyville	found	2.10	.....	.....	2.2	12.1	0.1	.....	6.2
Morgan County Farm Bureau	350a	5139	Martinsville	found	2.00	.....	.....	2.1	13.0	2.4	.....	6.1
Farm Bureau 2-14-4	351a	.....	.....	guaranteed	.....	.....	.....	2.0	14.0	.....	.....	4.0
Farmers Marketing Ass'n	351a	4651	Columbus	found	1.81	.....	.....	2.0	15.6	1.8	.....	4.5
Cass County Farm Bureau	351a	4774	Logansport	found	1.97	.....	.....	2.1	17.0	0.9	.....	4.3
Sullivan County Farm Bureau	351a	4821	Sullivan	found	2.05	.....	.....	2.3	14.5	2.3	.....	4.2
Washington County Farm Bureau, Inc.	351a	4978	Pekin	found	2.01	.....	.....	2.2	15.1	1.5	.....	4.4
LaGrange County Farm Bureau[103]	351a	5006	LaGrange	found	2.10	.....	.....	2.3	14.4	1.7	.....	4.3
W. L. Flack[104]	351a	5279	Bloomingdale	found	2.06	.....	.....	2.2	15.5	1.9	.....	3.8
Wabash County Farm Bureau	351a	5522	Spiker, mail Wabash	found	2.03	.....	.....	2.2	14.4	1.4	.....	4.4
Wabash County Farm Bureau	351a	5536	LaGro	found	1.85	.....	.....	2.1	14.0	1.6	.....	4.3
Porter County Farm Bureau	351a	5553	Valparaiso	found	2.06	.....	.....	2.2	15.0	1.2	.....	4.4
LaGrange County Farm Bureau	351a	5756	LaGrange	found	1.85	.....	.....	2.1	14.3	1.2	.....	4.7
Gibson County Shipping Ass'n	351a	6010	Haubstadt	found	2.00	.....	.....	2.2	14.2	2.4	.....	4.2
Farm Bureau 3-9-18	352a	.....	.....	guaranteed	.....	.....	.....	3.0	9.0	.....	.....	18.0
Clayton E. Weis	352a	4658	Mishawaka	found	2.68	.....	.....	3.0	9.1	0.3	.....	19.4
Knox County Farm Bureau	352a	4691	Vincennes	found	2.59	.....	.....	2.9	10.9	0.6	.....	19.8

Where 60.0 per cent or more of the total nitrogen guaranteed was found to be water soluble, the active and inactive insoluble organic was not determined.

Percentages appearing in bold type in the "Inactive water insoluble organic" column denote inferior nitrogen.

[94] Refund $1.60.

[95] Refund $0.37.

[96] Refund $1.30.

[97] Refund $1.17.

[98] Purchased from Clayton E. Weis.

[99] Refund $5.60.

[100] Purchased from J. C. Phillips.

[101] Purchased from James McKnight.

[102] Purchased from Clayton E. Weis.

[103] Sample received in the spring.

[104] Purchased from Parke Co. Farm Bureau.

TABLE XI.—Report of Inspection of Fertilizer Collected in 1930—Continued

Labels and names of persons from whom samples were secured	Official No.	Inspection No. H. H.	Samples taken at		Nitrogen (N)				Phosphoric acid (P_2O_5)			Potash (K_2O), soluble in water, per cent
					Water soluble as nitrates, ammonia salts and organic, per cent	Active water insoluble organic, per cent	Inactive water insoluble organic, per cent	Total per cent	Soluble and reverted (available), per cent	Insoluble, per cent	Total per cent	
Jay County Farm Bureau[105]	352a	4823	Portland	found	2.71			3.0	8.5	0.9		16.9
Wabash County Farm Bureau	352a	4833	Wabash	found	2.77			3.0	9.8	0.6		18.2
Williams Equity Exchange	352a	4921	Williams, mail Decatur	found	2.80			3.0	10.7	1.1		18.3
Tri County Farm Bureau Co-op. Ass'n	352a	4954	Evansville	found	2.85			3.0	12.2	0.4		19.8
W. A. Breyfogle[106]	352a	5162	Crown Point	found	3.12			3.2	10.1	1.0		18.6
Randolph County Farm Bureau	352a	5264	Parker	found	3.13			3.2	9.9	0.8		19.8
Shelby County Farm Bureau	352a	5902	Waldron	found	2.86			3.0	9.6	1.0		19.6
Farm Bureau 4-10-6	353a			guaranteed				4.0	10.0			6.0
Morgan County Farm Bureau	353a	5134	Martinsville	found	3.95			4.2	10.6	0.9		6.2
Farm Bureau 4-12-4	354a			guaranteed				4.0	12.0			4.0
Howard County Farm Bureau	354a	4795	Kokomo	found	3.79			4.0	16.1	0.1		4.7
Morgan County Farm Bureau	354a	5140	Martinsville	found	4.09			4.2	13.4	1.4		4.6
Central States Elevator Corp	354a	5747	Montezuma	found	4.14			4.3	12.5	1.7		4.3
Farm Bureau 4-24-12	355a			guaranteed				4.0	24.0			12.0
Earl Mark[107]	355a	4661	Mishawaka	found	3.62			3.9	25.3	0.2		12.5
Cass County Farm Bureau	355a	4783	Logansport	found	3.85			4.1	26.0			12.0
Howard County Farm Bureau	355a	4791	Kokomo	found	3.74			4.1	25.6	0.1		12.6
Sullivan County Farm Bureau	355a	4820	Sullivan	found	3.85			4.2	24.8	0.8		12.3
Wabash County Farm Bureau	355a	4837	Wabash	found	4.02			4.3	24.2	0.4		11.6
Wayne County Farm Bureau	355a	4860	Richmond	found	3.68			4.1	24.1	0.6		13.4
Wayne County Farm Bureau	355a	4861	Richmond	found	3.60			4.1	24.0	0.8		12.5
La Mont O'Hara[108]	355a	4865	Newcastle	found	3.76			4.1	24.9	0.6		12.6
Spencer County Farm Bureau	355a	4899	Lamar	found	3.73			4.0	24.3	1.3		12.3
Tri-County Farm Bureau Co-op. Ass'n	355a	4913	Evansville	found	3.85			4.2	24.3	1.0		12.5
Steuben County Farm Bureau	355a	5002	Angola	found	4.20			4.4	25.4	0.4		12.7
LaGrange County Farm Bureau	355a	5010	LaGrange	found	3.85			4.1	25.2	1.5		12.0
Elkhart County Farm Bureau	355a	5096	Goshen	found	3.82			4.1	24.2	0.8		12.1
Medaryville Co-operative Co	355a	5122	Medaryville	found	3.85			4.1	24.6	0.8		12.3
Blackford County Farm Bureau	355a	5259	Hartford City	found	3.80			4.0	25.2	0.3		12.4
Farmers Co-operative Co	355a	5261	Selma	found	3.79			4.0	25.4	0.4		12.5
Randolph County Farm Bureau	355a	5262	Parker	found	3.96			4.1	24.2	1.1		12.3
Parke County Farm Bureau	355a	5280	Brazil	found	3.69			4.0	25.3	0.8		12.1
Tipton County Farm Bureau	355a	5306	Tipton	found	3.66			4.0	25.7			11.8
Steuben Grain Co	355a	5483	Pleasant Lake	found	3.95			4.0	24.6	0.7		12.8
Kosciusko County Farm Bureau	355a	5657	Warsaw	found	3.95			4.1	24.9	0.2		13.5

Farm Bureau 6-8-6	356a			guaranteed				6.0	8.0			6.0
Vigo County Farm Bureau	356a	4817	Terre Haute	found	5.50			5.8	10.5	1.0		6.0
Farm Bureau 10-6-4	357a			guaranteed				10.0	6.0			4.0
Pike County Farm Bureau[109]	357a	5460	Petersburg	found	7.84			8.1	10.5	0.3		5.9
Farm Bureau 0-14-6	358a			guaranteed					14.0			6.0
Clayton E. Weis	358a	4660	Mishawaka	found					15.1	0.9		6.5
Parke County Farm Bureau	358a	4805	Rockville	found					14.6	1.0		6.1
Vigo County Farm Bureau	358a	4819	Terre Haute	found					17.7	1.2		6.1
Jay County Farm Bureau	358a	4827	Portland	found					13.9	1.7		6.0
Gibson County Shipping Ass'n	358a	4942	Haubstadt	found					14.4	1.1		5.8
Steuben County Farm Bureau	358a	5008	Angola	found					14.7	1.2		6.4
Steuben Grain Co.[110]	358a	5025	Pleasant Lake	found					14.6	2.1		6.0
Shelby County Farm Bureau	358a	5079	Shelbyville	found					14.0	1.0		6.2
E. S. Lochner[111]	358a	5257	Monroe	found					14.0	1.2		6.0
Steuben Grain Co.	358a	5481	Pleasant Lake	found					14.8	1.2		7.0
Wabash County Farm Bureau	358a	5493	Wabash	found					15.4	1.3		6.3
Farmers Marketing Ass'n	358a	5533	Columbus	found					15.1	1.1		6.5
Steuben County Farm Bureau	358a	5571	Pleasant Lake	found					15.9	0.7		6.9
Dekalb County Farm Bureau	358a	5589	Auburn	found					15.2	1.0		6.2
Noble County Farm Bureau	358a	5674	Albion	found					14.6	1.3		6.5
Clarence Edmondson	358a	5855	Clayton	found					16.0	0.6		6.4
Farm Bureau 0-24-24	359a			guaranteed					24.0			24.0
Farmers Elevator & Supply Co.	359a	4804	Crawfordsville	found					25.9	0.1		23.3
Ralph Harvey[112]	359a	4866	Newcastle	found					24 4	0.3		24.0
Farmers Co-operative Co.[113]	359a	5266	Selma	found					23.5	0.7		23.1
Mt. Ayr Grain Co.	359a	5323	Mt. Ayr, mail Parr	found					25.2			23.4
J. C. Phillips	359a	5392	Star City	found					26 8	1.1		23.8
Farm Bureau 0-12-8	369a			guaranteed					12.0			8.0
C. L. Borgman	369a	4742	Aurora	found					11.7	1.9		8.0
Morgan County Farm Bureau	369a	5138	Martinsville	found					12.7	0.6		8.6
Randolph County Farm Bureau[114]	369a	5265	Winchester	found					12.6	1 8		6.9
W. E. Brier[115]	369a	5378	Williamsport	found					12.0	0.9		8.2
Sam Molder	369a	5400	Brook	found					12.6	0.7		8.3
Don Burrows[116]	369a	5838	Carlisle	found					13.6	1 1		8.2
Farm Bureau 0-8-32	370a			guaranteed					8.0			32.0
Cass County Farm Bureau	370a	4772	Logansport	found					8.7	0 8		32.0
Kosciusko County Produce Ass'n	370a	5104	Warsaw	found					8.0	0.8		32.3
Farm Bureau 2-12-2	686a			guaranteed				2 0	12 0			2.0
Farmers Marketing Ass'n	686a	4649	Columbus	found	1.75			2.0	14.0	0.6		2.1
Wayne County Farm Bureau	686a	4870	Richmond	found	1.31			2.1	12.9	0.8		2.5
Shelby County Farm Bureau	686a	5077	Shelbyville	found	1.85			2.1	12.0	0.8		2.5
Wabash County Farm Bureau	686a	5487	Wabash	found	2.68			2.9	14.5	1.3		5.1
Morgan County Farm Bureau	686a	5494	Mooresville	found	1 89			2 0	12.1	2.0		2.6
Wabash County Farm Bureau	686a	5534	LaGro	found	1.78			2.0	12.0	2.0		2.4
Kendallville Shipping Ass'n	686a	5714	Kendallville	found	2.02			2.2	12.0	2.5		2.3

Where 60.0 per cent or more of the total nitrogen guaranteed was found to be water soluble, the active and inactive insoluble organic was not determined.

Percentages appearing in bold type in the "Inactive water insoluble organic" column denote inferior nitrogen.

[105] Refund $1.00.

[106] Purchased from James McKnight.

[107] Purchased from Clayton E. Weis.

[108] Purchased from Henry Co. Farm Bureau.

[109] Refund $1.35.

[110] Sample received in the spring.

[111] Purchased from Adams Co. Farm Bureau.

[112] Purchased from Henry Co. Farm Bureau.

[113] Refund $3.00.

[114] Refund $1.10.

[115] Purchased from Boswell Grain Co.

[116] Purchased from Sullivan Co. Farm Bureau.

TABLE XI.—Report of Inspection of Fertilizer Collected in 1930—Continued

Labels and names of persons from whom samples were secured	Official No.	Inspection No. H. H.	Samples taken at		Nitrogen (N)				Phosphoric acid (P_2O_5)			Potash (K_2O), soluble in water, per cent
					Water soluble as nitrates, ammonia salts and organic, per cent	Active water insoluble organic, per cent	Inactive water insoluble organic, per cent	Total per cent	Soluble and reverted (available), per cent	Insoluble, per cent	Total per cent	
Farmers Grain Co.	686a	5851	Bloomington	found	1.93			2.1	12.6	2.3		2.2
Tri-County Farm Bureau	686a	6001	Evansville	found	2.03			2.2	12.6	2.8		2.1
Gibson County Shipping Ass'n	686a	6008	Haubstadt	found	2.06			2.2	12.0	2.7		2.0
Farm Bureau 4-24-4 Fertilizer	701a			guaranteed				4.0	24.0			4.0
Wabash County Farm Bureau	701a	5489	Wabash	found	3.99			4.1	24.1	1.4		3.7
Wabash County Farm Bureau	701a	5515	Spiker, mail Wabash	found	3.99			4.2	24.0	0.8		4.9
Wabash County Farm Bureau	701a	5537	LaGro	found	3.85			4.1	25.0	0.8		5.0
Steuben County Farm Bureau	701a	5565	Angola	found	3.82			4.0	24.8	1.5		4.0
Muriate of Potash	805a			guaranteed								50.0
Indiana Farm Bureau[117]	805a	4642	Frankfort	found								52.3
Indiana Farm Bureau[117]	805a	4643	Frankfort	found								50.5
Clayton E. Weis	805a	4665	South Bend	found								51.0
Whitley County Farm Bureau Co-op. Ass'n, Inc.	805a	5035	Columbia City	found								51.5
Farm Bureau 20.6-0-0 Sulphate of Ammonia	806a			guaranteed				20.6				
Indiana Farm Bureau[117]	806a	4644	Frankfort	found				20.8				
Farm Bureau 0-44-0 (44% Superphosphate)	807a			guaranteed					44.0			
Indiana Farm Bureau[117]	807a	4641	Frankfort	found					48.3	0.6		
Knox County Farm Bureau[118]	807a	6009	Vincennes	found					41.0	0.4		
Farm Bureau 0-20-0	808a			guaranteed					20.0			
Leonard Sweet[119]	808a	5174	Frankfort	found					19.6	1.2		
Cass County Farm Bureau	808a	5513	Logansport	found					21.5	1.5		
Whitley County Farm Bureau Co-op. Ass'n, Inc.	808a	5578	Peabody	found					20.9	1.3		
Huntington County Farm Bureau	808a	5615	Huntington	found					21.1	0.6		
Howard County Farm Bureau	808a	5745	Kokomo	found					20.9	0.9		
Clarence Edmondson	808a	5868	Clayton	found					21.0	1.0		
Farm Bureau 4-24-12	809a			guaranteed				4.0	24.0			12.0
Frank Harden[119]	809a	5173	Frankfort	found	3.92			4.1	24.4	0.7		12.0
Mt. Ayr Grain Co.	809a	5332	Mt. Ayr, mail Parr	found	3.65			4.0	25.0	0.8		12.4
Sam Molder	809a	5401	Brook	found	3.80			4.0	24.7	1.0		12.2
Wabash County Farm Bureau	809a	5490	Wabash	found	4.22			4.4	24.3	0.5		12.0
Morgan County Farm Bureau	809a	5496	Mooresville	found	4.24			4.3	24.1	0.6		13.1
Cass County Farm Bureau	809a	5516	Logansport	found	3.76			3.9	24.0	0.8		12.8
Jesse A. Harlow[119]	809a	5650	Frankfort	found	3.83			4.0	24.0	0.9		12.7
Kosciusko County Farm Bureau	809a	5664	Milford	found	3.90			4.1	25.1	0.2		12.4
Tippecanoe County Farm Bureau	809a	5719	Buck Creek	found	3.90			4.0	25.5	0.3		12.0
Howard County Farm Bureau	809a	5732	Kokomo	found	3.92			4.1	24.8	0.4		12.8

Tipton Hatchery	809a	5788	Tipton	found	3.92	......	......	4.2	24.0	0.6	......	12.0
Sullivan County Farm Bureau	809a	5827	Brazil	found	3.82	......	......	4.1	24 5	0.6	......	12.7
Clay County Farm Bureau	809a	5832	Brazil	found	3.93	......	......	4.2	24.3	0 2	......	12 2
Morgan County Farm Bureau	809a	5856	Martinsville	found	4.23	......	......	4.4	24.5	......	......	12.7
Shelby County Farm Bureau	809a	5890	Waldron	found	3.12	......	......	4.0	24.8	0 4	......	13.1
J. W. Frisz[120]	809a	5937	Crawfordsville	found	3.92	......	......	4.0	23.8	1.3	......	11 8
J. W. Frisz[121]	809a	5938	Crawfordsville	found	4.14	......	......	4.3	**22.1**	1.4	......	11.9
Morton T. Elliott[122]	809a	5992	New Harmony	found	3.97	......	......	4.2	24.3	1.2	......	12.0
South Eastern Hospital	809a	6023	North Madison	found	3.89	......	......	4 0	24.4	0.2	......	12.6
Farm Bureau 0-14-6	810a	......	......	guaranteed	......	......	......	......	14.0	......	......	6.0
Clinton County Farm Bureau Co-op. Ass'n[123]	810a	4786	Frankfort	found	......	......	......	......	14.6	1.1	......	6.0
Huntington County Farm Bureau	810a	5622	Huntington	found	......	......	......	......	16.2	0.6	......	6.2
Clinton County Farm Bureau Co-op. Ass'n	810a	5649	Frankfort	found	......	......	......	......	14.0	0 7	......	6 9
Howard County Farm Bureau	810a	5727	Kokomo	found	......	......	......	......	15.8	0.4	......	6 7
Joe Altherr[124]	810a	5787	Tipton	found	......	......	......	......	14.3	0.9	......	6.6
Shelby County Farm Bureau	810a	5812	Rays Crossing	found	......	......	......	......	14.0	0.9	......	6.3
Hancock County Co-op. Ass'n	810a	5907	Greenfield	found	......	......	......	......	15.0	1.0	......	6.9
Spencer County Farm Bureau	810a	5983	Chrisney	found	......	......	......	......	15.2	0.8	......	6.2
Tri-County Farm Bureau Co-op. Ass'n	810a	5988	Evansville	found	......	......	......	......	16.1	1.1	......	6.3
Farm Bureau 2-12-6	811a	......	......	guaranteed	......	......	......	2.0	12.0	......	......	6.0
Clinton County Farm Bureau	811a	5175	Frankfort	found	2.24	......	......	2 3	**11.6**	3.0	......	6.6
Farmers Co-operative Elevator Co.	811a	5273	Clay City	found	1.96	......	......	2.1	12.1	2.3	......	6.0
Clay County Farm Bureau[125]	811a	5275	Brazil	found	2.09	......	......	2.2	14.3	0.9	......	6.0
Putnam County Farm Bureau Co-op. Ass'n, Inc.	811a	5296	Greencastle	found	1 89	......	......	2.0	12.8	1.7	......	5.8
Tipton County Farm Bureau[125]	811a	5310	Tipton	found	2 03	......	......	2.1	12.6	1.6	......	5.8
Geo. Wood[126]	811a	5338	Remington	found	1.83	......	......	2.0	12.5	2.3	......	6 3
Pike County Farm Bureau	811a	5464	Petersburg	found	1.96	......	......	2.1	14.1	1.3	......	5.4
Steuben Grain Co.	811a	5482	Pleasant Lake	found	1.89	......	......	2.1	13.0	1.8	......	6 1
Lagrange County Farm Bureau	811a	5485	Lagrange	found	2.00	......	......	2.1	13.9	2.3	......	6 1
Wabash County Farm Bureau	811a	5492	Wabash	found	2.16	......	......	2.3	12.6	2 2	......	6 8
Morgan County Farm Bureau	811a	5495	Mooresville	found	2 18	......	......	2.3	12.0	2.7	......	6.6
Owen County Farm Bureau	811a	5497	Spencer	found	1 96	......	......	2.1	12.4	3.1	......	6.5
Cass County Farm Bureau[127]	811a	5526	Logansport	found	2.29	......	......	2 4	**10.6**	4 1	......	6.4
Farmers Marketing Ass'n	811a	5529	Columbus	found	2.00	......	......	2.1	12.8	2 4	......	6 4
Wanatah Mercantile Co.	811a	5550	Wanatah	found	1.89	......	......	2.1	12.1	2.8	......	6.2
Porter County Farm Bureau	811a	5555	Valparaiso	found	1.92	......	......	2 1	12.1	1.4	......	6.0
Steuben County Farm Bureau	811a	5570	Pleasant Lake	found	1.89	......	......	2.1	12 8	0 7	......	6 3
Whitley County Farm Bureau	811a	5590	Columbia City	found	1.86	......	......	2.1	12.8	1 0	......	6.4
R. C. Fretz Feed Store	811a	5597	Waterloo	found	1.44	......	......	2.1	12.9	0.9	......	5 6
George Dilley	811a	5602	Waterloo	found	2 13	......	......	2.3	12 6	1 3	......	6 2
Huntington County Farm Bureau	811a	5612	Huntington	found	1 96	......	......	2.1	13 2	1 8	......	6 4
Montgomery County Farm Bureau[128]	811a	5648	Frankfort	found	1.97	......	......	2.1	12.1	1.3	......	6 5
Noble County Farm Bureau	811a	5659	Albion	found	1 97	......	......	2.2	12 4	0 8	......	6 7
Kosciusko County Farm Bureau	811a	5670	Milford	found	2 06	......	......	2.2	14 0	2 3	......	6 6

Where 60.0 per cent or more of the total nitrogen guaranteed was found to be water soluble, the active and inactive insoluble organic was not determined.

Percentages appearing in bold type in the "Inactive water insoluble organic" column denote inferior nitrogen.

[117] Not tagged. Labels furnished.

[118] Refund $5.85.

[119] Purchased from Clinton Co. Farm Bureau.

[120] Purchased from Farm Bureau Feed & Supply Co.

[121] Purchased from Farm Bureau Feed & Supply Co. Refund $0.42.

[122] Purchased from Anderson Bros.

[123] Sample received in the spring.

[124] Purchased from Tipton Co. Farm Bureau.

[125] Sample received in the spring.

[126] Purchased from Farm Bureau.

[127] Refund $8.40.

[128] Purchased from Clinton Co. Farm Bureau.

TABLE XI.—Report of Inspection of Fertilizer Collected in 1930—Continued

Labels and names of persons from whom samples were secured	Official No.	Inspection No. H. H.	Samples taken at		Nitrogen (N)				Phosphoric acid (P_2O_5)			Potash (K_2O), soluble in water, per cent
					Water soluble as nitrates, ammonia salts and organic, per cent	Active water insoluble organic, per cent	Inactive water insoluble organic, per cent	Total per cent	Soluble and reverted (available), per cent	Insoluble, per cent	Total per cent	
Lagrange County Farm Bureau	811a	5703	Lagrange	found	1.86	......	......	2.0	12.9	1.4	......	6.5
Kendallville Shipping Ass'n	811a	5713	Kendallville	found	1.99	......	......	2.2	12.4	1.6	......	6.2
Tippecanoe County Farm Bureau	811a	5721	Buck Creek	found	2.38	......	......	2.5	11.1	4.0	......	6.5
Howard County Farm Bureau	811a	5737	Kokomo	found	1.89	......	......	2.1	12.6	2.6	......	6.2
Howard County Farm Bureau	811a	5739	Kokomo	found	2.10	......	......	2.2	12.4	2.8	......	6.2
Miami County Farm Bureau	811a	5743	Peru	found	2.03	......	......	2.2	12.1	1.3	......	6.4
Central States Elevator Corp.	811a	5746	Montezuma	found	1.94	......	......	2.1	12.1	1.2	......	6.2
Carroll County Farm Bureau[129]	811a	5763	Rockfield	found	2.39	......	......	2.5	9.8	3.7	......	6.5
Tipton County Farm Bureau	811a	5783	Tipton	found	1.83	......	......	2.0	12.0	1.9	......	6.9
Johnson County Farm Bureau	811a	5799	Franklin	found	1.96	......	......	2.1	14.1	1.9	......	6.2
Shelby County Farm Bureau	811a	5813	Rays Crossing	found	1.82	......	......	2.0	12.2	1.1	......	6.0
Paul Stoner	811a	5824	Ladoga	found	1.82	......	......	2.1	12.4	1.6	......	6.0
Wm. Koenig[130]	811a	5828	Carlisle	found	1.95	......	......	2.2	13.0	2.6	......	6.5
Clay County Farm Bureau	811a	5837	Brazil	found	2.06	......	......	2.2	13.4	2.9	......	6.2
Farmers Grain Co.	811a	5852	Bloomington	found	1.82	......	......	2.1	12.6	2.2	......	6.2
Morgan County Farm Bureau	811a	5862	Martinsville	found	1.96	......	......	2.1	12.6	1.6	......	6.0
Clarence Edmondson	811a	5865	Clayton	found	1.89	......	......	2.1	13.0	2.4	......	6.4
Shelby County Farm Bureau	811a	5899	Waldron	found	2.01	......	......	2.2	12.0	1.5	......	6.2
Daviess County Farm Bureau	811a	5947	Washington	found	1.96	......	......	2.1	13.2	2.2	......	6.1
Jennings County Farm Bureau	811a	5971	North Vernon	found	1.86	......	......	2.1	13.7	2.2	......	6.2
Tri-County Farm Bureau	811a	5989	Evansville	found	2.03	......	......	2.2	12.8	2.4	......	6.1
Knox County Farm Bureau	811a	6003	Vincennes	found	2.26	......	......	2.4	14.2	3.0	......	6.5
Gibson County Shipping Ass'n	811a	6011	Haubstadt	found	2.04	......	......	2.2	12.4	2.6	......	6.2
Wm. Muth[131]	811a	6022	Madison	found	1.99	......	......	2.2	13.1	2.6	......	6.1
Aurora Farmers Supply Co.	811a	6048	Aurora	found	1.90	......	......	2.2	12.0	1.2	......	6.0
Farm Bureau 0-12-12	812a	.....	......	guaranteed	......	......	......	......	12.0	......	......	12.0
Joseph I. Kosta	812a	5547	Parr	found	......	......	......	......	12.7	1.1	......	12.3
Arthur Arnett[132]	812a	5647	Frankfort	found	......	......	......	......	12.0	1.0	......	13.0
Farm Bureau 0-28-12	822a	.....	......	guaranteed	......	......	......	......	28.0	......	......	12.0
L. W. Moore[133]	822a	5445	Otterbein	found	......	......	......	......	29.3	1.0	......	12.8
Farm Bureau 4-24-4	824a	.....	......	guaranteed	......	......	......	4.0	24.0	......	......	4.0
Howard County Farm Bureau	824a	5725	Kokomo	found	3.80	......	......	4.0	24.1	1.0	......	4.5
Jess Beydler	824a	5749	Rossville	found	3.74	......	......	3.8	24.5	1.9	......	4.1
Farm Bureau 3-9-18	832a	.....	......	guaranteed	......	......	......	3.0	9.0	......	......	18.0
Kosciusko County Farm Bureau[134]	832a	5675	Milford	found	3.03	......	......	3.1	10.6	1.3	......	16.4
Farm Bureau 0-12-8	835a	.....	......	guaranteed	......	......	......	......	12.0	......	......	8.0
Roy Bowman[135]	835a	5764	Rockfield	found	......	......	......	......	10.9	3.3	......	9.3

	837a	.....	.....	guaranteed	.....	.....	.....	2.0	14.0	.....	.....	4.0
Cass County Farm Bureau	837a	5525	Logansport	found	2.29	.....	.....	2.5	14.2	2.6	.....	4.6
Lagrange County Farm Bureau	837a	5711	Lagrange	found	1.96	.....	.....	2.2	15.6	2.1	.....	4.3
Howard County Farm Bureau	837a	5729	Kokomo	found	2.10	.....	.....	2.2	15.5	1.9	.....	4.3
Farmers Grain Co.	837a	5848	Bloomington	found	2.00	.....	.....	2.2	14.0	3.2	.....	4.2
Morgan County Farm Bureau	837a	5860	Martinsville	found	2.06	.....	.....	2.2	14.2	1.4	.....	4.2
Daviess County Farm Bureau	837a	5939	Washington	found	2.01	.....	.....	2.1	14.5	1.7	.....	4.1
Farm Bureau 0-10-10	840a	.....	.....	guaranteed	.....	.....	.....	.....	10.0	.....	.....	10.0
Wanatah Mercantile Co.	840a	5548	Wanatah	found	.....	.....	.....	.....	10.8	0.7	.....	10.3
Farm Bureau 0-8-24	841a	.....	.....	guaranteed	.....	.....	.....	.....	8.0	.....	.....	24.0
Jasper County Farm Bureau	841a	5324	Parr	found	.....	.....	.....	.....	8.6	1.6	.....	**23.7**
Farm Bureau 0-20-20	846a	.....	.....	guaranteed	.....	.....	.....	.....	20 0	.....	.....	20.0
Mt. Ayr Grain Co.	846a	5325	Mt. Ayr, mail Parr	found	.....	.....	.....	.....	19.8	0.2	.....	19.8
Farm Bureau 3-20-20	847a	.....	.....	guaranteed	.....	.....	.....	3.0	20.0	.....	.....	20.0
Loyd Madaus[136]	847a	5441	Medaryville	found	2.79	.....	.....	3.0	20.6	0.5	.....	19.8
Farm Bureau 2-12-2	856a	.....	.....	guaranteed	.....	.....	.....	2.0	12.0	.....	.....	2.0
Farmers Marketing Ass'n	856a	5628	Columbus	found	1.96	.....	.....	2.1	12.0	2.6	.....	2.0
Jess Beydler[137]	856a	5755	Rossville	found	2.13	.....	.....	2.2	9.4	4.9	.....	2.4
Carroll County Farm Bureau[138]	856a	5762	Rockfield	found	2.11	.....	.....	2.2	**10.3**	3.5	.....	2.0
Johnson County Farm Bureau	856a	5795	Franklin	found	1.93	.....	.....	2.1	12.9	2.3	.....	3.2
Wm. Koenig[139]	856a	5833	Carlisle	found	1.70	.....	.....	2.1	12.6	2.4	.....	2.0
Grant County Farm Bureau	856a	5924	Marion	found	1.82	.....	.....	2.1	12.1	2.6	.....	2.4
John F. Stover[140]	856a	5934	Crawfordsville	found	2.62	.....	.....	2.7	14.1	1.0	.....	**1.3**
John F. Stover[140]	856a	5935	Crawfordsville	found	2.06	.....	.....	2.2	**11.1**	3.6	.....	2.9
Farm Bureau Feed & Supply Co.	856a	5936	Crawfordsville	found	2.29	.....	.....	2.4	**11 0**	2.3	.....	2.8
Farm Bureau 0-24-24	880a	.....	.....	guaranteed	.....	.....	.....	.....	24.0	.....	.....	24.0
Farm Bureau[141]	880a	5766	Delphi	found	.....	.....	.....	.....	17.8	0.4	.....	31.7
International Agricultural Corporation, Cincinnati, Ohio.												
Nitrate of Soda	7667	.....	.....	guaranteed	.....	.....	.....	15.0				
Roy Nedderman	7667	4756	Sunman	found	.....	.....	.....	15.7	.....	.....	.....	.....
International 16% Superphosphate	7881	.....	.....	guaranteed	.....	.....	.....	.....	16.0	1.0	.....	.....
L. N. Jobe & Son	7881	4726	English	found	.....	.....	.....	.....	16.4	2.9	.....	.....
Reynolds Brooks Hardware	7881	4944	Loogootee	found	.....	.....	.....	.....	16.0	1.5	.....	.....
Fred H. Tripp Hardware Co.	7881	5363	North Vernon	found	.....	.....	.....	.....	16.6	1.9	.....	.....
Muriate of Potash	7976	.....	.....	guaranteed	.....	.....	.....	.....	.....	.....	.....	50.0
Samuel Craigmile[142]	7976	4648	Knox	found	.....	.....	.....	.....	.....	.....	.....	50.3
H. B. Fry Feed Mill & Elevator	7976	5118	Argos	found	.....	.....	.....	.....	.....	.....	.....	50.5
I. A. C. Twelve-Twelve	9038	.....	.....	guaranteed	.....	.....	.....	.....	12.0	1.0	.....	12 0
Steuben Coal Co.	9038	5014	Angola	found	.....	.....	.....	.....	11.9	2.1	.....	12.4
B. I. Holser[143]	9038	5646	Walkerton	found	.....	.....	.....	.....	13 5	1.2	.....	6.8

Where 60.0 per cent or more of the total nitrogen guaranteed was found to be water soluble, the active and inactive insoluble organic was not determined. Percentages appearing in bold type in the "Inactive water insoluble organic" column denote inferior nitrogen.

[129] Refund $5.94.

[130] Purchased from Sullivan Co. Farm Bureau.

[131] Purchased from John S. Smith.

[132] Purchased from Clinton Co. Farm Bureau.

[133] Purchased from Tippecanoe Co. Farm Bureau Cooperative Ass'n.

[134] Refund $4.80.

[135] Purchased from Carroll Co. Farm Bureau.

[136] Purchased from Medaryville Cooperative Co.

[137] Refund $6.24.

[138] Refund $2.43.

[139] Purchased from Sullivan Co. Farm Bureau.

[140] Purchased from Farm Bureau Feed & Supply Co.

[141] Refund $2.35.

[142] Will use on own farm.

[143] Sample to manufacturer. Refund $104.00.

TABLE XI.—Report of Inspection of Fertilizer Collected in 1930—Continued

Labels and names of persons from whom samples were secured	Official No.	Inspection No. H. H.	Samples taken at		Nitrogen (N)				Phosphoric acid (P_2O_5)			
					Water soluble as nitrates, ammonia salts and organic, per cent	Active water insoluble organic, per cent	Inactive water insoluble organic, per cent	Total per cent	Soluble and reverted (available), per cent	Insoluble, per cent	Total per cent	Potash (K_2O), soluble in water, per cent
I. A. C. Twelve-Six	9039	.....	.....	guaranteed	.....	.....	.....	.....	12.0	1.0	.....	6.0
Farmers Co-operative Co.	9039	5352	Ade, mail Kentland	found	.....	.....	.....	.....	11.5	1.5	.....	6.1
Roberts Feed & Produce Co.	9039	6060	Brookville	found	.....	.....	.....	.....	12.0	0.8	.....	6.0
I. A. C. 20% Superphosphate	9040	.....	.....	guaranteed	.....	.....	.....	.....	20.0	1.0	.....	.....
Heise Bros.	9040	4928	Mitchell	found	.....	.....	.....	.....	20.0	0.4	.....	.....
H. B. Fry Feed Mill & Elevator	9040	5119	Argos	found	.....	.....	.....	.....	20.2	0.4	.....	.....
International Ten-Ten	9922	.....	.....	guaranteed	.....	.....	.....	.....	10.0	.....	.....	10.0
Farmers Co-operative Co.	9922	5350	Ade, mail Kentland	found	.....	.....	.....	.....	10.0	0.9	.....	10.4
International Multiple Strength 4-24-12	141a		.....	guaranteed	.....	.....	.....	4.0	24.0	.....	.....	12.0
Claude Williams[144]	141a	5933	Muncie	found	3.69	.....	.....	4.0	23.0	0.3	.....	12.4
Roberts Feed & Produce Co.[145]	141a	6057	Brookville	found	3.89	.....	.....	4.0	22.8	0.5	.....	12.7
International Multiple Strength 28-12	144a	.....	.....	guaranteed	.....	.....	.....	.....	28.0	.....	.....	12.0
Roberts Feed & Produce Co.	144a	6061	Brookville	found	.....	.....	.....	.....	27.7	0.7	.....	12.0
International Special Onion Fertilizer 3-9-18	145a	.....	.....	guaranteed	.....	.....	.....	3.0	9.0	.....	.....	18.0
Steuben Coal Co.[146]	145a	5013	Angola	found	2.39	.....	.....	2.7	9.1	0.4	.....	18.6
International Tomato Special 2-12-6	148a	.....	.....	guaranteed	.....	.....	.....	2.0	12.0	.....	.....	6.0
Roberts Feed & Produce Co.	148a	5192	Brookville	found	2.04	.....	.....	2.2	13.5	0.8	.....	6.5
Petersburg Milling & Grain Co.	148a	5461	Petersburg	found	2.07	.....	.....	2.2	12.7	1.0	.....	7.0
International Extra High Grade 2-12-6	149a	.....	.....	guaranteed	.....	.....	.....	2.0	12.0	.....	.....	6.0
L. N. Jobe & Son	149a	4725	English	found	1.89	.....	.....	2.2	12.8	0.9	.....	6.3
Reynolds Brooks Hardware Co.	149a	4934	Loogootee	found	1.75	.....	.....	2.0	12.3	0.1	.....	6.6
Farmers Co-operative Co.[147]	149a	5356	Ade, mail Kentland	found	1.99	.....	.....	2.2	12.2	1.1	.....	6.0
J. W. Swick	149a	5695	Akron	found	1.42	.....	.....	1.7	14.9	0.8	.....	8.5
Frank E. Gray	149a	5857	Spencer	found	1.75	.....	.....	2.1	13.6	.....	.....	6.4
Samuel L. Griffith	149a	5871	Worthington	found	1.82	.....	.....	2.1	12.6	0.9	.....	6.4
Fred H. Tripp Hardware	149a	5969	North Vernon	found	1.69	.....	.....	2.1	13.0	0.4	.....	6.6
Roy Nedderman	149a	6012	Sunman	found	1.79	.....	.....	2.1	12.7	0.5	.....	6.6
International Truck & Potato Special 2-8-10	150a	.....	.....	guaranteed	.....	.....	.....	2.0	8.0	.....	.....	10.0
Steuben Coal Co.	150a	5001	Angola	found	1.86	.....	.....	2.1	8.0	1.0	.....	10.1
International Quality Burley Tobacco Producer 4-10-6	151a	.....	.....	guaranteed	.....	.....	.....	4.0	10.0	.....	.....	6.0
Roy Nedderman	151a	4755	Sunman	found	2.95	.....	.....	4.1	11.0	1.8	.....	6.7
Roberts Feed & Produce Co.	151a	5179	Brookville	found	2.80	.....	.....	3.8	10.8	1.4	.....	6.3
International Farmers Favorite 2-14-4	152a	.....	.....	guaranteed	.....	.....	.....	2.0	14.0	.....	.....	4.0
H. B. Fry Feed Mill & Elevator	152a	5117	Argos	found	1.89	.....	.....	2.1	13.8	1.2	.....	4.7

Elza D. Easton	153a	5950	Bedford	found	3.65			4.0	8.1	0.3		10.0
International Ideal Wheat and Corn 2-10-4	154a			guaranteed				2.0	10 0			4.0
Steuben Coal Co.	154a	5011	Angola	found	1.76			2.0	10.1	1.5		4.6
Petersburg Milling & Grain Co.	154a	5462	Petersburg	found	1.93			2.2	11.6	0.3		4.3
Frank E. Gray	154a	5861	Spencer	found	1.97			2.1	10.5			4.3
International Crop Grower 2-12-2	155a			guaranteed				2.0	12.0			2.0
Roy Nedderman[148]	155a	4750	Sunman	found	1.69			2.1	12.3	1.4		2.4
Heise Bros.[149]	155a	4941	Mitchell	found	1.52			1.7	12.1	1.0		4.4
Roberts Feed & Produce Co.	155a	5181	Brookville	found	1.79			2.1	12.2	1.2		2.6
Orval Baker	155a	5811	Rays Crossing	found	1.89			2.1	12.4	1.0		2.1
Frank E. Gray	155a	5863	Spencer	found	1.87			2.1	13.0	0.5		2.3
Reynolds Brooks Hardware Co.	155a	5940	Loogootee	found	1.82			2.1	13.3	0.6		2.4
Roy Nedderman	155a	6018	Sunman	found	1.77			2.0	12.5	1.0		2.2
Chas. E. Doerflein	155a	6059	Cedar Grove	found	1.68			2.1	13.0	1.4		2.1
International Grain Grower 1-10-3	156a			guaranteed				1.0	10.0			3.0
L. N. Jobe & Son	156a	4720	English	found	0.73			1.0	11.7	0.6		3.5
Roy Nedderman	156a	4754	Sunman	found	0.95			1.2	9 9	1.1		3.0
Reynolds Brooks Hardware Co.	156a	4957	Loogootee	found	0.93			1.1	10 5	0.2		3.3
Fred H. Tripp Hardware Co.	156a	5362	North Vernon	found	0.89			1.0	10.9	1.0		3.7
Orval Baker	156a	5816	Rays Crossing	found	1.16			1.2	10.0	0.9		3.0
Elza D. Easton	156a	5953	Bedford	found	0.92			1.2	10.2	0.5		3.5
Fred H. Tripp Hardware Co.	156a	5965	North Vernon	found	0.83			1.0	11.0	0 4		3.0
Roberts Feed & Produce Co.	156a	6058	Brookville	found	0.98			1.2	10 7	0 5		3.0
International Alkaline 14-6	158a			guaranteed					14.0			6.0
R. T. Overstreet	158a	5804	Whiteland	found					14.1	0.9		6.1
Pierceville Mill & Elevator Co.	158a	6013	Pierceville	found					14.1	0.8		6.3
Jones Phosphate Company, Robin, Nashville, Tenn.												
Manfield Blue Rock Phosphate	5451			guaranteed							28.0	
John S. Capper, Jr.	5451	6065	Star City	found							30 2	
Joslin-Schmidt Corporation, (Groves Fertilizer Works), Cincinnati, Ohio.												
Square Brand 0-10-10	9448			guaranteed					10.0	1 0		10 0
Monroeville Equity Exchange	9448	4996	Monroeville	found					11 0	1.2		9.2
Decatur County Co-operative Co.	9448	5074	Greensburg	found					10 0	0.8		10.0
Square Brand 0-14-4	9449			guaranteed					14.0	1.0		4.0
Monroeville Equity Exchange	9449	4916	Monroeville	found					15 0	0.6		4.5
Decatur County Co-operative Co.	9449	5916	Greensburg	found					15 4	1.0		4.2
Decatur County Co-operative Co.	9449	5918	Greensburg	found					14 2	1 4		4.8
Square Brand 0-8-24	9450			guaranteed					8 0	1.0		24.0
Burt Graffe[150]	9450	5380	Star City	found					7.9	1.1		26.0
Square Brand 0-12-12	9451			guaranteed					12 0	1 0		12.0
Stephen Kohley	9451	5544	Rensselaer	found					12.1	0 8		12.0

Where 60.0 per cent or more of the total nitrogen guaranteed was found to be water soluble, the active and inactive insoluble organic was not determined.

Percentages appearing in bold type in the "Inactive water insoluble organic" column denote inferior nitrogen.

[144] Purchased from Farmers Elevator. Sample to manufacturer. Refund $3.90.

[145] Sample to manufacturer. Refund $4.32.

[46] Sample to manufacturer. Refund $4.56.

[147] Not tagged. Labels furnished.

[148] Sample received in the spring.

[149] Sample to manufacturer. Refund $5.70.

[150] Purchased from Phillips Bros.

TABLE XI.—Report of Inspection of Fertilizer Collected in 1930—Continued

Labels and names of persons from whom samples were secured	Official No.	Inspection No. H. H.	Samples taken at		Nitrogen (N)				Phosphoric acid (P_2O_5)			Potash (K_2O), soluble in water, per cent
					Water soluble as nitrates, ammonia salts and organic, per cent	Active water insoluble organic, per cent	Inactive water insoluble organic, per cent	Total per cent	Soluble and reverted (available), per cent	Insoluble, per cent	Total per cent	
16% Superphosphate	9452	.....	.....	guaranteed	.....	.....	.....	.....	16.0	1.0	.....	.....
Monroeville Equity Exchange	9452	4925	Monroeville	found	.....	.....	.....	.....	16.8	1.6	.....	.....
Decatur County Co-operative Co.	9452	5904	Greensburg	found	.....	.....	.....	.....	16.1	1.1	.....	.....
20% Superphosphate	9453	.....	.....	guaranteed	.....	.....	.....	.....	20.0	1.0	.....	.....
Monroeville Equity Exchange	9453	4922	Monroeville	found	.....	.....	.....	.....	20.3	1.2	.....	.....
Square Brand 0-20-20	9680	.....	.....	guaranteed	.....	.....	.....	.....	20.0	1.0	.....	20.0
Fred Malchow[150]	9680	5379	Star City	found	.....	.....	.....	.....	20.6	1.0	.....	19.1
Asa Bonnell[150]	9680	5384	Kewanna	found	.....	.....	.....	.....	20.5	0.9	.....	19.8
Carl Schultz[150]	9680	5385	Star City	found	.....	.....	.....	.....	20.9	0.9	.....	20.0
Square Brand 0-14-6	184a	.....	.....	guaranteed	.....	.....	.....	.....	14.0	0.5	.....	6.0
Rush Service	184a	5054	Rushville	found	.....	.....	.....	.....	14.2	1.4	.....	8.1
Decatur County Co-operative Co.	184a	5071	Greensburg	found	.....	.....	.....	.....	14.0	1.0	.....	6.2
Huntington Equity Exchange	184a	5610	Huntington	found	.....	.....	.....	.....	13.3	0.9	.....	6.4
Guy Wolverston[151]	184a	5652	Chalmers	found	.....	.....	.....	.....	13.6	0.9	.....	7.2
Square Brand 2-12-6	415a	.....	.....	guaranteed	.....	.....	.....	2.0	12.0	0.5	.....	6.0
Groves Implement Store	415a	4703	Tell City	found	1.51	.....	.....	2.1	12.1	1.8	.....	5.7
Monroeville Equity Exchange	415a	4924	Monroeville	found	2.01	.....	.....	2.3	11.6	3.0	.....	6.2
Rush Service Bureau	415a	5047	Rushville	found	1.76	.....	.....	2.2	12.9	0.9	.....	6.8
Decatur County Co-operative Co.	415a	5061	Greensburg	found	0.95	0.70	0.25	1.9	11.5	1.8	.....	9.8
Decatur County Co-operative Co.	415a	5067	New Point	found	1.89	.....	.....	2.3	15.2	1.7	.....	6.7
Burk Graffis[152]	415a	5387	Star City	found	1.86	.....	.....	2.3	11.7	1.6	.....	6.3
Minor Nice[152]	415a	5393	Star City	found	2.04	.....	.....	2.2	12.5	1.1	.....	6.8
Decatur County Co-operative Co.[153]	415a	5421	Greensburg	found	1.40	.....	.....	2.2	11.6	1.8	.....	6.1
Decatur County Co-operative Co.[154]	415a	5897	Greensburg	found	1.56	.....	.....	2.0	12.1	1.6	.....	6.1
Decatur County Co-operative Co.	415a	5898	Greensburg	found	1.67	.....	.....	2.2	12.3	1.1	.....	6.0
Decatur County Co-operative Co.[155]	415a	5913	Greensburg	found	1.28	.....	.....	1.7	11.4	1.4	.....	7.3
Square Brand 2-12-2	416a	.....	.....	guaranteed	.....	.....	.....	2.0	12.0	0.5	.....	2.0
Rush Service Bureau	416a	5048	Rushville	found	1.61	.....	.....	2.2	12.1	1.8	.....	2.2
Walter G. Carson[156]	416a	5052	Falmouth	found	1.71	.....	.....	2.3	12.2	1.5	.....	2.5
Decatur County Co-operative Co.[153]	416a	5073	Greensburg	found	1.48	.....	.....	2.1	12.8	1.3	.....	2.4
Decatur County Co-operative Co.	416a	5425	Greensburg	found	1.79	.....	.....	2.2	12.5	2.3	.....	2.2
Decatur County Co-operative Co.	416a	5883	Greensburg	found	1.56	.....	.....	2.1	12.7	1.8	.....	3.1
Decatur County Co-operative Co.	416a	5903	Greensburg	found	1.26	.....	.....	2.2	12.0	0.4	.....	2.6
Square Brand 2-14-4	417a	.....	.....	guaranteed	.....	.....	.....	2.0	14.0	0.5	.....	4.0
Rush Service Bureau	417a	5049	Rushville	found	1.61	.....	.....	2.2	15.0	1.4	.....	5.4
Decatur County Co-operative Co.	417a	5905	Greensburg	found	1.68	.....	.....	2.2	13.9	1.3	.....	4.4

Monroeville Equity Exchange	419a	4920	Monroeville	found	2.04	......	......	2.6	9.1	0.8	......	6.7
Square Brand 2-8-16	579a	......		guaranteed	......	......	......	2.0	8.0	0.5	......	16.0
Gilbert Westfall[157]	579a	5397	Star City	found	1.09	......	......	1.3	8.8	0.9	......	18.9
Square Brand 1-11-4	844a	......		guaranteed	......	......	......	1.0	11.0	......	......	4.0
Decatur County Co-operative Co.	844a	5900	Greensburg	found	0.28	0.40	**0.42**	1.1	11.3	0.7	......	4.6
Decatur County Co-operative Co.	844a	5901	Greensburg	found	0.97	......	......	1.6	13 3	1.3	......	3.8
Long Company, The J. K.,												
Versailles, Ohio.												
Wonder-Growth	713a	......		guaranteed	......	......	......	2.5	......	......	0.5	5.0
Indiana State Milling Co.[158]	713a	5475	South Bend	found	0.95	0.50	**0.65**	**2.1**	......	......	0.5	**3.8**
Louisville Fertilizer Company, (Owned and Operated by Armour Fertilizer Works), Cincinnati, Ohio.												
Louisville 0-16-8 Fertilizer	9386	......		guaranteed	......	......	......	......	16.0	0.5	......	8.0
W. H. Hardy & Son	9386	5238	Anderson	found	......	......	......	......	16.7	0.1	......	9.0
Louisville 2-16-8 Fertilizer	299a	......		guaranteed	......	......	......	2.0	16.0	0.5	......	8.0
W. H. Hardy & Son	299a	5239	Anderson	found	2.20	......	......	2.3	17.1	0.3	......	8.2
Louisville Burley Tobacco Grower 3-8-6	301a	......		guaranteed	......	......	......	3.0	8.0	0.5	......	6.0
L. Thorn & Son	301a	4974	New Albany	found	2.29	......	......	3.1	7.7	1.2	......	6.3
Louisville Fertilizer Company,												
(Armour Owned), Louisville, Ky.												
Sixteen Percent	8073	......		guaranteed	......	......	......	......	16.0	0.5	......	......
Floyd E. Gladish	8073	5465	Petersburg	found	......	......	......	......	16.0	1.5	......	......
Louisville 0-10-10 Fertilizer	8722	......		guaranteed	......	......	......	......	10.0	0.5	......	10.0
W. Trow & Co.	8722	5413	Madison	found	......	......	......	......	10.7	0.6	......	10.0
Louisville 20% Superphosphate	9206	......		guaranteed	......	......	......	......	20.0	1.0	......	......
W. Trow & Co.	9206	5410	Madison	found	......	......	......	......	20.2	0.4	......	......
Miami Fertilizer Company,												
Dayton, Ohio.												
Big M 0-20-0%	9476	......		guaranteed	......	......	......	......	20.0	1.0	......	......
V. W. Norris & Son	9476	5892	Rushville	found	......	......	......	......	21.1	1.6	......	......
Big M 0-16-0%	9477	......		guaranteed	......	......	......	......	16.0	1.0	......	......
V. W. Norris & Son	9477	5885	Rushville	found	......	......	......	......	16.4	1.5	......	......
Big M 1-11-3	437a	......		guaranteed	......	......	......	1.0	11.0	1.0	......	3.0
V. W. Norris & Son[159]	437a	5056	Rushville	found	1.00	......	......	1.2	12.0	1.4	......	3.2
V. W. Norris & Son	437a	5872	Rushville	found	0.89	......	......	1.1	10.7	1.0	......	3.4
Big M 2-12-6	440a	......		guaranteed	......	......	......	2.0	12.0	1.0	......	6.0
V. W. Norris & Son	440a	5055	Rushville	found	2.13	......	......	2.2	15.3	1.5	......	6.9
Big M 2-16-8	441a	......		guaranteed	......	......	......	2.0	16.0	1.0	......	8.0
V. W. Norris & Son[159]	441a	5059	Rushville	found	1.86	......	......	2.0	16.4	2.2	......	8.3
V. W. Norris & Son	441a	5874	Rushville	found	1.92	......	......	2.1	15.8	1.3	......	8.1

Where 60.0 per cent or more of the total nitrogen guaranteed was found to be water soluble, the active and inactive insoluble organic was not determined.

Percentages appearing in bold type in the "Inactive water insoluble organic" column denote inferior nitrogen.

[151] Purchased from Chalmers Grain Co.

[152] Purchased from Phillips Bros.

[153] Sample received in the spring.

[154] Not tagged. Labels furnished.

[155] Not tagged. Labels furnished. Refund $13.97.

[156] Purchased from Rush Service Bureau.

[157] Purchased from Phillips Bros. Refund $11.30.

[158] Refund $14.97. 14½ tons fertilizer returned to factory.

[159] Sample received in the spring.

TABLE XI.—Report of Inspection of Fertilizer Collected in 1930—Continued

Labels and names of persons from whom samples were secured	Official No.	Inspection No. H. H.	Samples taken at		Nitrogen (N)				Phosphoric acid (P₂O₅)			Potash (K₂O), soluble in water, per cent
					Water soluble as nitrates, ammonia salts and organic, per cent	Active water insoluble organic, per cent	Inactive water insoluble organic, per cent	Total per cent	Soluble and reverted (available), per cent	Insoluble, per cent	Total per cent	
Big M 2-14-4	442a	......	......	guaranteed	......	......	......	2.0	14.0	1.0	......	4.0
V. W. Norris & Son	442a	5050	Rushville	found	2.03	......	......	2.2	14.1	1.5	......	4.5
Big M 4-10-6	443a	......	......	guaranteed	......	......	......	4.0	10.0	1.0	......	6.0
V. W. Norris & Son	443a	5057	Rushville	found	3.93	......	......	4.1	12.7	1.0	......	6.0
Big M 0-14-6	769a	......	......	guaranteed	......	......	......	......	14.0	0.5	......	6.0
V. W. Norris & Son[159]	769a	5058	Rushville	found	......	......	......	......	14.0	0.8	......	6.3
V. W. Norris & Son[160]	769a	5873	Rushville	found	......	......	......	......	13.7	1.9	......	6.0
Big M 0-12-12	770a	......	......	guaranteed	......	......	......	......	12.0	0.5	......	12.0
V. W. Norris & Son[161]	770a	5053	Rushville	found	......	......	......	......	12.1	1.5	......	12.2
V. W. Norris & Son[162]	770a	5876	Rushville	found	......	......	......	......	11.1	1.4	......	12.5
Nitrate Agency Company, New York, N. Y.												
Naco	892a	......	......	guaranteed	......	......	......	6.0	4.0	......	......	2.0
Greiner Seed Co.	892a	6064	Indianapolis	found	4.04	......	......	6.7	5.1	0.3	......	2.0
Nitrate Fertilizer Company, The, Columbus, Ohio.												
Muriate of Potash	8431	......	......	guaranteed	......	......	......	......	......	......	......	50.0
Ort & Co.	8431	4645	Churubusco	found	......	......	......	......	......	......	......	49.8
H. O. Greene[163]	8431	5095	Goshen	found	......	......	......	......	......	......	......	48.7
Nitrate of Soda	8432	......	......	guaranteed	......	......	......	15.0	......	......	......	......
H. O. Greene	8432	5097	Goshen	found	......	......	......	15.8	......	......	......	......
20% Superphosphate	9779	......	......	guaranteed	......	......	......	......	20.0	......	......	......
Hamlet Co-operative Shipping Ass'n	9779	5551	Hamlet	found	......	......	......	......	21.8	......	......	......
Norris Fertilizer Company, Rushville, Indiana.												
Norris' 16% Superphosphate	8930	......	......	guaranteed	......	......	......	......	16.0	......	......	......
Norris Fertilizer Co.	8930	5878	Rushville	found	......	......	......	......	15.7	1.8	......	......
Norris' High Quality 10-10	9063	......	......	guaranteed	......	......	......	......	10.0	......	......	10.0
Indiana Epileptic Village[164]	9063	4858	Newcastle	found	......	......	......	......	11.1	2.6	......	12.0
Norris Fertilizer Co.	9063	5045	Rushville	found	......	......	......	......	12.5	0.3	......	11.4
Norris' Corn and Wheat Special 1-12-2	514a	......	......	guaranteed	......	......	......	1.0	12.0	......	......	2.0
Fayette Grain Co.	514a	5193	Connersville	found	0.85	......	......	1.1	13.2	0.8	......	2.3
Norris Fertilizer Co.	514a	5887	Rushville	found	0.82	......	......	1.1	13.5	1.4	......	2.1

			Rushville	found	0.70			1.0	13.4	1.3		3.2
Norris' Grain Grower	516a			guaranteed				1.0	11.0			5.0
Norris Fertilizer Co.	516a	5046	Rushville	found	0.84			1.1	11.4	0.9		5.5
Fayette Grain Co.	516a	5199	Connersville	found	0.78			1.0	13.3	0.5		5.0
Norris' High Quality 2-12-6	522a			guaranteed				2.0	12.0			6.0
Indiana Epileptic Village[164]	522a	4867	Newcastle	found	1.75			2.1	13.3	0.3		6.3
Norris Fertilizer Co.	522a	5051	Rushville	found	1.75			2.0	11.6	0.9		7.0
Norris Fertilizer Co.	522a	5879	Rushville	found	1.82			2.1	12.2	1.0		6.2
Norris' High Quality 2-12-2	523a			guaranteed				2.0	12.0			2.0
Norris Fertilizer Co.	523a	5060	Rushville	found	1.93			2.2	12.6	1.7		2.4
J. A. Bertch & Son	523a	5190	Liberty	found	1.83			2.1	13.3	0.9		2.0
Norris Fertilizer Co.	523a	5886	Rushville	found	1.78			2.1	12.4	1.8		2.4
Norris' High Quality 0-14-6	525a			guaranteed					14.0			6.0
J. A. Bertch & Son	525a	5191	Liberty	found					16.1	0.1		6.3
Norris Fertilizer Co.	525a	5877	Rushville	found					14.3	1.5		6.0
Norris' High Quality 2-12-8	748a			guaranteed				2.0	12.0			8.0
Norris Fertilizer Co.	748a	5875	Rushville	found	1.79			2.0	12.4	1.4		8.0
North American Fertilizer Company, Louisville, Ky.												
North American Cradys Fertilizer Formula 1-11-3	100a			guaranteed				1.0	11.0			3.0
J. A. Fortwendel	100a	4719	Troy	found	0.75			1.2	11.6	1.2		3.7
North American Crop and Tobacco Fertilizer 1-8-4	101a			guaranteed				1.0	8.0			4.0
J. A. Fortwendel	101a	4705	Troy	found	0.75			1.2	8.1	1.0		4.0
North American 2-10-4 Fertilizer	107a			guaranteed				2.0	10.0			4.0
J. A. Fortwendel	107a	4718	Troy	found	1.34			2.1	11.4	0.5		4.0
Henry Huebschman	107a	4909	Lamar	found	1.44			2.2	10.4	0.6		4.0
North American Champion 2-12-2	108a			guaranteed				2.0	12.0			2.0
Henry Huebschman	108a	4903	Lamar	found	1.49			2.1	12.8	0.8		2.0
J. A. Fortwendel	108a	5986	Troy	found	1.64			2.2	12.4	1.2		2.0
North American Tomato and Potato Fertilizer 2-12-6	109a			guaranteed				2.0	12.0			6.0
J. A. Fortwendel[165]	109a	4704	Troy	found	1.41			2.2	11.8	1.8		6.0
J. A. Fortwendel	109a	5980	Troy	found	1.42			2.4	12.0	1.7		6.0
N. V. Potash Export My., New York, N. Y.												
Muriate of Potash	732a			guaranteed								48.0
Co-operative Elevator Co.	732a	5170	Winamac	found								51.6
Old Gardener Fertilizer Company, The, Pittsburgh, Pa.												
Old Gardener	643a			guaranteed				2.0	10.0	0.5		4.0
Budrow Hardware Co.[166]	643a	4677	Flora	found	2.15			2.4	10.5	0.6		4.5
Old Gardener, High Grade, Odorless Fertilizer	672a			guaranteed				3.0	12.0	1.0		4.0
Chas. Hofer and Son and Chris Pieper	672a	5288	Indianapolis	found	2.55			2.9	12.3	0.7		3.4

Where 60.0 per cent or more of the total nitrogen guaranteed was found to be water soluble, the active and inactive insoluble organic was not determined.

Percentages appearing in bold type in the "Inactive water insoluble organic" column denote inferior nitrogen.

[160] Sample to manufacturer.

[161] Sample received in the spring.

[162] Sample to manufacturer. Refund $1.08.

[163] Refund $2.60.

[164] Purchased from Jennings Lumber Co.

[165] Sample received in the spring.

[166] Not tagged. Labels furnished.

TABLE XI.—Report of Inspection of Fertilizer Collected in 1930—Continued

Labels and names of persons from whom samples were secured	Official No.	Inspection No. H. H.	Samples taken at		Nitrogen (N)				Phosphoric acid (P_2O_5)			Potash (K_2O), soluble in water, per cent
					Water soluble as nitrates, ammonia salts and organic, per cent	Active water insoluble organic, per cent	Inactive water insoluble organic, per cent	Total per cent	Soluble and reverted (available), per cent	Insoluble, per cent	Total per cent	
Pacific Manure and Fertilizer Company, San Francisco, Calif.												
Groz-it Brand Pulverized Sheep Manure	816a			guaranteed				1.5			1.0	2.5
Wm. B. Stebb[166]	816a	4657	Crown Point	found	0.14	0.35	0.81	1.3			1.3	3.0
Price Chemical Company, Louisville, Ky.												
Ten and Ten Percent Potash	8823			guaranteed					10.0			10.0
Isaac Shannon	8823	5125	Reynolds	found					10.1	0.4		11.7
Geo. W. Stainbrook	8823	5368	Franklin	found					12.4	0.4		10.0
Ed. Kanne[167]	8823	5391	Monticello	found					11.3	0.7		8.8
Kellerman & Son	8823	5442	North Judson	found					10.1	0.6		10.0
Twenty-Twenty Fertilizer	9025			guaranteed					20.0			20.0
Isaac Shannon[168]	9025	5124	Reynolds	found					19.0	0.3		20.9
Phosphate and Tobacco	9591			guaranteed					16.0			
Andry Bros.	9591	4722	Birdseye	found					17.3			
Geo. W. Stainbrook[169]	9591	5365	Franklin	found					18.3	0.4		
Geo. W. Stainbrook	9591	5802	Franklin	found					16.0	1.7		
Eight Twenty-four Fertilizer	9898			guaranteed					8.0			24.0
Isaac Shannon	9898	5129	Reynolds	found					8.6			24.7
40% Superphosphate	46a			guaranteed					40.0			
Isaac Shannon[170]	46a	5132	Reynolds	found					37.1	0.4		
Indiana Special 2-12-2	162a			guaranteed				2.0	12.0			2.0
Andry Bros.	162a	4730	Birdseye	found	1.88			2.3	14.0	0.5		2.3
Mike Morarity[171]	162a	5454	Hadley	found	1.65			1.8	13.7			2.3
A-1 Grain Grower	164a			guaranteed				2.0	12.0			6.0
Leslie Barton[172]	164a	5236	Monticello	found	2.12			2.4	12.7			6.0
Ed. Kanne	164a	5382	Monticello	found	2.20			2.3	14.0	0.5		5.1
Halstead Bros.[173]	164a	5656	Brookston	found	1.63			2.4	12.2	1.4		6.7
Geo. W. Stainbrook[174]	164a	5791	Franklin	found	2.03			2.8	12.8	1.3		4.9
Concentrated Special	167a			guaranteed				4.0	24.0			4.0
Geo. W. Stainbrook[175]	167a	5373	Franklin	found	3.59			4.0	23.7	0.7		4.7
Halstead Bros.[176]	167a	5651	Brookston	found	3.07			3.6	20.9	1.1		4.9
Geo. W. Stainbrook	167a	5805	Franklin	found	5.00			5.4	23.4	0.7		5.3
Onion and Truck Special 2-8-16	227a			guaranteed				2.0	8.0			16.0
Geo. Steckley	227a	5019	Kendallville	found	1.89			2.1	9.1	0.1		17.6

Roy Markin Hardware	594a	5258	Eaton	found	0.92	.....	.....	1.1	13.7	0.5	.....	2.3
Geo. W. Stainbrook	594a	5794	Franklin	found	1.04	.....	.....	1.3	11.0	0.7	.....	3.0
Four-Sixteen-Four Fertilizer	871a	.....	.....	guaranteed	.....	.....	.....	4.0	16.0	.....	.....	4.0
Burket Elevator Co.	871a	5696	Burket	found	3.60	.....	.....	4.3	16.6	1.5	.....	4.5
Pulverized Manure Company, The, Chicago, Ill.												
Wizard Brand Pulverized Sheep Manure	7810	.....	.....	guaranteed	.....	.....	.....	2.0	.....	.....	1.5	1.5
C E. Bash & Co.	7810	4663	Huntington	found	0.66	0.59	**1.25**	2.5	.....	.....	2.0	2.8
Wizard Brand Pulverized Sheep Manure	797a	.....	.....	guaranteed	.....	.....	.....	2.0	.....	.....	1.0	2.0
Syler & Syler	797a	5637	Nappanee	found	0.59	0.52	**0.89**	2.0	.....	.....	1.4	3.6
Fred Reule, Inc.	797a	5761	Lafayette	found	0.49	0.45	**1.06**	2.0	.....	.....	1.1	3.2
John D. Martin	797a	5976	Lafayette	found	0.53	0.40	**1.27**	2.2	.....	.....	1.8	4.1
Rasin Monumental Company (Sub. of Virginia-Carolina Chemical Corporation, Cincinnati Division), Cincinnati, Ohio.												
Rasin Sweep Stakes Fertilizer	208a	.....	.....	guaranteed	.....	.....	.....	2.0	12.0	1.5	.....	2.0
Thomas Milling Co.	208a	5929	Marion	found	1.75	.....	.....	2.1	12.9	1.0	.....	2.4
Rauh and Sons Fertilizer Company, E., Indianapolis, Ind.												
Red Star Brand 16% Superphosphate	8726	.....	.....	guaranteed	.....	.....	.....	.....	16.0	.....	.....	.....
Pioneer Elevator Co.	8726	4676	Worthington	found	.....	.....	.....	.....	16.4	0.9	.....	.....
Red Star Brand 20% Superphosphate	8727	.....	.....	guaranteed	.....	.....	.....	.....	20.0	.....	.....	.....
E. N. Cook	8727	5112	Plymouth	found	.....	.....	.....	.....	20.8	1.1	.....	.....
E. K. Sowash	8727	5149	Crown Point	found	.....	.....	.....	.....	21.4	1.8	.....	.....
Red Star Brand 0-10-10	8732	.....	.....	guaranteed	.....	.....	.....	.....	10.0	.....	.....	10.0
A. B. Martin Co.	8732	4846	Sweetser	found	.....	.....	.....	.....	11.2	0.8	.....	10.2
Oren Thomas	8732	5546	Lowell	found	.....	.....	.....	.....	10.0	0.7	.....	10.0
Standard Brand 20% Superphosphate	8746	.....	.....	guaranteed	.....	.....	.....	.....	20.0	.....	.....	.....
J. A. McCarty Seed Co.	8746	4948	Evansville	found	.....	.....	.....	.....	20.8	1.8	.....	.....
Red Star Brand 0-22-22	9099	.....	.....	guaranteed	.....	.....	.....	.....	22.0	1.0	.....	22.0
J. A. McCarty Seed Co.	9099	4906	Evansville	found	.....	.....	.....	.....	22.0	1.0	.....	23.2
E. Rauh & Sons Fertilizer Co	9099	5224	Indianapolis	found	.....	.....	.....	.....	22.3	0.7	.....	22.0
Rauh's Standard 0-14-6	9945	.....	.....	guaranteed	.....	.....	.....	.....	14.0	.....	.....	6.0
Bourbon Feed Mills	9945	5686	Bourbon	found	.....	.....	.....	.....	14.5	1.0	.....	6.1
Rauh's Red Star 0-28-12	9950	.....	.....	guaranteed	.....	.....	.....	.....	28.0	.....	.....	12.0
Fred & Chas. Sims	9950	5216	Indianapolis	found	.....	.....	.....	.....	28.7	1.4	.....	11.7
Rauh's Red Star 0-12-18	9952	.....	.....	guaranteed	.....	.....	.....	.....	12.0	.....	.....	18.0
E. N. Cook	9952	5111	Plymouth	found	.....	.....	.....	.....	12.3	0.9	.....	20.6
Rauh's Red Star 0-14-6	9953	.....	.....	guaranteed	.....	.....	.....	.....	14.0	.....	.....	6.0
E. N. Cook	9953	5131	Plymouth	found	.....	.....	.....	.....	14.2	1.2	.....	6.1
James Robertson	9953	5753	Otterbein	found	.....	.....	.....	.....	15.2	.....	.....	6.3

Where 60.0 per cent or more of the total nitrogen guaranteed was found to be water soluble, the active and inactive insoluble organic was not determined.

Percentages appearing in bold type in the "Inactive water insoluble organic" column denote inferior nitrogen.

[167] Refund $12.00.

[168] Refund $4.80.

[169] Sample received in the spring.

[170] Refund $3.48.

[171] Purchased from Luther Hadley.

[172] Purchased from Ed. Kanne.

[173] Purchased from Barr Grain Co.

[174] Refund $3.30.

[175] Sample received in the spring.

[176] Refund $7.80.

TABLE XI.—Report of Inspection of Fertilizer Collected in 1930—Continued

Labels and names of persons from whom samples were secured	Official No.	Inspection No. H. H.	Samples taken at		Nitrogen (N) Water soluble as nitrates, ammonia salts and organic, per cent	Nitrogen (N) Active water insoluble organic, per cent	Nitrogen (N) Inactive water insoluble organic, per cent	Nitrogen (N) Total per cent	Phosphoric acid (P_2O_5) Soluble and reverted (available), per cent	Phosphoric acid (P_2O_5) Insoluble, per cent	Phosphoric acid (P_2O_5) Total per cent	Potash (K_2O), soluble in water, per cent
Rauh's Red Star 0-16-4	9954			guaranteed					16.0			4.0
E. K. Sowash	9954	5165	Crown Point	found					16.8	0.8		4.3
E. K. Sowash	9954	5201	Indianapolis	found					16.4	0.8		4.8
Bourbon Feed Mills	9954	5680	Bourbon	found					16.0	0.8		4.0
Hersch Bros. Grain Co.	9954	5718	Clymers	found					16.6	0.7		4.5
Rauh's Red Star 2-10-8 Fertilizer	88a			guaranteed				2.0	10.0			8.0
A. B. Martin Co.	88a	4847	Sweetser	found	1.99			2.3	10.4	0.6		8.0
J. A. McCarty Seed Co.	88a	4938	Evansville	found	1.93			2.2	10.5	0.7		8.1
John Colliers[177]	88a	5152	Crown Point	found	1.96			2.2	10.3	1.1		8.6
E. K. Sowash	88a	5159	Crown Point	found	1.99			2.2	11.1	0.3		8.0
H. L. Potter	88a	5278	Marshfield	found	1.72			2.0	11.4	1.1		7.8
Rauh's Red Star 2-12-6 Fertilizer	89a			guaranteed				2.0	12.0			6.0
Pioneer Elevator Co.	89a	4674	Worthington	found	1.87			2.2	12.8	0.3		6.4
Brownstown Hardware Co.	89a	4731	Brownstown	found	1.83			2.1	13.2	0.5		6.4
Elmer Scarlet	89a	4933	West Baden	found	2.04			2.2	12.0	0.8		6.3
E. K. Sowash	89a	5157	Crown Point	found	2.05			2.3	13.6	1.1		6.3
H. L. Potter	89a	5230	Marshfield	found	1.75			2.1	12.4	1.0		6.4
Mishawaka Grain & Coal Co.	89a	5473	Mishawaka	found	1.95			2.3	13.0	0.8		6.2
Donald Metz[178]	89a	5543	Lowell	found	2.00			2.2	12.7	1.4		6.4
Iglehart Bros.	89a	6000	Cynthiana	found	1.92			2.2	12.5	1.4		6.0
Rauh's Red Star 4-10-6 Fertilizer	92a			guaranteed				4.0	10.0			6.0
J. A. McCarty Seed Co.	92a	4943	Evansville	found	3.72			4.0	10.6	0.8		6.4
E. K. Sowash	92a	5146	Crown Point	found	3.93			4.1	10.3	0.6		6.5
Kiefer Feed & Supply Co.	92a	5314	Elwood	found	4.83			5.0	11.0	0.3		6.1
Rauh's Red Star 3-21-6 Fertilizer	94a			guaranteed				3.0	21.0			6.0
L. F. Blann	94a	6007	Monroe City	found	2.99			3.2	21.3	1.6		6.7
Rauh's Red Star 4-24-12 Fertilizer	95a			guaranteed				4.0	24.0			12.0
Roy Chandler[179]	95a	5269	Marshfield	found	3.65			4.0	25.3	1.1		12.1
Rauh's Standard 2-12-6 Fertilizer	98a			guaranteed				2.0	12.0			6.0
C. E. Thompson	98a	6039	Elberfeld	found	1.81			2.2	12.0	1.0		6.8
Rauh's Standard 2-14-4 Fertilizer	99a			guaranteed				2.0	14.0			4.0
James Robertson[180]	99a	5754	Otterbein	found	2.02			2.3	14.6	0.7		4.2
Rauh's Standard 2-12-2	549a			guaranteed				2.0	12.0			2.0
Victoria Mill & Elevator Co.	549a	6034	Jasper	found	1.82			2.2	12.4	1.2		2.3
Rauh's Red Star 2-12-2	550a			guaranteed				2.0	12.0			2.0
Brownstown Hardware	550a	4729	Brownstown	found	2.14			2.4	12.6	0.5		2.6
E. K. Sowash	550a	5150	Crown Point	found	1.96			2.2	12.7	1.2		2.0

Rauh's Standard 1-8-2	618a			guaranteed				1.0	8.0			2.0
Elmer Scarlet	618a	5202	Indianapolis	found	0.93			1.1	8.3	0.5		2.0
Read Phosphate Company, New Albany, Ind.												
Twenty-Twenty All Available	8450			guaranteed					20.0	1.0		20.0
Ladoga Canning Co.	8450	5395	Brookston	found					20.2	0.4		20.7
Eight-Twenty-four	9061			guaranteed					8.0	1.0		24.0
Sommerfield & Swanson	9061	5160	LaPorte	found					9.5	0.1		25.4
Twelve-Twelve	9144			guaranteed					12.0	1.0		12.0
Sommerfield & Swanson	9144	5164	LaPorte	found					12.7	0.9		12.1
General Crop Grower	464a			guaranteed				2.0	12.0	1.0		2.0
Sommerfield & Swanson[181]	464a	5147	LaPorte	found	1.95			2.3	12.1	2.7		2.3
Jesse K. Eggers	464a	5299	Cloverdale	found	1.96			2.3	11.7	2.6		2.1
Somerfield & Swanson[182]	464a	5974	LaPorte	found	1.26			2.1	8.5	5.6		2.2
Two-Twelve-Six	466a			guaranteed				2.0	12.0	1.0		6.0
Sommerfield & Swanson[181]	466a	5153	LaPorte	found	2.17			2.4	12.1	2.1		6.2
Sommerfield & Swanson	466a	5156	LaPorte	found	1.89			2.2	13.6	0.3		6.8
F. Waddell[183]	466a	5750	Otterbein	found	1.93			2.2	10.5	3.6		6.4
Ray B. Wilhite	466a	5864	Clayton	found	1.82			2.2	11.6	2.2		6.3
Sommerfield & Swanson	466a	5975	LaPorte	found	1.58			2.1	11.9	2.1		6.6
Onion Grower 2-8-15	469a			guaranteed				2.0	8.0	1.0		15.0
Sommerfield & Swanson	469a	5161	LaPorte	found	1.64			2.0	8.4	0.8		18.2
Old Time Mix with Bone Tankage	472a			guaranteed				2.0	6.0	6.0		3.0
Hayes & Dodds	472a	4990	Campbellsburg	found	0.84	0.90	0.46	2.2	12.4	0.4		3.1
Royster Guano Company, The F. S., Toledo, Ohio.												
Royster's 8-24 Phosphate and Potash	8708			guaranteed					8.0	0.5		24.0
I. B. Beckley	8708	5145	Royal Center	found					9.7	0.9		24.3
Royster's 2-12-2	558a			guaranteed				2.0	12.0	0.5		2.0
Urmston Grain & Seed Co.	558a	5510	Camden	found	1.79			2.2	12.0	1.5		2.4
Royster's 2-12-6	559a			guaranteed				2.0	12.0	0.5		6.0
Urmston Grain & Seed Co.	559a	5603	Camden	found	1.68			2.1	12.5	0.8		6.1
Warren Replogle	559a	5920	Marion	found	1.75			2.2	12.7	1.5		6.7
Royster's 0-10-10	571a			guaranteed					10.0			10.0
I. B. Beckley	571a	5171	Royal Center	found					10.4	0.1		10.8
Urmston Grain & Seed Co.	571a	5598	Camden	found					11.4	0.4		10.7
Ruhm Phosphate and Chemical Company, Mount Pleasant, Tenn.												
Ground Phosphate Rock	652a			guaranteed							33.0	
Claud D. Bronough[184]	652a	4801	New Ross	found							32.9	
V. P. Smith[185]	652a	5458	Williamsport	found							33.3	
Chas. Phillips[185]	652a	5973	Brems, mail Knox	found							33.7	

Where 60.0 per cent or more of the total nitrogen guaranteed was found to be water soluble, the active and inactive insoluble organic was not determined.

Percentages appearing in bold type in the "Inactive water insoluble organic" column denote inferior nitrogen.

[177] Purchased from E. K. Sowash.

[178] Purchased from Oren Thomas.

[179] Purchased from H. L. Potter.

[180] Not tagged. Labels furnished.

[181] Sample received in the spring.

[182] Refund $42.00.

[183] Refund $36.00.

[184] Not tagged. Labels furnished.

[185] Not tagged. Labels furnished. Purchased from Hopkins.

TABLE XI.—Report of Inspection of Fertilizer Collected in 1930—Continued

Labels and names of persons from whom samples were secured	Official No.	Inspection No. H. H.	Samples taken at		Nitrogen (N): Water soluble as nitrates, ammonia salts and organic, per cent	Nitrogen (N): Active water insoluble organic, per cent	Nitrogen (N): Inactive water insoluble organic, per cent	Nitrogen (N): Total per cent	Phosphoric acid (P_2O_5): Soluble and reverted (available), per cent	Phosphoric acid (P_2O_5): Insoluble, per cent	Phosphoric acid (P_2O_5): Total per cent	Potash (K_2O), soluble in water, per cent
Notre Dame Farm	652a	6066	South Bend	found							33.7	
M. C. Kent[186]	652a	6067	Brookston (Farm)	found							34.6	
Smith Agricultural Chemical Company, Indianapolis, Ind.												
Nitrate of Soda	5075			guaranteed				14.4				
Hutchins Bros. Mineral Works	5075	5471	Hillsboro	found				15.6				
Black Soil Formula 0-10-10	5078			guaranteed					10.0			10.0
Rochester Co-operative Elevator Co.	5078	5085	Rochester	found					9.9	0.7		10.0
16% Superphosphate	5525			guaranteed					16.0			
Acme Coal & Lime Co.	5525	5831	Terre Haute	found					18.2	0.6		
Smith's 20% Superphosphate	8418			guaranteed					20.0			
Co-operative Elevator Co.	8418	5168	Winamac	found					21.4	0.4		
Arthur Long[187]	8418	5645	Lapaz	found					20.0	0.8		
Mexico Elevator Co.	8418	5728	Mexico	found					20.8	0.7		
Smith's Bone Meal	8971			guaranteed				1.8			28.0	
Acme Coal & Lime Co.	8971	5829	Terre Haute	found	0.42	1.20	0.38	2.0			28.9	
Smith's Sacco 20-20	9977			guaranteed					20.0			20.0
Co-operative Elevator Co.[188]	9977	5206	Indianapolis	found					19.6	1.6		19.0
Sacco Plant Food 4-12-4	79a			guaranteed				4.0	12.0			4.0
Acme Coal & Lime Co.	79a	4815	Terre Haute	found	3.81			4.2	14.0	1.0		4.8
Everitt Seed Store	79a	5229	Indianapolis	found	4.12			4.4	12.9	1.0		4.8
Sacco 2-12-2	212a			guaranteed				2.0	12.0			2.0
Paoli Hardware Co.	212a	4939	Paoli	found	1.87			2.2	12.8	0.9		2.3
Lapaz Grain Co.	212a	5109	Lapaz	found	1.97			2.2	12.3	1.2		2.4
Donald Hollingshead[189]	212a	5512	Wabash	found	1.61			2.1	12.0	1.0		2.1
Syler & Syler	212a	5684	Plymouth	found	1.79			2.1	12.0	0.8		2.1
Lapaz Grain Co.	212a	5688	Lapaz	found	1.82			2.1	12.2	0.7		2.4
Mexico Elevator Co.	212a	5741	Mexico	found	1.75			2.1	12.0	1.7		2.3
Sacco 2-14-4	213a			guaranteed				2.0	14.0			4.0
Ennis Rhea	213a	5226	Indianapolis	found	1.99			2.2	15.0	0.8		4.1
J. Ford Chamberlin[190]	213a	5233	Monticello	found	1.93			2.2	15.1	1.0		4.4
Kraus & Apfelbaum	213a	5644	Bremen	found	2.00			2.2	16.3	0.5		4.6
Sacco 2-12-6	215a			guaranteed				2.0	12.0			6.0
Mexico Elevator Co.[191]	215a	4763	Mexico	found	1.80			2.1	12.9	0.8		6.9
Acme Coal & Lime Co.[191]	215a	4816	Terre Haute	found	1.78			2.2	12.4	1.1		6.2
Geo. McKinley	215a	4976	Borden	found	1.90			2.2	12.3	1.0		6.3

			Nappanee	found	1.86			2.2	12.2	0.6		6.2
Farmers Co-operative Elevator	215a	5221	Indianapolis	found	1.89			2.2	12.0	0.3		6.2
Marshall Feed & Grain Co.	215a	5270	Marshall	found	1.99			2.3	12.0	1.6		5.9
Ralph Howe	215a	5514	Wabash	found	1.95			2.3	12.0	0.6		6.5
Farmers Co-operative Elevator	215a	5566	Winamac	found	1.75			2.1	12.9	0.4		6.2
M. E. Leitch	215a	5586	Churubusco	found	1.72			2.1	12.3	0.8		6.5
Lapaz Grain Co.	215a	5643	Lapaz	found	1.65			2.0	12.5	1.0		6.1
Syler & Syler	215a	5683	Plymouth	found	1.75			2.2	12.1	0.8		6.4
Rochester Co-operative Elevator Co.	215a	5692	Rochester	found	1.85			2.2	12.5	0.7		6.4
Mexico Elevator Co.	215a	5744	Mexico	found	1.89			2.2	12.0	1.5		6.4
Acme Coal & Lime Co.	215a	5836	Terre Haute	found	1.92			2.2	12.0	1.1		6.5
Worthington Grain Co.	215a	5843	Worthington	found	1.79			2.2	12.0	1.4		6.6
Maxwell & Marshall Hardware	215a	5853	Martinsville	found	1.74			2.1	12.3	0.4		6.6
Graves Hardware Co.	215a	6037	Tell City	found	1.86			2.2	12.0	1.0		6.3
Sacco 2-8-10	216a			guaranteed				2.0	8.0			10.0
Rochester Co-operative Co.	216a	5093	Rochester	found	1.81			2.2	8.2	0.6		10.2
H. H. Madaus	216a	5274	Williamsport	found	1.89			2.2	8.3	0.9		10.7
Sacco 2-8-16	217a			guaranteed				2.0	8.0			16.0
C. R. Seymour	217a	4666	Kimmell	found	1.51			2.0	9.1	0.3		16.1
A. F. Seymour[192]	217a	5020	Albion	found	1.86			2.2	8.5	1.0		16.5
Lapaz Grain Co.	217a	5105	Lapaz	found	1.88			2.2	8.9	0.2		17.1
Sacco 4-24-4	219a			guaranteed				4.0	24.0			4.0
Lapaz Grain Co.	219a	5640	Lapaz	found	4.03			4.3	25.1	1.4		4.4
Mexico Elevator Co.	219a	5733	Mexico	found	3.88			4.1	24.9	1.3		4.3
Sacco 4-24-12	220a			guaranteed				4.0	24.0			12.0
Mexico Elevator Co.	220a	4765	Mexico	found	3.86			4.2	24.5	1.3		12.2
Lapaz Grain Co.	220a	5641	Lapaz	found	3.76			4.0	25.0	1.5		12.3
Walter Crouch[193]	220a	5858	Gosport	found	1.86			2.2	13.6	0.3		6.5
Sacco 1-8-4	222a			guaranteed				1.0	8.0			4.0
Syler & Syler[194]	222a	5108	Nappanee	found	0.86			1.2	11.2	1.2		4.0
Syler & Syler	222a	5642	Nappanee	found	0.75			1.1	8.4	1.1		4.1
Sacco 14-6	223a			guaranteed					14.0			6.0
M. E. Leitch	223a	5575	Churubusco	found					13.9	1.1		6.1
Sacco 10-10	224a			guaranteed					10.0			10.0
Sellars Grain Co.	224a	5228	Indianapolis	found					11.0	1.9		10.0
Farmers Co-operative Elevator Co.	224a	5638	Winamac	found					11.4	0.6		11.3
Syler & Syler	224a	5678	Plymouth	found					10.7	0.7		10.8
Sacco 12-12	225a			guaranteed					12.0			12.0
Kraus & Apfelbaum	225a	5106	Bremen	found					12.3	1.1		12.7
E. E. Sypalt	225a	5220	Indianapolis	found					12.0	1.5		12.0
J. Ford Chamberlin[195]	225a	5234	Monticello	found					12.4	0.5		12.0
Enos Grain Co.	225a	5359	Enos, mail Morocco	found					**11.4**	1.3		12.0
Farmers Co-operative Elevator	225a	5635	Winamac	found					**11.5**	0.8		11.7
Rochester Co-operative Elevator Co.	225a	5699	Rochester	found					12.0	0.9		12.0
Sacco 0-8-24	226a			guaranteed					8.0			24.0
Kraus & Apfelbaum	226a	5107	Bremen	found					8.3	0.5		24.1

Where 60.0 per cent or more of the total nitrogen guaranteed was found to be water soluble, the active and inactive insoluble organic was not determined.
Percentages appearing in bold type in the "Inactive water insoluble organic" column denote inferior nitrogen.

[186] Purchased from L. A. Waugh.

[187] Purchased from Lapaz Grain Co.

[188] Refund $5.92.

[189] Purchased from Ralph Howe.

[190] Purchased from Homer Dresback.

[191] Sample received in the spring.

[192] Purchased from Campbell & Fetters.

[193] Misbranded. Sold as 2-12-6. Relabeled 215-A.

[194] Sample received in the spring.

[195] Purchased from Dresback.

TABLE XI.—Report of Inspection of Fertilizer Collected in 1930—Continued

Labels and names of persons from whom samples were secured	Official No.	Inspection No. H. H.	Samples taken at		Nitrogen (N)				Phosphoric acid (P_2O_5)			Potash (K_2O), soluble in water, per cent
					Water soluble as nitrates, ammonia salts and organic, per cent	Active water insoluble organic, per cent	Inactive water insoluble organic, per cent	Total per cent	Soluble and reverted (available), per cent	Insoluble, per cent	Total per cent	
Sacco 44% Treble Superphosphate	646a	.....	.....	guaranteed	.....	.....	.....	.....	44.0	.....	.....	.....
Rochester Co-operative Elevator Co.[196]	646a	5091	Rochester	found	.....	.....	.....	.....	43.0	1.2	.....	.....
Smith's Sacco 3-9-18	738a	.....	.....	guaranteed	.....	.....	.....	3.0	9.0	.....	.....	18.0
Co-operative Elevator Co.	738a	5163	Winamac	found	2.92	.....	.....	3.2	10.3	0.1	.....	18.4
Smith's Sacco 0-16-6	739a	.....	.....	guaranteed	.....	.....	.....	.....	16.0	.....	.....	6.0
Mr. Sullivan[197]	739a	5556	Wanatah	found	.....	.....	.....	.....	16.0	0.9	.....	6.1
Smith's Sacco 3-12-12	740a	.....	.....	guaranteed	.....	.....	.....	3.0	12.0	.....	.....	12.0
Rochester Co-operative Elevator Co.	740a	5086	Rochester	found	3.02	.....	.....	3.3	12.3	0.5	.....	12.7
Sacco 0-8-32	857a	.....	.....	guaranteed	.....	.....	.....	.....	8.0	.....	.....	32.0
Green Acre Farms, Inc.	857a	5358	Enos, mail Morocco	found	.....	.....	.....	.....	8.0	0.6	.....	33.2
Steinkamp, Hugo, Holland, Ind.												
Pure Bone Meal	682a	.....	.....	guaranteed	.....	.....	.....	1.6	.....	.....	27.0	.....
A. M. Bohnert & Son	682a	5955	Jasper	found	0.32	1.30	0.28	1.9	.....	.....	28.7	.....
Swift and Company Fertilizer Works, Calumet City, Ill.												
Swift's Muriate of Potash	7955	.....	.....	guaranteed	.....	.....	.....	.....	.....	.....	.....	50.0
Farmers Grain & Supply Co.	7955	5169	Thornhope, mail Oak	found	.....	.....	.....	.....	.....	.....	.....	51.2
Swift's Red Steer 0-10-10 Fertilizer	8614	.....	.....	guaranteed	.....	.....	.....	.....	10.0	0.5	.....	10.0
Morocco Grain Co.	8614	5346	Morocco	found	.....	.....	.....	.....	11.2	0.4	.....	10.8
Medaryville Co-operative Co.	8614	5439	Medaryville	found	.....	.....	.....	.....	10.0	1.2	.....	9.9
Swift's Red Steer 0-12-12 Fertilizer	8793	.....	.....	guaranteed	.....	.....	.....	.....	12.0	0.5	.....	12.0
V. T. Reid Hardware	8793	4977	Salem	found	.....	.....	.....	.....	13.2	0.7	.....	11.3
Morocco Grain Co.	8793	5347	Morocco	found	.....	.....	.....	.....	11.8	1.0	.....	12.4
Morocco Grain Co.	8793	5348	Morocco	found	.....	.....	.....	.....	12.4	0.6	.....	12.4
Boonville Implement Co.	8793	5991	Boonville	found	.....	.....	.....	.....	12.6	0.9	.....	12.5
Swift's Red Steer 0-8-24	8827	.....	.....	guaranteed	.....	.....	.....	.....	8.0	0.5	.....	24.0
Aetna Life Insurance Co.[198]	8827	5345	Rensselaer	found	.....	.....	.....	.....	11.4	0.2	.....	20.9
Enos Grain Co.	8827	5357	Enos, mail Morocco	found	.....	.....	.....	.....	8.4	0.6	.....	24.7
Swift's Red Steer 0-20-20	9561	.....	.....	guaranteed	.....	.....	.....	.....	20.0	.....	.....	20.0
Haynes Milling Co.	9561	4826	Portland	found	.....	.....	.....	.....	20.5	0.5	.....	20.7
Farmers Co-operative Elevator Co.[199]	9561	4832	LaFontaine	found	.....	.....	.....	.....	20.5	0.5	.....	16.7
Montezuma Mill & Elevator[200]	9561	5277	Montezuma	found	.....	.....	.....	.....	20.3	0.6	.....	18.0
Aetna Life Insurance Co.	9561	5334	Rensselaer	found	.....	.....	.....	.....	20.0	0.5	.....	20.7

Clayton Milling Co.	9561	5776	Clayton	found					20.2	0.7		20.1
Swift's Red Steer 4-24-12	335a			guaranteed				4.0	24.0			12.0
Swain & Breeding[201]	335a	5364	Edinburg	found	3.89			4.0	22.7	1.1		12.1
Lafayette Co-operative Elevator Co.	335a	5752	Lafayette	found	3.95			4.1	24.0			12.7
Swift's Red Steer 4-16-4	337a			guaranteed				4.0	16.0			4.0
Henry Lucas	337a	4727	Brownstown	found	4.19			4.4	15.9	1.3		4.2
Haynes Milling Co.	337a	4829	Portland	found	4.00			4.2	16.3	1.0		4.6
Boonville Implement Co.	337a	4888	Boonville	found	3.93			4.1	15.6	1.9		4.5
H. O. Greene	337a	5099	Goshen	found	4.11			4.3	17.4	0.5		4.3
Montezuma Mill & Elevator Co.	337a	5267	Montezuma	found	4.20			4.3	17.0	1.3		4.2
C. E. Bloom	337a	5668	Albion	found	3.89			4.1	17.0	1.4		4.2
Wm. Littell & Co.	337a	5777	Clayton	found	4.06			4.2	16.2	1.5		4.0
Swift's Red Steer 3-12-4	341a			guaranteed				3.0	12.0			4.0
Boonville Implement Co.	341a	4901	Boonville	found	2.85			3.2	12.2	1.2		4.5
Swift's Red Steer 3-9-18	342a			guaranteed				3.0	9.0			18.0
Aetna Life Insurance Co.	342a	5326	Rensselaer	found	2.96			3.0	9.1	0.5		19.1
Swift's Red Steer 2-16-2	343a			guaranteed				2.0	16.0			2.0
John Huebner Hardware Co.	343a	5941	Loogootee	found	2.16			2.3	16.8	1.1		2.4
Swift's Red Steer 2-12-6	344a			guaranteed				2.0	12.0			6.0
Henry Lucas	344a	4728	Brownstown	found	1.95			2.2	11.3	1.7		6.3
Farmers Co-operative Elevator Co.[202]	344a	4834	LaFontaine	found	2.09			2.3	10.9	2.2		6.1
The Haynes Milling Co.	344a	4880	Portland	found	1.98			2.2	12.0	2.2		6.1
Farmers Co-operative Co.	344a	4998	Hoagland	found	1.99			2.3	12.4	1.9		6.1
Geo. Steckley	344a	5015	Kendallville	found	2.02			2.2	13.3	0.7		6.2
Warsaw Feed Store[203]	344a	5094	Warsaw	found	2.04			2.2	12.1	0.8		6.6
Montezuma Mill & Elevator Co.	344a	5268	Montezuma	found	2.00			2.2	12.9	1.3		6.0
Brown Hardware Co.	344a	5281	Brazil	found	2.24			2.3	12.4	1.4		5.9
Jay Grain Co.	344a	5315	Elwood	found	2.17			2.2	12.1	0.9		6.3
Farmers Elevator Co.	344a	5632	Monticello	found	1.92			2.1	13.4	1.2		6.1
Warsaw Feed Store	344a	5661	Warsaw	found	1.68			2.1	13.1	1.2		6.5
St. Joseph Orphans Home[204]	344a	5748	Lafayette	found	2.06			2.2	11.5	2.0		6.4
Robertson Grain Co.	344a	5768	Williamsport	found	2.09			2.3	12.0	1.7		6.1
Wm. Littell & Co.	344a	5779	Clayton	found	1.98			2.1	12.2	1.2		6.0
Geo. P. Wagoner	344a	5958	Jasper	found	1.96			2.1	13.3	1.0		6.0
Boonville Implement Co.	344a	5990	Boonville	found	1.98			2.1	12.4	1.0		6.0
Swift's Red Steer	345a			guaranteed				2.0	12.0			2.0
Haynes Milling Co.	345a	4875	Portland	found	1.82			2.1	12.9	1.2		2.1
Farmers Co-operative Elevator Co.	345a	4997	Hoagland	found	2.17			2.3	12.0	1.7		2.2
H. O. Greene	345a	5100	Goshen	found	2.20			2.2	12.0	1.3		2.0
Warsaw Feed Store	345a	5101	Warsaw	found	1.94			2.1	13.7	0.2		2.2
Brown Supply Co.[203]	345a	5148	Valparaiso	found	2.07			2.2	11.4	1.6		2.1
Pierce Elevator Co.	345a	5260	Union City	found	2.20			2.3	12.0	1.0		2.0
Brown Supply Co.	345a	5552	Valparaiso	found	1.99			2.2	12.4	0.4		2.4
Clayton Milling Co.	345a	5780	Clayton	found	1.89			2.1	12.3	0.8		2.0
Clayton Milling Co.	345a	5866	Clayton	found	2.00			2.2	12.2	0.7		2.5

Where 60.0 per cent or more of the total nitrogen guaranteed was found to be water soluble, the active and inactive insoluble organic was not determined.

Percentages appearing in bold type in the "Inactive water insoluble organic" column denote inferior nitrogen.

[196] Refund $1.50.

[197] Purchased from Chas. Price.

[198] Sample to manufacturer. Refund $15.50.

[199] Refund $3.30.

[200] Sample to manufacturer. Refund $2.00.

[201] Refund $8.85.

[202] Refund $7.92.

[203] Sample received in the spring.

[204] Purchased from Lafayette Cooperative Elevator.

TABLE XI.—Report of Inspection of Fertilizer Collected in 1930—Continued

Labels and names of persons from whom samples were secured	Official No.	Inspection No. H. H.	Samples taken at		Nitrogen (N)				Phosphoric acid (P₂O₅)			Potash (K₂O), soluble in water, per cent
					Water soluble as nitrates, ammonia salts and organic, per cent	Active water insoluble organic, per cent	Inactive water insoluble organic, per cent	Total per cent	Soluble and reverted (available), per cent	Insoluble, per cent	Total per cent	
Swift's Red Steer 2-8-16	346a			guaranteed				2.0	8.0			16.0
Lafe Crothers	346a	4678	Kimmell	found	1.96			2.1	9.0	0.3		16.8
Geo. Steckley	346a	5018	Kendallville	found	2.10			2.2	8.0	1.5		16.3
Swift's Red Steer 0-14-6	347a			guaranteed					14.0			6.0
Farmers Co-operative Elevator	347a	4923	Hoagland	found					14.9	0.9		6.2
Aetna Life Insurance Co.	347a	4964	Crothersville	found					14.0	1.9		6.7
Pierce Elevator Co.	347a	5263	Union City	found					14.1	1.6		6.4
Wm. Littell & Co.	347a	5775	Clayton	found					14.1	1.3		6.0
Swift's Red Steer 1-29 Steamed Bone Meal Fertilizer	348a			guaranteed				1.0			29.0	
Boonville Implement Co.	348a	5982	Boonville	found	0.21	1.20	0.59	2.0			29.8	
Swift's Red Steer 20% Superphosphate	373a			guaranteed					20.0			
Joe Abraham[205]	373a	4656	North Hayden	found					22.3	0.3		
V. T. Reid Hardware	373a	4982	Salem	found					22.0	1.7		
Brown Supply Co.	373a	5557	Valparaiso	found					21.5	0.8		
V. T. Reid Hardware	373a	6029	Salem	found					22.4	1.7		
Swift's Red Steer 3-15-12	692a			guaranteed				3.0	15.0			12.0
Aetna Life Insurance Co.	692a	5331	Rensselaer	found	2.94			3.0	15.4	0.7		14.9
Farmers Elevator Co.	692a	5639	Monticello	found	3.23			3.3	15.1	1.0		12.4
Swift's Red Steer 8-24-8	766a			guaranteed				8.0	24.0			8.0
The Haynes Milling Co.	766a	4879	Portland	found	8.13			8.3	23.6	0.8		8.8
Swift's Red Steer 44% Superphosphate	855a			guaranteed					44.0			
C. E. Bloom[206]	855a	5671	Albion	found					41.1			
Swift's Red Steer 0-28-12	891a			guaranteed					28.0			12.0
Warren T. McCray	891a	6063	Kentland	found					28.0			12.2
Synthetic Nitrogen Products Corporation, New York, N. Y.												
Nitrophoska	9990			guaranteed				15.0	30.0			15.0
Howard County Farm Bureau	9990	4794	Kokomo	found				15.4	31.4	0.6		15.0
Steuben County Farm Bureau	9990	5007	Angola	found				15.3	30.8	0.4		14.8
Morgan County Farm Bureau[207]	9990	5459	Mooresville	found				15.0	30.8			15.1
Calcium Nitrate Basf (Nitrate of Lime)	9992			guaranteed				15.0				
Arthur Goss[208]	9992	4848	Vincennes	found				15.3				
Tri County Farm Bureau	9992	4931	Evansville	found				15.1				

Loma	647a			guaranteed				5.0	10.0	1.0		4.0
Everitt Seed Store	647a	5212	Indianapolis	found	4.45			4.9	11.0	1.2		4.0
Tennessee Phosphate and Fertilizer Company, Cincinnati, Ohio.												
Disintegrated Rock Phosphate	725a			guaranteed							26.2	
Disintegrated Phosphate Sales Co.[210]	725a	5477	Seymour	found							**19.9**	
Disintegrated Phosphate Sales Co.[209]	725a	5478	St. Louis Crossing	found							19.8	
J. H. Glassburn[210]	725a	5479	Bargersville	found							20.0	
Fred J. Dorsey[211]	725a	5480	Edinburg	found							19.1	
Eagle Creek Farms[212]	725a	5772	New Augusta	found							**22.8**	
Geo. W. Watkins[213]	725a	5778	Clermont	found							**20.7**	
Disintegrated Phosphate Sales Co.[214]	725a	5801	Whiteland	found							29.0	
Disintegrated Phosphate	890a			guaranteed							24.0	
Disintegrated Phosphate Sales Co.	890a	5806	Shelbyville	found							28.1	
Disintegrated Phosphate Sales Co.	890a	5807	Shelbyville	found							30.5	
S. M. Toner[215]	890a	5808	Fenns, mail Shelbyville	found							27.9	
A. S. Magaw	890a	6068	Daleville	found							29.6	
Thompson Phosphate Company, Chicago, Ill.												
Four Leaf Special	742a			guaranteed				2.0			25.0	6.0
J. Harvey Coffelt	742a	5376	Boswell	found	1.94			2.0			25.2	6.2
Farmers Co-operative Co.	742a	5429	Wolcott	found	1.89			2.0			25.6	5.9
Four Leaf Rock Phosphate-Potash Fertilizer	779a			guaranteed							24.0	12.0
Wm. E. Brier[216]	779a	5394	Williamsport	found							24.3	11.9
Farmers Co-operative Co.[217]	779a	5433	Wolcott	found							24.0	10.6
Virginia-Carolina Chemical Company, Cincinnati Division, Cincinnati, Ohio.												
V-C 16% Superphosphate	6133			guaranteed					16.0			
Geo. Wettschurack	6133	5891	Montmorenci	found					18.8	2.8		
V-C 24% Superphosphate	8326			guaranteed					24.0	1.5		
C. E. Bash & Co.	8326	5617	Huntington	found					26.5	0.5		
Virginia-Carolina Chemical Corporation, Cincinnati Division, Cincinnati, Ohio.												
V-C Potash Phospho Tobacco	9589			guaranteed					14.0	1.5		4.0
Uhl-Snider Milling Co.	9589	5180	Connersville	found					14.4	1.3		4.3

Where 60.0 per cent or more of the total nitrogen guaranteed was found to be water soluble, the active and inactive insoluble organic was not determined.

Percentages appearing in bold type in the "Inactive water insoluble organic" column denote inferior nitrogen.

[205] Purchased from Farmers & Gleaners Elevator.

[206] Refund $3.48.

[207] Not tagged. Labels furnished.

[208] Not tagged. Labels furnished. Purchased from Knox Co. Farm Bureau.

[209] Reregistered. Refund $81.60.

[210] Reregistered.

[211] Reregistered. Refund $108.80. Purchased from Disintegrated Phosphate Sales Co.

[212] Purchased from Disintegrated Phosphate Sales Co. Refund $49.50.

[213] Not tagged. Labels furnished. Purchased from Fred J. Dorsey. Refund $56.91.

[214] Not tagged. Labels furnished.

[215] Purchased from Disintegrated Phosphate Sales Co.

[216] Purchased from J. Harvey Coffelt.

[217] Refund $11.20.

TABLE XI.—Report of Inspection of Fertilizer Collected in 1930—Continued

Labels and names of persons from whom samples were secured	Official No.	Inspection No. H. H.	Samples taken at		Nitrogen (N)				Phosphoric acid (P_2O_5)			Potash (K_2O), soluble in water, per cent
					Water soluble as nitrates, ammonia salts and organic, per cent	Active water insoluble organic, per cent	Inactive water insoluble organic, per cent	Total per cent	Soluble and reverted (available), per cent	Insoluble, per cent	Total per cent	
V-C Superphosphate 16%	9616			guaranteed					16 0	1.5		
New Haven Thurman Equity Exchange	9616	4917	New Haven	found					17 7	2 8		
Clay Syler	9616	5031	North Manchester	found					16 0	4 0		
V-C Superphosphate 20%	9617			guaranteed					20 0	1.5		
Clay Syler	9617	5034	North Manchester	found					22 2	1.2		
S. F. Trembley Co.	9617	5574	Columbia City	found					20 0	1 0		
C. E. Bash & Co.	9617	5614	Huntington	found					22 8	0.5		
V-C Superphosphate 24%	9618			guaranteed					24 0	1.5		
Geo. Wettschurack	9618	5893	Montmorenci	found					25 9	1 0		
V-C Phospho Tobacco 16%	9619			guaranteed					16.0	1.5		
Geo. Wettschurack	9619	5894	Montmorenci	found					16 7	1.0		
V-C Plow Brand 10-10	9715			guaranteed					10 0	1.5		10 0
New Haven Thurman Equity Exchange	9715	4918	New Haven	found					11 3	0 3		10.1
Frank Strock	9715	5564	Hudson	found					11.4	0.7		10.3
V-C Pacific Crop Grower 14-4	9716			guaranteed					14 0	1 5		4 0
Flora Artificial Stone Co.	9716	5506	Flora	found					14.6	2.0		4 3
Andrews Elevator Co.	9716	5599	Andrews	found					14.5	1.7		4.1
V-C High Power Fertilizer 0-12-12	9769			guaranteed					12 0	1 5		12.0
Geo. J. Miller	9769	4761	Fulton	found					13.7	0.6		12.6
Hartman & Dotterer	9769	4845	Bluffton	found					12 2	1.0		12.3
V-C Potash Phospho Tobacco 10-10	9934			guaranteed					10.0	1.5		10.0
S. F. Trembley Co.	9934	5043	Columbia City	found					11.8	1.4		10 2
V-C Phospho Tobacco 24%	9962			guaranteed					24.0	1.5		
Ort & Co.	9962	4647	Churubusco	found					25 8	0.5		
V-C Ammoniated Phospho Tobacco 2-12-2	186a			guaranteed				2.0	12.0	1.5		2.0
Mike Ripperger	186a	5178	Brookville	found	1.90			2.2	12.3	1.4		2.2
Uhl-Snider Milling Co.	186a	5194	Connersville	found	1.82			2.1	13.7	1.3		3.0
C. V. Graft	186a	5251	Winchester	found	1.97			2.3	13.1	1.1		2.6
V-C Ammoniated Phospho Tobacco 2-12-6	187a			guaranteed				2.0	12.0	1.5		6.0
Willard Milner	187a	5172	Frankfort	found	1.93			2 2	12.9			6.6
C. V. Graft	187a	5252	Winchester	found	1.95			2.2	13.6	0.8		6 0
V-C Potash Formula 0-14-6	189a			guaranteed					14.0	1.5		6.0
Geo. J. Miller & Son	189a	4762	Fulton	found					14.6	1.5		6.1
Frank Strock	189a	5563	Hudson	found					14.9	1.1		6 2
V-C Tip Top 2-8-16	191a			guaranteed				2.0	8 0	1 5		16 0
S. F. Trembley & Co.	191a	5038	Columbia City	found	1.86			2.1	8 5	0.6		16.9

V-C Owl Brand 2-12-2	192a	......	......	guaranteed	......	......	......	2.0	12.0	1.5	......	2.0
Farmers Elevator Co.	192a	5032	South Whitley	found	1.92	......	......	2.2	13.2	1.3	......	2.0
S. F. Trembley Co.[217a]	192a	5037	Columbia City	found	1.95	......	......	2.2	12.0	1.3	......	2.1
Uhl-Snider Milling Co.	192a	5176	Connersville	found	1.85	......	......	2.2	12.8	4.0	......	2.1
Mike Ripperger	192a	5196	Brookville	found	2.12	......	......	2.4	12.6	3.5	......	2.1
Frank Strock	192a	5486	Hudson	found	1.89	......	......	2.1	15.3	0.5	......	2.7
G. Wolff & Sons	192a	5568	Hamilton	found	1.85	......	......	2.1	12.5	1.1	......	2.4
S. F. Trembley & Co.	192a	5587	Columbia City	found	1.68	......	......	2.1	12.9	0.8	......	2.3
C. E. Bash & Co.	192a	5621	Huntington	found	1.82	......	......	2.1	12.3	1.6	......	2.1
Andrews Elevator Co.	192a	5624	Andrews	found	1.75	......	......	2.0	12.2	1.8	......	2.1
V-C Big Winner 2-16-6	195a	......	......	guaranteed	......	......	......	2.0	16.0	1.5	......	6.0
C. E. Bash & Co.	195a	5613	Huntington	found	1.90	......	......	2.0	16.1	0.8	......	6.3
V-C Good Luck 4-24-4	201a	......	......	guaranteed	......	......	......	4.0	24.0	1.5	......	4.0
Clay Syler	201a	5044	North Manchester	found	3.75	......	......	4.0	25.0	0.8	......	4.2
V-C Super Fertilizer 4-24-12	530a	......	......	guaranteed	......	......	......	4.0	24.0	1.5	......	12.0
Kraus & Apfelbaum	530a	5687	Inwood	found	3.85	......	......	4.0	23.6	0.9	......	13.3
V-C Phosphate and Potash 24-12	689a	......	......	guaranteed	......	......	......	24.0	1.5	......	......	12.0
G. Wolff & Sons	689a	5577	Hamilton	found	......	......	......	24.3	0.4	......	......	12.0
V-C Farmers Friend 2-12-6	759a	......	......	guaranteed	......	......	......	2.0	12.0	1.5	......	6.0
Farmers Elevator Co.	759a	5039	South Whitley	found	1.89	......	......	2.2	12.0	1.4	......	6.5
Flora Artificial Stone Co.	759a	5503	Flora	found	1.96	......	......	2.1	12.1	1.2	......	6.4
G. Wolff & Sons	759a	5559	Hamilton	found	1.86	......	......	2.0	12.2	0.9	......	6.2
S. F. Trembley Co.	759a	5561	Columbia City	found	1.79	......	......	2.0	12.7	0.7	......	6.3
Andrews Elevator Co.	759a	5625	Andrews	found	1.89	......	......	2.1	12.6	1.1	......	6.2
Kraus & Apfelbaum	759a	5676	Inwood	found	1.89	......	......	2.1	12.6	0.9	......	6.5
Kraus & Apfelbaum	759a	5681	Argos	found	1.82	......	......	2.1	12.2	0.9	......	6.4
Uhl-Snider Milling Co.	759a	6053	Connersville	found	1.88	......	......	2.3	13.7	1.3	......	6.4
V-C Corn and Wheat Grower 3-18-9	761a	......	......	guaranteed	......	......	......	3.0	18.0	1.5	......	9.0
Kraus & Apfelbaum	761a	5679	Argos	found	2.83	......	......	3.1	18.5	0.7	......	9.2
Welch Chemical Company,												
Columbus, Ohio.												
No. 10 Independent Higrade Potash Special	8857	......	......	guaranteed	......	......	......	......	10.0	......	......	10.0
Bloomfield Mill & Elevator Co.	8857	4667	Bloomfield	found	......	......	......	......	9.6	1.2	......	11.6
No. 9 Higrade Phosphate-Potash	9187	......	......	guaranteed	......	......	......	......	14.0	......	......	4.0
J. A. Bertch & Son	9187	5187	Liberty	found	......	......	......	......	14.9	1.1	......	3.7
No. 2 Higrade Bumper Crop	76a	......	......	guaranteed	......	......	......	2.0	12.0	......	......	6.0
Jesse Thomas[218]	76a	4868	Greenfield	found	1.65	......	......	2.2	12.7	1.0	......	6.4
Sam L. Griffith	76a	5841	Worthington	found	1.60	......	......	2.0	12.2	2.2	......	5.6
Powell Grain Co.	76a	6036	Losantville	found	1.85	......	......	2.2	12.0	2.2	......	6.3
No. 3 Higrade Bigger Crop	77a	......	......	guaranteed	......	......	......	2.0	14.0	......	......	4.0
Wm. Branhard[218]	77a	4873	Greenfield	found	1.85	......	......	2.2	14.7	1.7	......	4.0
No. 6 Higrade General Crop	78a	......	......	guaranteed	......	......	......	2.0	12.0	......	......	2.0
Bloomfield Milling Co.	78a	5304	Bloomfield	found	2.00	......	......	2.3	11.6	1.9	......	2.0
Sam L. Griffith	78a	5842	Worthington	found	1.70	......	......	2.1	12.0	2.1	......	2.4
Powell Grain Co.	78a	6062	Losantville	found	1.33	......	......	2.1	12.2	2.2	......	2.0
No. 1 Independent Favorite	719a	......	......	guaranteed	......	......	......	1.0	11.0	......	......	4.0
Bloomfield Milling Co.	719a	5289	Bloomfield	found	0.99	......	......	1.3	10.7	1.6	......	3.8

Where 60.0 per cent or more of the total nitrogen guaranteed was found to be water soluble, the active and inactive insoluble organic was not determined.

Percentages appearing in bold type in the "Inactive water insoluble organic" column denote inferior nitrogen.

[217a] Sample received in the spring.

[218] Purchased from Walter Weil.

TABLE XI.—Report of Inspection of Fertilizer Collected in 1930—Continued

Labels and names of persons from whom samples were secured	Official No.	Inspection No. H. H.	Samples taken at		Nitrogen (N)				Phosphoric acid (P_2O_5)			Potash (K_2O), soluble in water, per cent
					Water soluble as nitrates, ammonia salts and organic, per cent	Active water insoluble organic, per cent	Inactive water insoluble organic, per cent	Total per cent	Soluble and reverted (available), per cent	Insoluble, per cent	Total per cent	
Wuichet Fertilizer Company, The, Dayton, Ohio.												
20 Percent Phosphate	9069	.....	.....	guaranteed	.....	.....	.....	.....	20.0	1.0	.....	.....
Claude Shepple	9069	5884	Rays Crossing	found	.....	.....	.....	.....	20.0	0.8	.....	.....
Ten Ten	9071	.....	.....	guaranteed	.....	.....	.....	.....	10.0	1.0	.....	10.0
Claude Shepple[219]	9071	5880	Rays Crossing	found	.....	.....	.....	.....	12.7	0.7	.....	8.8
Spot Cash Fertilizer	634a	.....	.....	guaranteed	.....	.....	.....	2.0	12.0	1.0	.....	2.0
Claude Shepple	634a	5815	Rays Crossing	found	2.06	.....	.....	2.1	11.5	1.1	.....	2.3
Claude Shepple	634a	5889	Rays Crossing	found	1.82	.....	.....	2.0	12.2	1.0	.....	2.5
Dayton Fertilizer	635a	.....	.....	guaranteed	.....	.....	.....	2.0	12.0	1.0	.....	6.0
Claude Shepple[220]	635a	5809	Rays Crossing	found	1.80	.....	.....	2.0	12.2	1.2	.....	6.1
Claude Shepple[220]	635a	5881	Rays Crossing	found	1.96	.....	.....	2.1	12.0	0.9	.....	6.4
Ruby Fertilizer	825a	.....	.....	guaranteed	.....	.....	.....	1.0	12.0	1.0	.....	3.0
Claude Shepple[220]	825a	5810	Rays Crossing	found	0.98	.....	.....	1.1	11.5	0.6	.....	3.2
Claude Shepple[220]	825a	5870	Rays Crossing	found	0.91	.....	.....	1.0	12.2	0.3	.....	3.0
Gem Fertilizer	826a	.....	.....	guaranteed	.....	.....	.....	1.0	10.0	1.0	.....	5.0
W. W. Martin[221]	826a	6054	Connersville	found	1.02	.....	.....	1.2	10.4	0.7	.....	5.2

Where 60.0 per cent or more of the total nitrogen guaranteed was found to be water soluble, the active and inactive insoluble organic was not determined.

Percentages appearing in bold type in the "Inactive water insoluble organic" column denote inferior nitrogen.

[219] Refund $2.85.

[220] Not tagged. Labels furnished.

[221] Purchased from James Ochiltree.

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Circular No. 183 June, 1931

REPORT OF MOSES FELL ANNEX FARM

BEDFORD, INDIANA

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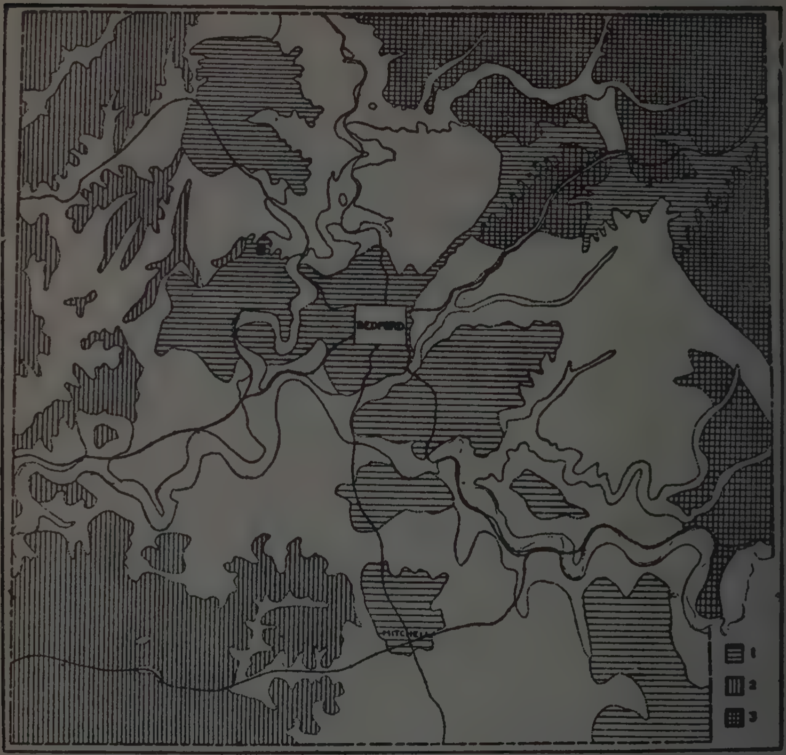
Map Showing Soil Types Similar to Experiment Field



Region	Principal Soil Characteristics
No. 1.	**Yellowish limestone land like Bedford experimental field.**
No. 2.	**Yellowish "freestone" land.**
No. 3.	**Like No. 1 on ridge tops and like No. 2 on lower slopes.**

The results of the Moses Fell Annex Farm can be applied to the greater part of Lawrence County and surrounding territory.

The soil survey made in this county in 1922 enabled the Department of Agronomy to classify the soils of this section and to indicate the types which can benefit most from the experimental work on this farm.

The results will apply to all similar land in the county, which is indicated by shading No. 1 on the map. They will also apply fully as well to the areas indicated by shading No. 2, and more or less fully to the areas indicated by shading No. 3 where the hilltops are like No. 1 and the lower slopes like No. 2.

Portions of the unshaded area would doubtless respond to similar treatments, but most of it does not need either lime or fertilizer to the same extent as the shaded areas.

REPORT OF MOSES FELL ANNEX FARM

JUNE, 1931

H. J. REED, Farm Director H. G. HALL, Superintendent

The drought of 1930 seriously affected the crops of the farm but the average results over a period of years show worthwhile returns from the best methods of soil management. The value of the most profitable methods of fertilization was emphasized by the severe conditions existing last summer.

The work of the farm has been expanded during the last year to give additional information on pertinent problems which interest the people of this vicinity. The livestock work has had additional attention and the sheep and lamb experiments were started. A herd of eight calves were imported from Canada to establish a foundation for the cooperative project with the Bureau of Animal Industry of the U. S. Department of Agriculture; the pasture work has been enlarged; the orchard has been carefully scraped

Governor Harry G. Leslie, P. R. Edgerton, member of the Board of Trustees of Purdue University, and Director J. H. Skinner were the principal speakers at the Annual Field Day, Moses Fell Annex Farm.

to make possible better codling moth control; parasites colonies have been started to aid in checking the attack of the oriental fruit worm; a deep well has been drilled to improve the water supply of the farm and many other improvements have been made to the equipment.

At the meeting last year on June 12 the new gateway was dedicated to honor Moses Fell Dunn for his services to agriculture through the bequest of this farm for experimental and demonstration purposes. President Elliott of Purdue University wrote Director Skinner as follows:

"You know how deeply I regret the circumstances that prevent me from attending the gateway dedication ceremony at the Moses Fell Farm on Thursday. This is to be an event of importance and I hope you will express for me and for the Trustees the satisfaction that the University has from the great service which is being performed by the Moses Fell Experimental Farm for the betterment of agriculture in Lawrence County, and indeed for the entire state.

"The gateway to be dedicated is intended to be a tribute to the memory of a generous and far-sighted man. Through the Farm which bears his name, Moses Fell Dunn has become an active citizen of the state for unnumbered generations. It is a part of his eternal life and influence.

"The memorial gateway is a useful structure. It is also a symbol that the road to the Farm is always open to those who know agriculture must know more each year if it is to be maintained in this rapidly competitive world."

In speaking further for the institution, Director J. H. Skinner said:

"A genuine interest in agriculture and country life; and faith and confidence in the people of Lawrence County and southern Indiana; a generous spirit and a desire to enrich the lives of people whom he loved, prompted this man—Hon. Moses Fell Dunn to give this farm, known as The Moses Fell Annex Farm, and certain securities amounting to $105,000.00 to Purdue University to be used for the benefit and service of the people of Lawrence County and southern Indiana. It should be noted that he not only gave the farm but that he provided ample funds to maintain it. He might have made this bequest for other worthy purposes. Only this morning it was announced that a wealthy lawyer has given $12,000,000 to the Law School of Michigan. Mr. Dunn was a lawyer and greatly interested in education and the legal profession but he had an undying love for the country, the hills, and the trees, the birds, fields, and farms, and above all the people of the country, so he gave this property to serve these interests. Could he have found a more worthy cause?

"Then there is another thing that I wish to point out. Moses Fell Dunn had a personal desire to demonstrate the possibilities of southern Indiana as a fruit growing section. He planted an orchard of 80 acres which he operated until he turned the property over to Purdue University in 1914. In his declining years he found that his undertaking had not been completed and it became a great disappointment to him, but he did not give up. After careful investigation he decided to turn the task which he had commenced and voluntarily undertaken over to Purdue University.

"Why did he do this? First, he wanted it to serve the people. Second, he wanted to be assured that it would become permanent and of greater value as the years go by. He must have recognized the underlying purpose of Purdue University—which is *service to the people of Indiana* and the nation. He must have had confidence in the officials of the institution. Other men of wealth might well follow his example.

The new gateway erected as a memorial to Moses F. Dunn and Antoinette Fell, commemorating the gift of the Moses Fell Annex Farm to the Purdue University Agricultural Experiment Station for the benefit of the agriculture of southern Indiana.

"In order to give permanent and lasting recognition and testimony in appreciation of his service to agriculture, country life and the people of Lawrence County and southern Indiana, and the state of Indiana, these gates have been erected by Purdue University in memory of Moses Fell Dunn and Antoinette Fell.

"We come this 12th day of June, 1930, to welcome you to Moses Fell Annex Farm and to rededicate the resources of his bequest to the cause of Agriculture and Country Life. May you appreciate, cherish, and honor the memory of Moses Fell Dunn by making the greatest possible use of this farm, its staff, and Purdue University, by applying the results of the work to your farms, and in the enrichment of your lives and by uplifting, serving agriculture, and those about you."

The occasion was honored by the presence of the Honorable Governor Harry G. Leslie who acted as principal speaker for the meeting.

GENERAL SOIL FERTILITY TEST

The soil fertility experiments carried on under the direction of A. T. Wiancko, Chief, and G. P. Walker, Associate, of the Agronomy Department are showing striking results that are of great value to the farmers of southern Indiana.

It will be noted, in comparing earlier reports and in examining the crops on the experiment field, that the spread between the good and poor treatments is becoming greater year by year, and that the better treatments are becoming more and more profitable. Without soil treatment, the average value of the crops per rotation of corn, soybeans, wheat, and clover is now $29.90 per acre. With lime, manure and phosphate, the value is $78.17, at an average cost of $8.05 for lime and phosphate.

The largest returns have been secured on the limed land, which has received an average of 6.8 tons of manure for corn and 450 pounds of fertilizer divided between the corn and wheat in the rotation of corn, soybeans, wheat and clover. (Plot 20.) The crop increases from this treatment have averaged $48.87 per acre per rotation as compared with the untreated land (plot 14), or a total of $171.04 in fourteen years. The cost of treatment outside of the manure, which was produced on the farm, has been $10.50 for three tons of ground limestone in 1917 and $4.44 every second year for fertilizer, or a total of $41.58 in the fourteen years.

Phosphorus is by far the most important plant food need of this soil. Applications of superphosphate have been highly profitable, either alone or in addition to manure. Without manure (plot 2) 225 pounds of 16 per cent superphosphate for corn and wheat in the four-year rotation has produced average crop increases of 16.2 bushels of corn, 6.2 bushels of soybeans, 6.8 bushels of wheat and 1,083 pounds of hay per acre, valued at $29.44 at a cost of $5.04 for the fertilizer. On land receiving an average of 6.8 tons of manure for corn, a similar use of superphosphate has further increased the crop yields by 9.5 bushels of corn, 5.2 bushels of soybeans, 6.2 bushels of wheat and 1,134 pounds of hay, worth $24.23 at a cost of $5.04 for the phosphate, showing that manure is not sufficient on this land. (Compare plots 16 and 18.)

Manure applied at an average rate of 5.7 tons per acre for the corn has produced average crop increases of 15.7 bushels of corn, 2.6 bushels of soybeans, 2.2 bushels of wheat and 263 pounds of mixed hay per acre, valued at $16.50, which amounts to an average return of $3.64 per ton of manure applied. (Compare plots 14 and 15.)

Ground limestone applied at the rate of three tons per acre in 1917 has so far produced average crop increases of 3.6 bushels of corn, 1.4 bushels of soybeans, 1.7 bushels of wheat, and 486 pounds of mixed hay per acre, valued at $28.14, up to the present time. (Compare plots 13 and 14.)

Lime and manure together have produced average increases of 19.3 bushels of corn, 4.0 bushels of soybeans, 3.9 bushels of wheat, and 486 pounds of mixed hay per acre, amounting to $22.13 for the rotation. (Compare plots 14 and 16.)

Applications of 300 pounds of 0-12-4 on corn and 300 pounds of 4-12-4 fertilizer on the wheat have produced average increases of 18.0 bushels of corn, 4.2 bushels of soybeans, 9.6 bushels of wheat, and 1,300 pounds of mixed hay per acre, amounting to $31.57 at a total cost of $8.88 for the fertilizer. (Compare plots 12 and 14.) The bulk of the increase, however, has been due to the phosphorus in the fertilizer, as is shown in the comparison of plots 2 and 8 with plots 3, 4, 6 and 7.

The field was laid out and tile drained in the spring of 1917. The original rotation was corn, wheat, clover and timothy, but this was changed in 1923 to corn, soybeans, wheat and clover, which is a more suitable rotation for this kind of land. All crops are removed except on plots 6, 7, 8, 10 and 11, where only the ear corn, wheat grain, soybean grain, and clover hay are removed, leaving all the roughage except the clover hay on the land in lieu of manure.

The treatments shown in the second column of the table are as follows: L=ground limestone; P=phosphorus; K=potash; N=nitrogen; Res.=crop residue; O=no treatment; M=manure.

All limed plots received 3 tons of ground limestone per acre in the spring of 1917. The fertilizer applications consist of 72 pounds of phosphoric acid, 24 pounds of potash and 12 pounds of nitrogen per acre per rotation. To the end of 1928 the phosphorus and potash were equally divided between the corn and wheat, but the nitrogen is all applied for wheat, half in the fall and half in the spring. Beginning with 1929 the wheat receives two-thirds of the phosphorus and potash and nitrogen as formerly, while the corn receives one-third of the phosphorus and potash in the row and also 4 pounds of nitrogen per acre on the plots receiving complete fertilizer.

The manure applications consisted of 6 tons per acre plowed under for corn in the first round of the rotation. Since then the rate of manuring has been equal to the amount of produce removed during the previous round of the rotation, except the wheat grain.

The following table shows the results of different soil treatments begun in 1917:

RESULTS OF GENERAL FERTILITY TEST

AVERAGE YIELDS PER ACRE AND FINANCIAL STATEMENT PER ROTATION[1]

Plot No.	TREATMENT	Average Yields Per Acre				Total Value Four Crops	Value of increase due to fertilizer	Cost of fertilizer	Gain over cost of fertilizer
		Corn bus. 1917-1930	Soybeans bus. 1923-1930	Wheat bus. 1918-1930	Hay lbs. 1917-1930				
1	L	22.6	8.8	4.6	1,313	$37.43			
2	L P	39.2	15.1	11.5	2,407	67.46	$29.44	$5.04	$24.40
3	L P K	42.8	14.6	12.1	2,360	69.47	30.85	6.48	24.37
4	L P K N	42.2	14.7	14.6	2,392	70.65	31.44	8.88	22.56
5	L	24.4	9.2	5.2	1,358	39.81			
6	L PKN Res	44.8	16.2	15.5	2,555	72.30	32.56	8.88	23.68
7	L PK Res	44.7	16.5	13.7	2,607	71.42	31.49	6.48	25.01
8	L P Res	44.5	16.7	12.6	2,468	69.99	29.88	5.04	24.84
9	L	25.5	9.1	5.6	1,321	40.55			
10	L Res	26.5	9.8	5.5	1,396	39.53			
11	— Res	23.3	9.5	4.5	1,247	35.68	10.19[2]		
12	— PKN	38.1	11.6	12.9	2,101	62.06	31.57	8.88	22.69
13	L	23.3	8.8	4.9	1,278	37.86	28.14[3]	10.50[3]	17.64[3]
14	O	19.9	7.3	3.2	793	29.90			
15	— M	35.3	9.3	5.8	1,239	46.76	16.78[4]	5.4 Tons	3.11[5]
16	LM	39.7	11.1	7.2	1,544	54.59	16.50[6]	5.7 Tons	2.88[5]
17	L	24.3	8.4	5.1	1,282	38.17			
18	LMP	49.1	16.0	13.4	2,650	78.17	24.23	5.04	19.19
19	LM PK	49.4	15.6	14.1	2,539	77.99	24.97	6.48	18.49
20	LM PKN	47.2	15.8	15.3	2,566	78.05	25.86	8.88	16.98
21	L	22.5	7.6	4.5	1,164	34.87			
	Ave. L checks	23.8	8.6	4.9	1,286	38.01			

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1. The crop rotation was changed in 1923 from corn, wheat, clover and timothy to corn, soybeans, wheat, clover.
2. Value of grain and hay increase due to residue alone.
3. Value of increase, cost and net for liming to date.
4. Value of increase due to manure used alone.
5. Value of increase per ton of manure.
6. Value of increase due to manure over lime.

NOTE.—In computing the financial results, corn has been valued at 60c, wheat at 80c and soybeans at $1.25 per bushel; stover and wheat straw at $2.50, soybean straw at $3.00 and hay at $10.00 per ton. Nitrogen has been charged at 20c, phosphoric acid at 7c and potash at 6c per pound. Ground limestone has been charged at $3.50 per ton.

Comparison of Different Phosphates

The object of this experiment is to determine the relative values of superphosphate, rock phosphate, bone meal, and basic slag as phosphatic fertilizers. Superphosphate and rock phosphate are also compared in several different proportions with and without lime, manure, nitrogen and potash fertilizers. The table following shows the results to date of treatments begun in 1916.

The largest returns have been secured from the combination of ground limestone, manure and medium to heavy applications of superphosphate (plots 5 and 26). The heavy treatment (plot 26) has produced average increases of 26.1 bushels of corn, 10.1 bushels of wheat, and 1,554 pounds of mixed hay per acre, valued at $34.20 per rotation or a total of about $170.00 per acre since 1916, when the treatments were begun, at a total cost of $39.20 for lime and phosphate. Fourteen dollars of this cost was charged for 4 tons of limestone, applied when the experiment was begun. (Compare plot 26 with 33.)

In combination with lime and manure, superphosphate has been the most profitable source of phosphorus, the returns per acre per rotation, above the cost of materials, from the lime and different phosphates averaging as follows: superphosphate, $17.48; basic slag, $16.83; steamed bone meal, $14.49; and rock phosphate, $12.01. (Compare plots 5, 3, 2 and 6.) In this comparison, superphosphate, basic slag and steamed bone meal have been applied at the rate of 48 pounds and rock phosphate at 192 pounds of phosphoric acid per acre with manure for each corn crop.

On limed land, superphosphate has been more efficient than rock phosphate in all cases, whether used in large or small amounts, and with or without manure or nitrogen and potash (compare plots 5, 11, 17, 23, 26 and 29 with plots 6, 12, 18, 24, 27 and 30).

On manured land without lime, rock phosphate and superphosphate have been about equally profitable (compare plots 11 and 12). However, it pays better on this land to use lime and superphosphate instead of rock phosphate (plot 5).

Without manure, rock phosphate alone has produced larger returns than the combination of lime and superphosphate although in both cases the crop yields have been too low to be profitable.

The lime, manure and superphosphate combination (plot 5) has produced larger returns over total cost than the manure and rock phosphate combination (plot 9) and is the more practical treatment for this land from the standpoint of both crop yields and profit.

This field was laid out and tile drained in the summer of 1915. The crop rotation is corn, wheat, and clover with all produce removed except second growth clover.

The treatments shown in the second column of the table are as follows: L=ground limestone; M=manure; St. B.=steamed bone meal; BS=basic slag; SP=superphosphate; RP=rock phosphate; N=12 pounds nitrogen; K=50 pounds potash.

Ground limestone was applied at the rate of 4 tons per acre in 1915.

Manure was applied at the rate of 6 tons per acre for corn in the first round of the rotation and since then in amounts equal to the produce removed except wheat grain. The phosphates are applied at the rates shown in the third column in the accompanying table.

RESULTS OF PHOSPHATE EXPERIMENT

AVERAGE YIELDS PER ACRE AND FINANCIAL STATEMENT PER ROTATION

Plot No.	Treatment	Lbs. phos. acid per acre	Average Yields Per Acre			Total value of three crops	Value of increase due to fertilizer and lime	Cost of lime and fertilizer treatment	Gain over cost of lime and fertilizer
			Corn bus. 1916-1930	Wheat bus. 1917-1930	Hay lbs. 1918-1930				
0	0		22.6	4.3	1,192	$25.77			
1	LM		36.4	7.7	1,588	39.81			
2	LM St. B	48	43.3	11.7	2,337	51.65	$20.65	$6.16	$14.49
3	LM BS	48	46.4	12.6	2,357	54.46	22.99	6.16	16.83
4	LM		37.9	8.1	1,628	41.22			
5	LM SP	48	47.9	13.1	2,454	56.59	23.64	6.16	17.48
6	LM RP	192	47.1	11.6	2,293	53.77	19.81	7.80	12.01
7	LM		39.8	8.9	1,829	44.25			
8	—M SP	48	46.1	11.8	2,381	53.63	18.78	3.36	15.42
9	—M RP	192	46.7	11.8	2,654	55.32	20.59	4.80	15.79
10	LM		39.7	8.8	1,788	43.89			
11	L— SP	48	31.6	9.2	1,995	39.76	15.04	6.16	8.88
12	L— RP	192	28.8	7.5	1,810	35.53	11.11	7.80	3.31
13	L[5]		24.0	5.3	1,307	27.98			
14	— SP	48	32.1	7.4	1,695	36.91	13.19	3.36	9.83
15	— RP	192	35.7	8.8	2,142	42.86	19.46	4.80	14.66
16	LM		37.5	8.7	1,689	41.94			
17	L— NK SP	48	41.2	11.1	2,144	48.96	25.06	11.56	13.50
18	L— NK RP	192	34.4	9.5	2,071	42.58	17.86	13.00	4.86
19	LM		39.1	9.4	1,827	44.40			
20	—NK SP	48	40.8	10.3	1,908	46.59	21.82	8.76	13.06
21	—NK RP	192	49.5	10.4	2,471	49.55	25.56	10.20	15.36
22	LM		37.8	8.3	1,737	42.07			
23	LM SP	24	47.1	12.5	2,378	55.40	20.55	4.48	16.07
24	LM RP	96	44.5	11.6	2,235	52.00	15.09	5.20	9.89
25	LM		41.8	10.8	1,996	48.26			
26	LM SP	72	50.4	15.7	2,908	63.12	24.70	7.84	16.86
27	LM RP	288	47.7	13.2	2,660	57.83	19.98	10.00	9.98
28	LM		40.7	10.1	1,911	46.57			
29	LM SP	160[6]	48.9	14.6	2,694	60.01	118.45[7]	36.40[7]	82.05[7]
30	LM RP	600[6]	47.0	12.4	2,524	55.70	101.75[7]	44.00[7]	57.75[7]
31	LM		39.5	9.3	1,677	43.66	9.28[1]		
32	—M		32.1	6.4	1,098	33.13	8.58[2]	4 tons	2.15[3]
33	—		19.9	4.1	903	22.30			
34	LM		35.8	9.0	1,442	39.91	18.86[4]		
	Ave. LM checks		38.7	9.0	1,737	43.18			

(Plots 17, 18, 20 and 21 received 12 pounds of nitrogen and 50 pounds of potash per acre per rotation, all on the corn.)

1. Value of increase due to lime over manure.
2. Value of increase due to manure.
3. Value of increase per ton of manure.
4. Value of increase due to lime and manure.
5. Manured on Series B in 1916 and Series C in 1917.
6. Applied in 1916 and again in 1925.
7. Total value of increase, cost, and net returns to date at present prices.

NOTE.—In computing the financial results, corn has been valued at 60c and wheat at 80c per bushel; stover and wheat straw at $2.50, and hay at $10.00 per ton. Nitrogen has been charged at 20c, phosphoric acid at 7c and potash at 6c per pound. Rock phosphate (30%) has been charged at $15.00, and ground limestone at $3.50 per ton.

Variety Tests of Farm Crops

The selection of hardy, high-yielding varieties of the crops grown in any section is very important. To determine those best adapted for this part of the state, the most promising varieties of several crops have been compared each year for a number of years. Each variety has been harvested separately and the yields determined by weight. The land on which the variety tests are carried has been kept in a good state of fertility by uniform applications of fertilizer on wheat, and manure on each corn crop.

RESULTS OF CROP VARIETY TESTS, 1922-1930

Varieties	Bushels per acre	
	Average 1929-30	Average 1922-25
Winter Wheat		
Purkof	24.8	21.9
Selection 21-2-11	19.8	....
Michigan Amber	20.1	19.5
Fulhio	18.5	....
Fultz	20.8	19.1
Poole	....	17.5
Rudy	....	17.4
Red Rock	....	17.2
Red Chaff	....	18.2
Red Cross	21.3	....
Trumbull	20.8	....
Winter Rye		
Mammoth Winter	24.1	21.2
Wisconsin Pedigree	....	18.9
Rosen	....	19.0
Winter Barley		
Purdue 21	27.6	20.7
Tennessee Winter	24.9	19.0

Varieties	Bushels per acre	
	Average 1926-30	Average 1922-25
Oats		
Minota	35.2	37.2
Swedish Select	30.4	33.9
Iowa 103	33.7	33.4
Fairfield	....	32.7
Big Four	....	29.2
Burt	....	29.0
Victory	....	27.8
Iowar	36.3	....
Fulghum	33.0	....
Cornellian	31.5	....
Spring Barley	11.2	10.4
Spring Wheat	5.8	8.3
Spring Rye	9.9	13.7

Varieties	Hay pounds per acre	
	Average 1927-30	Average 1922-26
Soybeans		
Dunfield	4,714	5,035
Manchu	3,763	4,966
Lexington	....	4,635
Midwest	5,706	4,012
Wilson	4,922	....
Virginia	4,670	....
Mansoy	3,738	....
Cowpeas	....	3,278

Pasture Experiments

The improvement of pasture land has a very definite place in the agricultural program for southern Indiana. Large areas of this section are better adapted to pasture purposes than to its present use. There is a considerable area of pasture land that is not producing in a satisfactory way. The development of better pastures will make possible the expansion of the live stock industry from both the beef cattle and the dairy cattle point of view.

Several years ago a series of pasture experiments was laid out in one of the uniform spots of the old pasture, and the results given in the accompanying table indicate the value of this work. Further work will be conducted to study the most economical methods of pasture improvement.

Various grass mixtures were used in connection with the different fertilizer treatments, so some very definite information is available for those who are interested in this important work. In connection with this, lespedeza has been seeded on poor unproductive spots, and is gradually extending over the pasture land. Lespedeza seems well adapted to our poor lands, on which more expensive methods of improvement are not practiced.

RESULTS OF PASTURE EXPERIMENT, 1924-1929

Plot No.	Treatment per Acre*	Green forage pounds per acre 1924	Green forage increase over untreated	1925	Cured pounds per acre average 1926-29	Cured forage increase over untreated
1	Manure	5,445	1,512	Due to dry weather growth was small in 1925 and nothing was harvested	1,293	730
2	500 lb. 2-12-6	16,940	13,007		1,926	1,363
3	500 lb. 0-12-6	13,613	9,680		1,508	945
4	500 lb. 0-12-0	13,310	9,377		1,275	712
5	Untreated	3,933	....		563	....
6	Limestone 2 tons	6,363	2,430		1,149	586
7	Lime, 500 lb. 0-12-0	13,613	9,680		1,147	584
8	Lime, 500 lb. 0-12-6	18,150	14,217		1,477	914
9	Lime, 500 lb. 2-12-6	16,940	13,007		2,027	1,464
10	Lime, manure	13,613	9,860		1,381	818

* Treatments applied at seeding time in April, 1923, and fertilizer repeated in fall of 1929. Plots 2 and 9 receive top dressings of 100 pounds of nitrate of soda per acre each spring.

All this experimental work, including some crop rotation experiments and the test of nitrogen top dressing of wheat will be seen on the fields.

HORTICULTURAL WORK

The Horticultural Department is carrying on a number of lines of work of interest to the fruit industry of the state. These projects are under the direction of Professor Laurenz Greene. Most of the experiments are being carried out by C. E. Baker, F. C. Gaylord, F. P. Cullinan, Monroe McCown and C. L. Burkholder. About 90 acres in all are planted in apple, peach, plum and pear.

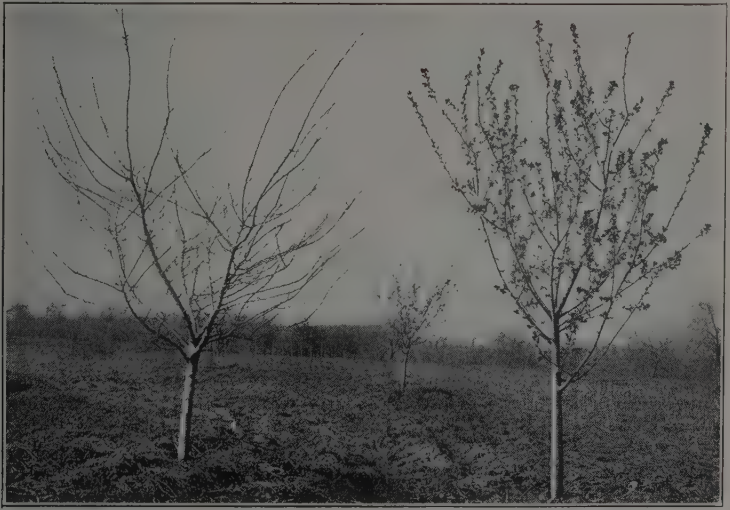
Most of the apple acreage was planted before the farm came under the management of Purdue.

Plum and Prune Variety Tests

In 1928 a three-acre block of some 15 promising varieties of plums and prunes were planted just north of the apple orchard. A few new varieties have been added since. The oldest trees in this block have had three summers' growth and a number of them had a nice bloom this spring and set some fruit. Plum and prune fruit buds are rarely injured by low winter temperatures but are as easily killed as peaches during bloom. One interesting observation in 1931 was made on the Roberts prune which was just beginning to show green leaf tips when the other varieties in the plot were in full bloom or already dropping their petals. (See picture of Robert's prune and Reine Claude plum.)

Peach Variety Tests

The Oriental Peach Moth invasion of this part of the country in recent years has had a decided effect on the matter of peach varieties. All varieties which ripen later than Elberta will be much more subject to attack and the later the ripening date the more serious the infestation. For this reason Salway and Krummel October have already been removed although they proved to be hardier in bud than Elberta. The Gold Drop and Crosby rows are still in the block but as the skin on these varieties is covered with



Roberts Prune on left and Reine Claude plum on right on April 22. Note delayed blooming period on Roberts Prune as compared to Reine Claude.

a thick fuzz they seem to be especially susceptible to Oriental Peach Moth injury for this reason as well as because they ripen later than Elberta.

J. H. Hale and Big Red were discarded several years ago as not being as desirable as Elberta. Greensboro has been hardy in bud but is a peach of very poor quality and most of the trees have been killed or seriously injured by low winter temperatures.

Rochester, an early yellow peach, and Champion, Belle of Georgia, and Hiley Belle (white fleshed varieties) are recommended for home orchards and local sales. All four varieties are superior to Elberta as a canning peach and the fruit buds are more resistant to low winter temperatures.

This test plot is South of the old Elberta peach orchards and rows are named on East end.

Old Peach Orchard

This block of trees is now in the 14th growing season. Last year's crop failure gave an opportunity to cut these old trees back severely. In spite of the very unfavorable growing conditions of 1930 they made a nice renewal growth and are carrying a good crop of fruit which required heavy thinning. In spite of this entire site being a very poor one for peaches this block of trees has produced five crops in the last ten years.

Pear Blight Plot

This is an area of about two acres of trees planted in 1930 West of the apple orchard in the alfalfa field. All trees are on

A peach tree in the Elberta block showing renewal growth following heavy heading back in spring of 1930.

Removing rough bark on apple trees as an aid in codling moth control.

roots resistant to blight and have Old Home bodies which also have been found to be blight resistant. The present plan is to bud in Bartlett and Wilder varieties 12 to 18 inches out on the scaffold branches this summer and to later start a regular spraying program in the pink and blooming periods to aid in controlling blight.

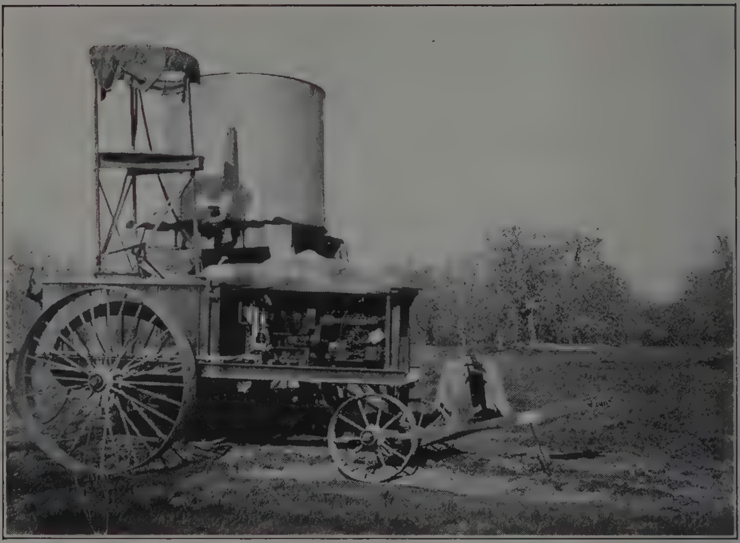
Apple Orchard

The control of codling moth has been a big problem in this orchard as well as in other commercial orchards in the Mitchell and Bedford areas. All of the apple trees have been scraped to remove loose bark and wintering over codling moth larva and a self-working codling moth band has been applied to each tree. The type of band used is one that has been developed by Mr. Marshall of the Purdue Entomology Department. The worms which crawl into these bands to pupate are killed, which does away with the work of examining each band and crushing the larva every ten days all summer. Growers who are having difficulty controlling codling moth should scrape their trees and give this new band a trial.

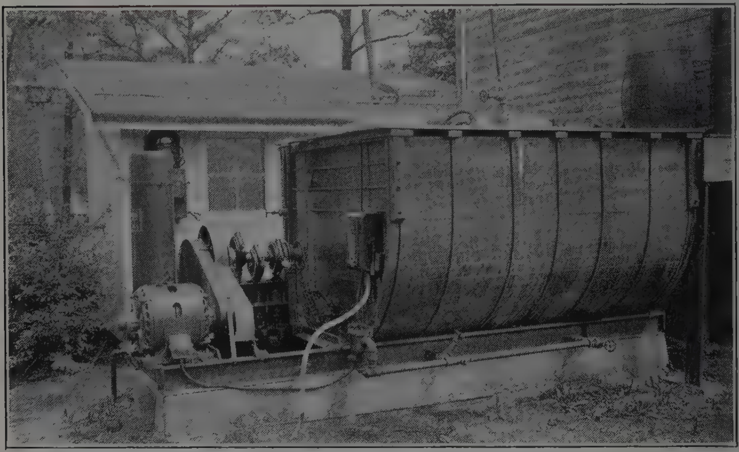
The packing shed has been made moth tight so that none of the hibernating worms inside the shed can get out into the orchard. This is a very important control measure.

Spray Residue

The continual reduction in U. S. arsenical tolerance on apples will soon make it necessary to revise the summer spray schedule or arrange to clean all fruit at harvest time. In 1930 a change was made in the July and August spray applications. Two oil-nico-



Portable sprayers with towers are used on half of the apple orchard to compare the cost and efficiency with the stationary sprayed block. The water tank is a substation fed by a half inch pipe from the main tank.



A view of the stationary spray plant. This outfit makes possible the prompt and efficient spraying of the orchard even if the ground is soft and muddy.

tine sprays were used in place of two of the arsenical sprays. This schedule failed to give satisfactory codling moth control under the unusual conditions of heavy second brood codling moth infestation and extremely dry weather of 1930. A late arsenical spray was used the latter part of August which made it necessary to clean all of the Jonathan and Grimes and most of the later ripening varieties in a weak hydrochloric acid solution. This practice was also followed in 1928 and the results of the two years' work along this line will soon be published in bulletin form.

Stationary vs. Portable Spraying

In the spring of 1929 all of the apple orchard north of the main water tower was piped for stationary spraying. This area was rough and difficult to spray with portable rigs. All of the work was done by farm labor at a cost of $32.35 per acre, laying all lines on the surface of the ground.

Reed and Son, Vincennes, Indiana, have just completed installing a stationary spray plant covering 200 acres at a cost of $39.21 per acre. In this case all pipe lines were buried from 18 to 36 inches deep.

Floyd Stout installed a stationary spray plant in the spring of 1930 on a ten acre block Southwest of Indianapolis. He hired $14.70 of labor and not allowing for his own labor the cost was about $80.00 an acre with all lines on surface. The same motor, pump and spray tank would of course care for a larger acreage which could be added to the present system at a cost of approximately $10.00 per acre.

The stationary block at the Moses Fell Orchard lost most of its crop by a late spring freeze and very few records were obtained in comparison with the 30 acre block to the South being handled by an up to date large capacity portable rig. It took 6½ hours to apply a spray on the stationary block to one side of the trees only. (There are 6 acres of unplanted area in this fifty acres.) Three gunmen were used in the orchard and an operator at the plant although the outfit has enough volume to carry four gunmen.

The plant went through the winter in good shape and the pink spray was applied to both sides of the trees in the stationary block in 1931 in 8½ hours using 3850 gallons of spray material. One grower near Indianapolis applied 3600 gallons of material in a 10-hour day using a large portable rig, tractor and two leads of hose. One of the most outstanding savings in labor and time of applications is on the portable block where a large outfit with a 250 gallon tank is being used in comparison with two years' records using a medium sized portable outfit and 200 gallon tank.

Bees

A small apiary has been established on the farm for the purpose of assisting in the pollination of bloom and helping to obtain a better set of apples. These colonies were started from small packages of bees containing a queen and several pounds of worker bees.

Apple Storage Investigations

During the past season the fifth year's study on the keeping of early varieties of apples in a farm storage has been completed. Fruit kept in a room of 1200 bushels capacity cooled by ventilation only has been compared with fruit kept in a similar room in which about 3.5 tons of ice has been used to cool the fruit. The ice was placed in a frame bunker with sheet iron drip pan beneath and an electric blower has been used to circulate the air within the room to maintain a uniform temperature.

A new shipment of "package bees" helped to increase the set of fruit in 1931.

These experiments have indicated that ice may be profitably used in southern Indiana to hold early fall apples in salable condition for short periods. In many seasons fruit that can be held in prime condition for three to six weeks can be sold for a much higher price than can be obtained immediately following harvest. Under these conditions the use of ice may lead to increased profits, as fruit held in uniced common storages frequently ripens so rapidly that its quality and value are greatly reduced after a few weeks.

The cost per bushel for the ice used has been gradually reduced over this five year period by shortening the icing period. This has been accomplished without corresponding loss in quality of the fruit. The costs per bushel for the five years are as follows: 1925-26, 23.5 cents; 1926-27, 26.9 cents; 1928-29, 18 cents; 1929-30, 14 cents and 1930-31, 13 cents.

Demonstration Farm Garden

Every Indiana farm should have a generous farm garden. To give a practical demonstration of the layout of such a garden an acre of the best land on Moses Fell farm has been set aside for gardening purposes. Only half will be used each year, the other half being planted to soybeans which will be plowed under in order to increase the fertility and organic matter in the soil.

The garden plot has been in Japanese clover continuously for the past seven years. Ten loads of stable manure were spread over the half acre to be cultivated in 1931 and 500 pounds of complete fertilizer were broadcast previous to planting.

The garden has been laid out as a practical demonstration of the makeup and layout of a garden that will provide an abundance of high quality fresh vegetables for summer and winter with ample supply for canning. Not only have the regular crops been planted but enough cantaloupes and watermelons have been included to provide the farm family with plenty of these delightful vegetables.

The garden will be operated for at least a five year period, records kept of cost of operation and quantities of vegetables of various kinds harvested. It is the hope that this demonstration garden will provide essential information as to the practical operation of a real farm garden. In addition, this garden will show the money value as well as the personal satisfaction that can be derived from a good garden on every southern Indiana farm.

See this garden located on the west end of the road leading west from the water tower.

It is important that the tops of the trees be properly sprayed if disease and insect control is effective. The use of the shade tree nozzle on the spray gun is shown here.

LIVESTOCK

The livestock work on the farm has been expanded during the last year to make it yield some valuable information to those interested in sheep and lamb production in southern Indiana. Eight head of purebred Shorthorn calves were imported from the Bingeman herd near Waterloo, Canada, to serve as a foundation for the herd which will be used to study several phases of breeding problems confronting cattlemen and to give specific information regarding the performance of dual purpose cattle. This project is being carried on in cooperation with the United States Department of Agriculture, Bureau of Animal Industry. In our livestock work we have had the benefit of the advice and cooperation of Professor F. G. King, Chief, and Professor Claude Harper, Assistant Chief, of the Department of Animal Husbandry.

The flock of Type C Merino ewes were culled and divided into two lots. One lot was bred to a purebred Merino ram and the other lot bred to a purebred Southdown buck. A lot of 25 western ewes and a lot of native ewes were also bred to Southdown bucks. Accurate records have been kept of the feed requirements for the

One of the heifer calves purchased to establish the Shorthorn herd which will be a part of an important co-operative project with the Bureau of Animal Industry, U. S. Department of Agriculture.

This calf is out of a Scotch Shorthorn cow with a good milk record. Individual records will be kept on each animal in the herd.

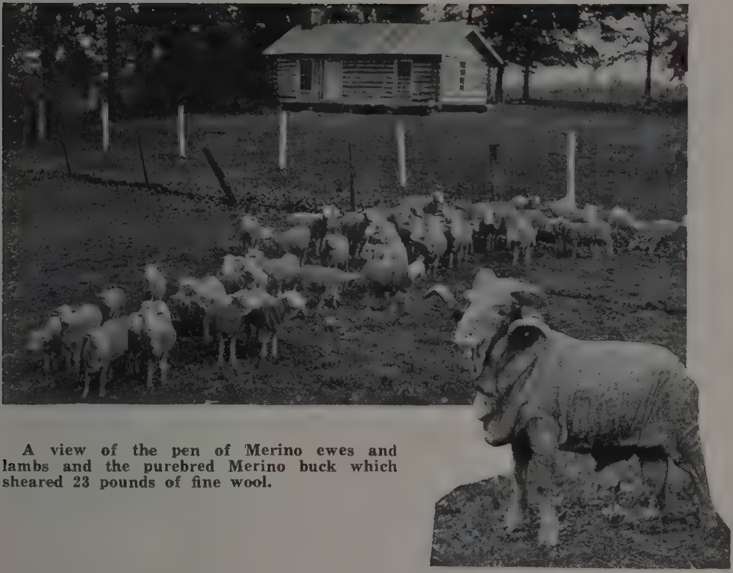
This calf was purchased to head the herd. It is now 20 months old and if it continues to develop satisfactorily, it should make a good sire.

ewes and the lambs so that costs, gains, profits and effect on wool production can be definitely determined. The lambs will be valued about June 10th and the data summarized for the meeting.

The western and native ewes have produced the largest number of lambs and these have gained faster than those from the Merino ewes. The Merino-Southdown lambs are larger and thriftier than the straight Merino lambs. This work will assist the sheepmen of southern Indiana to realize the greatest profit from their flocks.

The young cattle have made good growth since arriving at the farm January 5th. These animals range from 8 to 20 months of age and a few of them should calve next year. Milk and feed records will be kept on the cows and the dual qualities and performance of the calves will be measured as accurately as possible.

The top picture shows the group of Western ewes and their lambs.
Middle—The pen of native ewes and their lambs. These ewes were purchased locally for the test.
Bottom—Merino ewes and their lambs.
All lambs shown above were sired by purebred Southdown bucks.



A view of the pen of Merino ewes and lambs and the purebred Merino buck which sheared 23 pounds of fine wool.

The three purebred Southdown rams used in the sheep experiments.

POULTRY

A consistent effort is being made to develop one of the finest flocks of Barred Plymouth Rocks in the country. In this work Mr. S. M. Walford of the Department of Poultry Husbandry advises regarding the management and assists in the development of a constructive breeding program.

A uniform intermingling of the several Indiana and imported blood lines in the flock of 750 pullets and hens is beginning to show results in a more uniform, high egg production. The birds, entered in Indiana Record of Performance, are trapnested every day of the year, and an accurate record is thus kept of each bird's egg production and egg weight, as well as the body-weight of the bird.

A pen of high producing pullets that are making production records.

By pedigree breeding and wingbanding, the progeny of outstanding females is definitely identified. Lady Antoinette (B 7089), a 5-pound bird which laid 281 eggs averaging 23.5 ounces per dozen in her pullet year, was mated to a son of hers out of a Purdue male. Five daughters from this mother-son mating are now completing their pullet year in R. O. P. They came into production at an average age of 7 months, and their production to May 21st was 142, 144, 155, and 185, or an average of 156 eggs to date. They have been in production an average of 6¼ months, which makes the production per bird per month slightly over 25 eggs. Full brothers to these outstanding pullets sired the bulk of the chicks produced on the farm this spring.

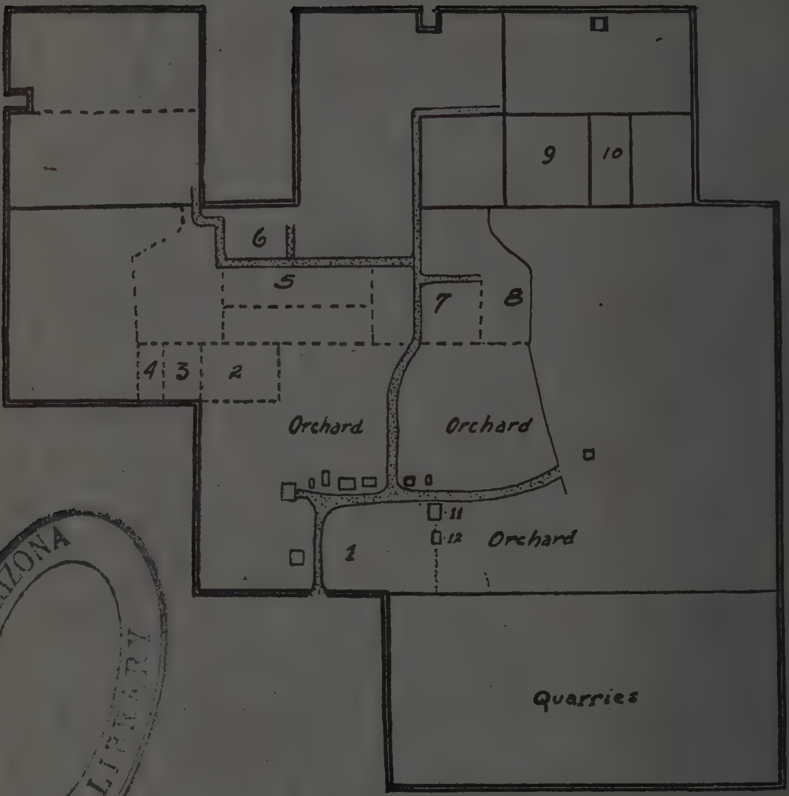
Individual records are kept on each bird by means of trap nests. All of the chickens have leg bands and individual numbers.

Brooder houses are moved to a clean range each year to eliminate the possibility of disease.

TOBACCO EXPERIMENTS

The drought last year seriously affected the tobacco crop on the farm and the following table which gives the results clearly shows that the different fertilizer applications had little effect. This is particularly noticeable between the plots receiving 250 pounds and 500 pounds per acre. The trials were conducted on the same plots that were used last year because it was a piece of new ground with a good blue grass sod turned under.

Plot No.	FERTILIZER PER ACRE	Yield per Acre	Graded as follows:			
			Trash	Lugs	Red	Tips
1	1,000 lbs.	1,194	236	228	360	370
2	500 lbs.	1,033	261	184	251	337
3	250 lbs.	1,016	246	184	246	340
4	500 lbs.	1,020	192	168	400	260
5	None	938	252	153	155	378



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Points of Interest

1. Picnic and meeting grounds.
2. Orchard Experiments.
3. Elberta Peach Orchard.
4. Peach Variety Orchard.
5. Soils Experiments, General Fertility Series.
6. Soils Experiments, Phosphate Series.
7. Crop Variety Tests.
8. Alfalfa Field.
9. Pasture being improved.
10. Pasture Experiments.
11. Apple Packing and Storage Building.
12. Sheep Barn.

Visit these places and feel at liberty to ask questions. Representatives of the various departments will be present to answer and discuss your problems with you.

20 1931

Circular No. 184 July, 1931

Purdue University
Agricultural Experiment Station
Lafayette, Indiana

OPERATING WATER PUMPS WITH ELECTRIC POWER

TRUMAN E. HIENTON
Department of Agricultural Engineering

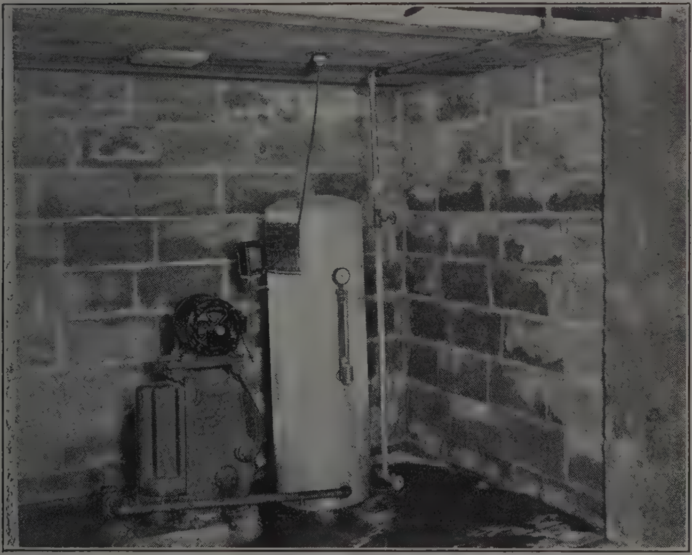

Fig. 1. Electric motor-driven deep-well pump in Tippecanoe County.

Deep-well pumps should be used where the lift from the level of the water in the well or cistern to the pump exceeds 22 feet. The pumping head must be located above the well although the pressure tank may be located at some other point. A convenient arrangement is shown where the well is drilled just outside of the basement wall and the pump is enclosed in a small room which joins directly to the cellar. The drop pipe may be pulled out of the well through the hole in the ceiling filled by the removable concrete block.

Electric energy is the most satisfactory source of power for operating the farm water pump. The daily demand for water on the farm requires a reliable power unit to operate the pump and the electric motor has been found to be the most dependable and economical for that purpose. The rapid extension of farm electric lines in the past eight years and the increase in the use of individual light plants has brought electric energy to nearly one-sixth of all Indiana farms. As a result, it is now possible for many farmers to utilize the electric motor to save time and expense in pumping water.

Electric Motor-Driven Pumps.—Water pumps are usually divided into two classes, shallow-well and deep-well. The first is recommended for use in pumping from wells or cisterns in which water is not more than 22 feet below the level of the pump. The deep-well pump is for use in pumping where the vertical lift from the water to the pump exceeds 22 feet.

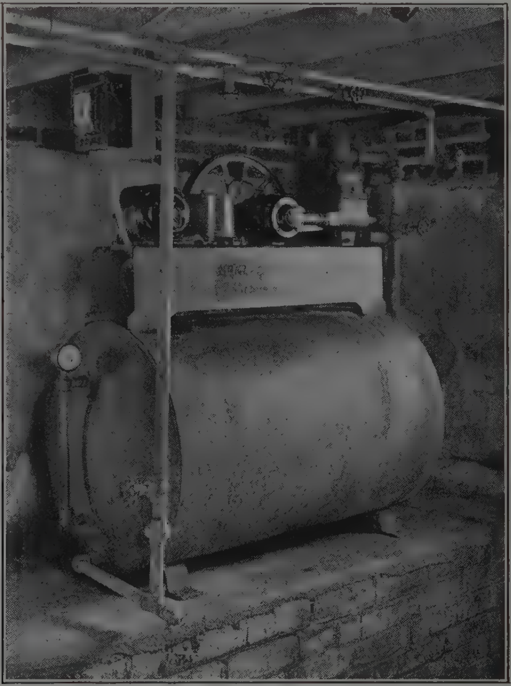

Fig. 2. Electric motor-driven shallow-well pump on a Clinton County farm.

Shallow-well pumps are recommended for use in pumping water which is not more than 22 feet below the pump. The pump may be placed above the well or cistern but is usually located with the pressure tank in the cellar of the house or in another building for protection from frost.

The shallow-well pump may be located above or at some convenient point near the well or cistern. This makes it possible to locate the pump in the basement of the house or other building to protect it from freezing. The pumping head of the deep-well pump must be located above the well although the pressure tank, where used, may be located away from the well.

A pump jack may be used with either shallow- or deep-well pumps but must be located over the well or cistern when used with a deep-well unit. Where a jack is used with a pump which forces water into a pressure tank, the tank is usually placed in the basement or other protected location.

The change from an engine to an electric motor for operating a pump seldom involves any material change in equipment. The drive pulley on the pump or pump jack must in most cases be exchanged for a larger one to obtain the proper speed of the pump. In situations where water is pumped into a pressure tank and automatic operation of the motor is desired, a switch, which controls the motor, must be installed. Belt drive which is most frequently used with engines is satisfactory for use with motors, but some type of belt tightener should be provided.

On many farms it is desired to install new pumping equipment when electric power becomes available. Typical complete pumping units for deep wells and shallow wells are shown, respectively, in Figures 1 and 2. Motor-driven pump jacks are also available as complete units, as shown in Figure 3. They may be secured with or without a pump but usually can operate any make of pump, designed for use with a pump jack. A pressure tank and automatic switch can also be secured for use with the pump jack.

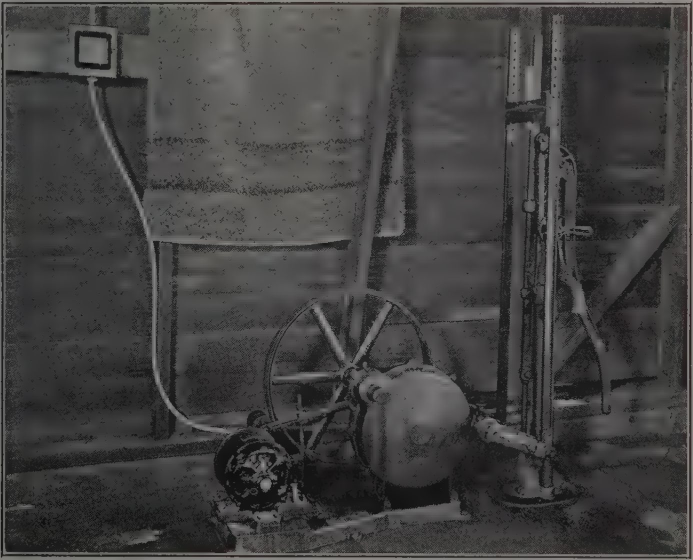

Fig. 3. Electric motor-driven pump jack on a Clinton County farm.

A pump jack may be used with either shallow- or deep-well pumps. It must be located above the well or cistern from which the water is pumped when used with a deep-well pump, but not necessarily so with a shallow-well unit. Automatic operation is possible, where water is pumped into a pressure tank, by the use of an automatic switch.

Wiring required for the installation of a motor on any pump should be installed by a competent electrician. Motors should be protected with fuses of proper size to prevent possible damage.

Energy Used for Pumping.—The amount of water pumped by a kilowatt-hour of electrical energy or a gallon of gasoline depends upon a number of factors. Several of the more important items which affect the amount of water pumped are the size and class of pump, depth of well, and pressure against which the water is pumped.

Tests were conducted on five makes of shallow-well plunger pumps in December, 1929, at the Purdue University Agricultural Engineering Department. The results of the tests on one pump, shown in Table I, are typical of those of all pumps tested in so far as energy consumption is affected by the lift and pressure. It will be noted that as the pressure, against which the water was pumped, increased, the energy consumed per 1000 gallons increased, and as the lift increased the energy also increased, while the capacity of the pump decreased with those increases in pressure and lift.

TABLE I.—ENERGY USED FOR PUMPING 1000 GALLONS OF WATER AT VARIOUS LIFTS AND PRESSURES.[1]

Lift feet	Pressure pounds	Capacity gal. per hour	Kw.-hr. per 1000 gal.
15	30	328.0	1.09
22	20	334.0	0.928
22	30	323.9	1.13
22	40	315.1	1.35

[1] Pump used was of double-acting, plunger type, rated to deliver 300 gallons per hour by the manufacturer.

The average consumption of the five shallow-well pumps with a 15-foot lift at 30 pounds gage pressure was 1.25 kilowatt-hours per 1000 gallons of water pumped. Similar results, secured on five farm-installed, shallow-well pumps where the water pumped was measured by meters, showed a consumption of 1.44 kilowatt-hours per 1000 gallons of water pumped, with pressures varying from 20 to 40 pounds. Energy required for pumping with deep-well pumps is greater than that with shallow-well pumps and increases with the increase in lift of the water.

Field survey records were obtained during 1930 in a study of cost of power for pumping water by P. F. Aylesworth of the Farm Management Department under the direction of the Agricultural Engineering Department. The average of eight records taken on shallow-well pumps driven by gasoline engines showed a consumption of 1.05 gallons of gasoline per 1000 gallons of water pumped against no pressure. Similar records taken on five shallow-well pumps driven by electric motors showed a use of 1.56 kilowatt-hours per 1000 gallons pumped against pressures of 20 to 40 pounds. With gasoline costing 12 cents per gallon and electric energy 5 cents per kilowatt-hour, the costs for pumping 1000 gallons of water under the above conditions were $0.078 for electric power and $0.126 for gasoline power. The results of the tests reported would indicate that under identical pumping conditions (both pumping against the same pressure) a greater difference in cost of power would result.

Another item not included in the foregoing cost of power, which is difficult to evaluate, is that of labor involved in starting the engine. Electric motors, where equipped with automatic switches, require no attention for starting or stopping them.

Extension Bulletin No. 170, "Water Systems for the Farm Home," of the Purdue University Agricultural Extension Department describes pumps operated by all types of power and will be of interest to those who do not have electric power available.

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Circular No. 185 June, 1931

SEVENTEENTH ANNUAL REPORT OF THE CREAMERY LICENSE DIVISION

For the Year Ending March 31, 1931

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Purdue University
Agricultural Experiment Station
Lafayette, Indiana

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Mr. V. D. Rhodes	Assistant Inspector
Mr. C. E. Schumacher	Assistant Inspector

Milk Handled by Licensed Plants and Total Estimated Milk Production, 1920-1930

Year	Number of Licensed Plants	Pounds of Milk or Its Equivalent, Handled by Licensed Plants	*Number of Milk Cows	Total Milk Production
1920	183	1,227,971,123	659,000	3,086,007,190
1921	198	1,350,320,469	653,000	3,035,325,150
1922	234	1,471,978,897	659,000	3,093,440,591
1923	220	1,439,266,503	652,000	3,133,036,289
1924	234	1,698,110,981	659,000	3,200,137,516
1925	243	1,758,946,467	679,000	3,280,146,910
1926	272	1,830,970,397	665,000	3,447,213,947
1927	307	2,132,280,140	679,000	3,669,804,287
1928	334	2,444,867,845	679,000	3,792,498,038
1929	344	2,434,039,990	693,000	3,842,440,026
1930	369	2,552,288,533	721,000	3,924,405,203
1931	....	....	743,000	....

*Indiana Crops and Livestock, 1931. Department of Agricultural Statistics.

SEVENTEENTH ANNUAL REPORT OF THE CREAMERY LICENSE DIVISION

T. H. BINNEY

In 1927 the Creamery License Division of Purdue University Agricultural Experiment Station entered into an agreement with the United States Department of Agriculture to collect production figures from the dairy manufacturing plants in Indiana. Each quarter, blanks are sent out from the Bureau of Agricultural Economics' office in Washington to all dairy plants in the state and returned to them through the Creamery License Division. A carbon copy of all figures are filed in the office of the Creamery License Division and the original copy is sent to Washington. In addition to these figures production reports are received from all licensed dairy plants in the state at the time they apply for creamery licenses. With the information received, it is possible to compile reliable statistics concerning the total production of licensed manufacturing plants.

The following table is a summary of the reports received from licensed plants for the years indicated:

OUTPUT OF LICENSED PLANTS IN INDIANA FOR 1916, 1920, 1924, 1929 AND 1930

	1916	1920	1924	1929	1930
Pounds of Butter	33,026,796	42,577,180	53,462,104	62,700,705	63,248,581
Pounds of Milk	55,059,940	155,950,136	257,417,090	537,463,634	613,005,756
Pounds of Cream	5,799,663	12,224,488	25,219,252	36,052,145	29,892,859
Gallons of Ice Cream	2,111,701	4,132,318	4,865,465	5,250,345	4,664,131
Pounds of Cheese	82,667	233,806	574,686	10,126,417	11,956,315
Pounds of Sweetened Condensed Milk	1,619,880	6,920,592	8,735,498	3,355,734	2,557,973
Pounds of Evaporated Milk	13,657,248	10,265,791	23,912,054	37,973,360	50,602,364
Pounds of Bulk Evaporated Milk	2,774,880	5,977,716	19,065,245	31,102,559	43,054,573

By comparing the figures for 1930 with those for 1929 in the above table, it will be noted that most of the manufactured products show an increase. The increase in the amount of butter made is 547,876 pounds, or slightly less than 1.0 per cent. A total of 613,005,756 pounds of milk and 29,892,859 pounds of sweet cream were sold in licensed plants during the past year. This represents an increase of 14.0 per cent of milk and a decrease of 20.6 per cent of cream in 1930 as compared with 1929. The amount of ice cream manufactured during the past year shows a decrease of 586,214 gallons or 12.5 per cent. Cheese production increased 1,829,898 pounds or 18.0 per cent. Sweetened condensed milk decreased 797,761 pounds or 31.1 per cent, evaporated milk (case goods) increased 12,629,004 pounds or 33.2 per cent, and bulk evaporated milk increased 11,952,014 pounds or 38.4 per cent.

In addition to the above products dairy plants of the state manufactured 16,298,695 pounds of condensed skim milk; 2,333,165 pounds of evaporated skim milk; 4,612,506 pounds of concentrated skim milk (for animal feed); 8,099,871 pounds of condensed or evaporated buttermilk; 1,690,196 pounds of dried or powdered skim milk; 2,147,463 pounds of dried or powdered buttermilk, and 153,150 pounds of malted milk.

An estimate of the total amount of dairy products manufactured in the state may be secured by using the above statistics and estimating the amount of dairy products manufactured and sold in the plants which are not licensed. A large number of ice cream plants and market milk plants buy milk on a gallon or weight basis rather than on a butterfat basis and do not come under the jurisdiction of the Creamery License Division.

Amount of Butter, Milk, Ice Cream, Condensed Milk and Cheese Estimated as Produced in Indiana During 1930

Pounds of Creamery Butter	63,248,581
Pounds of Dairy Butter	10,297,908
Pounds of Milk Consumed	1,605,559,991
Gallons of Ice Cream	9,691,509
Pounds of Condensed and Evaporated Milk	96,214,910
Pounds of Cheese	11,956,315
Pounds of Cottage Cheese	3,202,849

By taking the amount of milk used in the manufacture of each of the various dairy products the total milk production of the state may be calculated. In making this calculation, it has been necessary to estimate the amount of milk and cream consumed direct, the amount of dairy butter made, the amount of milk fed to calves, and the amount of milk lost on farms and in factories.

Total (Estimated) Milk Production

Creamery butter used	1,328,220,201	pounds
Dairy butter used	216,256,068	pounds
Milk consumed direct	1,605,559,991	pounds
Ice cream used	133,258,248	pounds
Cheese used	119,563,150	pounds
Condensed milk used	240,537,275	pounds
Milk fed to calves	105,774,000	pounds
Milk shipped out of state	266,231,898	pounds
Losses on farms and in factories	120,462,025	pounds
Total	4,135,862,856	pounds
Milk shipped in	211,457,653	pounds
Total milk production in Indiana	3,924,405,203	pounds

Creamery Licenses

In order to comply with Section 6 of the Creamery and Testers' License Law (Acts of 1913, Chapter 340), every creamery, shipping station, milk factory, cheese factory, person or agent, firm, company, association or corporation, receiving, buying and paying for milk or cream on a butterfat basis, is required to hold a creamery license. Unless revoked for a violation of the Law or Rules and Regulations under which it is granted, a creamery license is valid for a year.

During the past year 1893 creamery licenses were issued as compared with 1932 for the previous year. Station licenses show a decrease of 64 in number while the number of plant licenses show a gain of 25 in number.

The following table is a summary of the number and kinds of plants issued creamery licenses during the year ending March 31, 1931, and for previous years as indicated.

CREAMERY LICENSES ISSUED FROM 1924 TO 1930 INCLUSIVE

PLANTS AND STATIONS	Number and Year						
	1924	1925	1926	1927	1928	1929	1930
Butter	51	51	64	58	56	58	56
Milk	71	78	91	108	129	141	162
Ice Cream	15	14	17	15	11	16	18
Cheese	4	3	3	9	18	17	18
Condensed Milk	7	4	7	8	8	9	8
Butter and Milk	34	31	33	43	39	33	36
Butter and Ice Cream	17	16	12	14	17	13	10
Butter and Condensed Milk	1	1	1	1	0	0	0
Butter and Cheese	0	0	0	0	3	2	1
Butter, Milk, and Ice Cream	12	16	13	16	13	15	20
Butter, Milk and Condensed Milk	2	4	4	4	5	5	7
Butter, Milk, Ice Cream and Condensed Milk	6	6	4	6	7	7	6
Butter, Milk, Cheese and Condensed Milk	0	0	0	0	0	1	0
Milk and Ice Cream	10	13	19	20	24	18	19
Milk and Condensed Milk	2	4	3	3	2	5	4
Milk, Ice Cream and Condensed Milk	2	2	1	2	2	3	2
Milk, Ice Cream and Cheese	0	0	0	0	0	1	1
Total number of Plants	234	243	272	307	334	344	369
Stations	1,588	1,618	1,631	1,653	1,614	1,588	1,524
Total Licenses Issued	1,822	1,961	1,903	1,960	1,948	1,932	1,893

With the exception of plants handling whole milk, the number of plants handling the various dairy products have remained fairly constant for the past three years. Milk plants show a gain of 21 in number over the previous year.

The following table shows the number of plants which reported each of the five major products handled in licensed plants for the years indicated:

PRODUCT	Number of Plants Reporting						
	1924	1925	1926	1927	1928	1929	1930
Butter	123	125	131	142	140	134	136
Milk	139	154	168	202	221	229	257
Ice Cream	62	67	66	73	74	73	76
Cheese	4	3	3	9	21	21	20
Condensed Milk	20	21	20	24	24	30	28

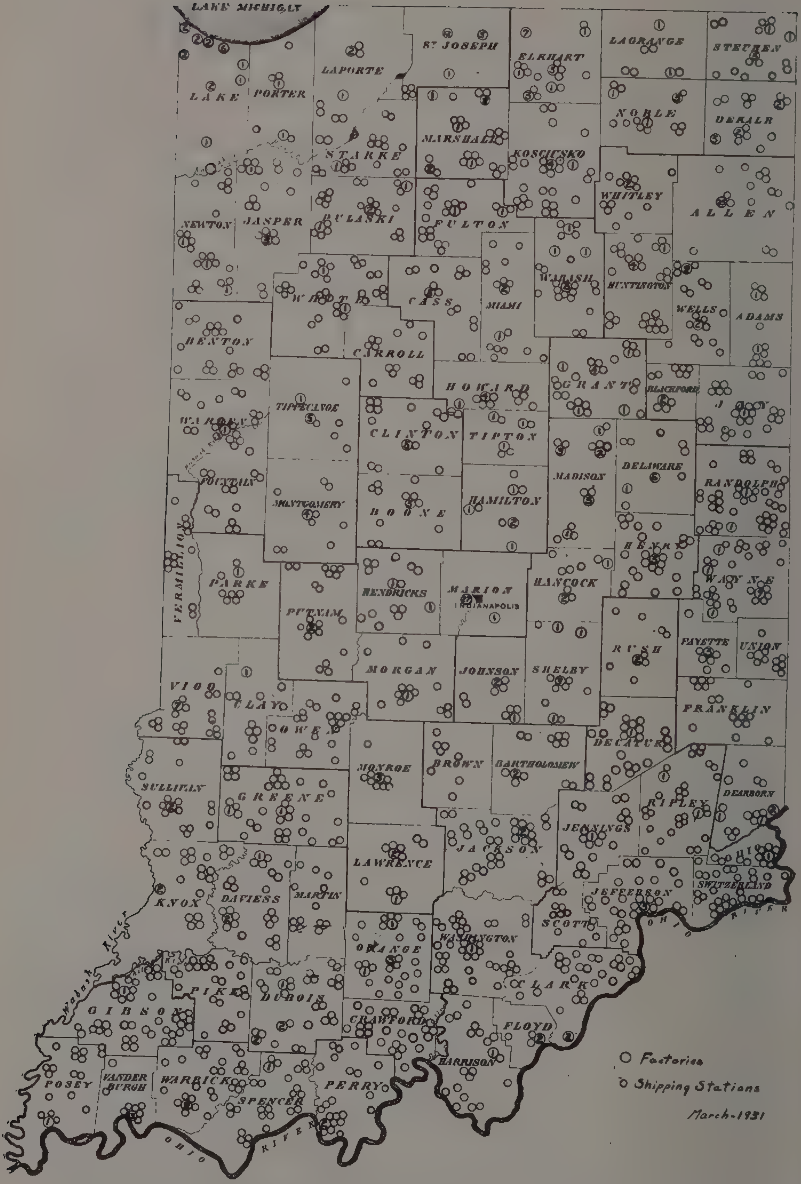
The accompanying map shows the distribution of plants and stations in the state. The larger circle containing a number is the number of licensed plants operating in each town, while each small circle represents a cream station.

Testers' Licenses and Examinations

All dairy plants or stations, or person, or agent buying milk or cream on a butterfat basis must have in their employ a licensed tester who shall supervise and be responsible for the operation of the Babcock test of milk and cream.

Before licenses are issued testers must pass an examination, which consists of both laboratory and written work. The laboratory work consists of testing duplicate samples of both milk and cream. The written work consists of answering twenty questions taken from a list of questions furnished all testers before the examination. (Circular 41.)

Twenty-three hundred and ninety-five testers' licenses were issued during the past year; a decrease of one hundred and sixty-seven from the previous year's total of twenty-five hundred and sixty-two.


LAKE MICHIGAN
LAKE
PORTER
LAPORTE
ST JOSEPH
ELKHART
LAGRANGE
STEUBEN
NOBLE
DEKALB
STARKE
MARSHALL
KOSCIUSKO
WHITLEY
ALLEN
NEWTON
JASPER
PULASKI
FULTON
WHITE
CASS
MIAMI
WABASH
HUNTINGTON
WELLS
ADAMS
BENTON
CARROLL
HOWARD
GRANT
BLACKFORD
JAY
WARREN
TIPPECANOE
CLINTON
TIPTON
MADISON
DELAWARE
RANDOLPH
FOUNTAIN
MONTGOMERY
BOONE
HAMILTON
HENRY
VERMILLION
PARKE
PUTNAM
HENDRICKS
MARION
INDIANAPOLIS
HANCOCK
WAYNE
RUSH
FAYETTE
UNION
VIGO
CLAY
OWEN
MORGAN
JOHNSON
SHELBY
FRANKLIN
SULLIVAN
GREENE
MONROE
BROWN
BARTHOLOMEW
DECATUR
RIPLEY
DEARBORN
JENNINGS
JACKSON
LAWRENCE
OHIO
SWITZERLAND
KNOX
DAVIESS
MARTIN
JEFFERSON
SCOTT
ORANGE
WASHINGTON
CLARK
GIBSON
PIKE
DUBOIS
CRAWFORD
FLOYD
HARRISON
POSEY
VANDERBURGH
WARRICK
SPENCER
PERRY
Wabash River
OHIO RIVER
O Factories
o Shipping Stations
March-1931

Location of Licensed Plants and Stations for Year Ending March 31, 1931.

NUMBER OF CANDIDATES EXAMINED AND TESTERS' LICENSES ISSUED FOR THE YEARS ENDING MARCH 31, 1920, 1924, 1928, 1930 AND 1931.

	1920	1924	1928	1930	1931
Number of Individual Examinations	1,339	850	904	691	518
Number of Failures	226	125	290	144	79
Number of Persons Passing Examination	1,113	725	614	547	439
Number of Testers' Licenses Issued	2,371	2,518	2,661	2,562	2,395

The results of the seventy examinations which were held at the nine examination points in the state are given in the following table:

RESULTS OF TESTERS' EXAMINATIONS 1930-1931

PLACE OF EXAMINATION	Number of Examinations	Number of Candidates	Average Grades (Per Cent)		
			All Candidates	Candidates Passed	Candidates Failed
Lafayette	12	108	80.7	85.1	42.1
Muncie	8	54	79.0	84.5	42.1
Fort Wayne	10	81	83.2	87.0	56.6
Plymouth	1	8	84.4	84.4	....
New Albany	6	22	76.8	81.0	50.3
Evansville	8	56	75.8	82.0	58.9
Terre Haute	8	57	77.3	81.4	60.3
Indianapolis	8	62	79.1	80.3	59.0
North Vernon	9	70	80.7	82.6	69.7
Totals	70	518	Aver. 79.7	84.0	56.0

Glassware Inspection

With the exception of cream pipettes, all Babcock testing glassware used in the state must be inspected for accuracy by the Purdue University Agricultural Experiment Station before it may be used in Indiana dairy plants and cream stations. Only test bottles and pipettes conforming to specifications set forth in the Creamery and Testers' License Law (see Circular 41) are examined for accuracy. All pieces of glassware found to be correct are stamped with the letters "S. G. P.," meaning Standard Glassware Purdue.

Nine-gram weights used in weighing cream are also tested and are stamped "S. G. P." if within the tolerance allowed.

During the past fiscal year 34,940 pieces of Babcock testing glassware were examined by the Glassware Inspector of the Agricultural Experiment Station. In addition 204 nine-gram weights were inspected and all found to be correct. This is 19,672 pieces of glassware and 290 nine-gram weights less than were inspected last year.

The number of pieces of glassware inspected during the past year is less than for any year since 1916 and 17,724 pieces below the average per year since the Creamery and Testers' License Law became effective. The percentage of incorrect glassware is the highest since 1921.

The following table gives the amount of each kind of glassware inspected, and the number of pieces found to be incorrect:

GLASSWARE INSPECTION

KINDS OF GLASSWARE	Total Number of Pieces	Number Incorrect	Per Cent Incorrect
Cream test bottles	20,634	116	.562
Milk test bottles	12,288	2	.162
Milk pipettes	2,018	0	.000
Summary	34,940	118	.337

Licenses Revoked

Licensed milk and cream testers who do not test in accordance with the provisions of the Creamery and Testers' License Law and the Rules and Regulations under which licenses are granted may have their licenses revoked. Such action is taken by the Purdue University Agricultural Experiment Station upon recommendation of the Examining Board. Before recommending the revocation of a license, the tester appears before the Board where the evidence of incorrect testing is presented. After hearing the evidence presented by the Creamery License Division, and the statements of the tester, the Board recommends what action should be taken.

The following testers' licenses were revoked during the past year:

Mr. Cecil Goldsberry, Rensselaer, Jasper County, Indiana; tester for Rensselaer Creamery and Produce Company, Rensselaer, Indiana.

Mr. Thomas Patterson, Loogootee, Martin County, Indiana; tester for Evansville Packing Company, Evansville, Indiana.

Mrs. Oma Ohmart, North Manchester, Wabash County, Indiana; tester for Cloverleaf Creameries, Huntington, Indiana.

Mrs. Carrie Amburn, Winchester, Randolph County, Indiana; tester for Sherman, White & Company, Fort Wayne, Indiana.

Mr. V. N. Jones, Attica, Fountain County, Indiana; tester for Beatrice Creamery Co., Chicago, Illinois.

Mr. L. A. Blackburn, Oakland City, Gibson County, Indiana; tester for the Indiana Produce Company, Huntingburg, Indiana.

Mr. J. L. Glover, Covington, Fountain County, Indiana; tester for Sugar Creek Creamery Company, Danville, Illinois.

Miss Achsa Heaney, Bainbridge, Putnam County, Indiana; tester for Sugar Creek Cramery Company, Danville, Illinois.

Mrs. Bertha Dorton, Matthews, Grant County, Indiana; tester for Swift & Company, Marion, Indiana.

LICENSED MANUFACTURING PLANTS IN INDIANA

1930

Name	Address	Products
E. C. Adams Products Company	Fairmount	Butter, Milk and Ice Cream
Adler Milk Company	Fort Wayne	Milk
Ahles Edgewood Dairy	Evansville	Milk
Albion Creamery Company	Albion	Butter
Fred Alexander	Crawfordsville, R. R. 6	Butter
Alexandria Pure Milk Company	Alexandria	Milk
Alspaugh Ice Cream Company	Newcastle	Ice Cream
Amboy Creamery Company	Marion	Ice Cream
American Dairy Company	Evansville	Butter, Milk
Angola Co-operative Dairy Products Co.	Angola	Butter, Ice Cream
Anthony Dairy	Fort Wayne	Milk
Armour Creameries	Rochester	Butter
Armour Creameries	Terre Haute	Butter
Associated Dairies Company	Fort Wayne	Milk
Auburn Dairy	Auburn	Milk
Babybrand Dairy Company	Fort Wayne	Milk
Chas. C. Baker	Muncie	Butter
Ballard Ice Cream Company	Danville	Milk
Ballard Ice Cream Company	Indianapolis	Milk, Ice Cream
Banner Farms Dairy	Indianapolis	Milk
Banquet Ice Cream and Milk Co.	Indianapolis	Milk, Ice Cream
Barnett Bros. Sunlight Creamery	Logansport	Butter, Milk
Bass Lake Cheese Company	Knox, R. R. 1	Cheese
Beatrice Creamery Company	Muncie	Butter, Ice Cream
Beaver Ridge Dairy Company	South Bend	Milk
Beckstein-Popp Dairy	Fort Wayne	Milk
Bedford Dairy Company	Bedford	Milk, Ice Cream
Belcher-Hinkle Dairy	Bloomington	Milk
Bender Ice Cream Company	Richmond	Ice Cream
Bixler and Carson Dairy	Indianapolis	Milk
Blosser Dairy	Nappanee	Butter, Milk
Blue Ribbon Dairy	Gary	Milk
Blue Valley Creamery Company	Indianapolis	Butter
Boonville Pure Milk Company	Boonville	Butter, Milk, Ice Cream
Bordens Farm Prod. Co. of Illinois	Akron	Milk
Bordens Farm Prod. Co. of Illinois	Crown Point	Milk
Bordens Farm Prod. Co. of Illinois	Lowell	Milk
Bosstick Pure Milk and Ice Cream Co.	Sullivan	Milk, Ice Cream
Bowman Dairy Company	Francesville	Milk
Bowman Dairy Company	Kouts	Milk
Breyer Ice Cream Company	Kendallville	Condensed
Browder Ice Cream Company	Indianapolis	Milk, Ice Cream

Bunker Hill Creamery Company	Bunker Hill	Butter
Butler Dairy	Butler	Milk
Calverts Dairy	Edinburg	Milk
Cambridge Ice and Dairy Company	Cambridge City	Milk
Capitol Dairies, Inc. No. 1	Indianapolis	Milk
Carey and Sons	Indianapolis	Milk
Center Lake Dairy	Angola	Milk
Chamberlin Ice Cream Company	Lafayette	Milk, Ice Cream
Chapman and Son	Frankfort	Milk
Cicero Country Butter Company	Cicero	Butter
City Dairy Company	Connersville	Milk, Butter
City Dairy Company	Kendallville	Milk
City Dairy Company	South Bend	Milk, Butter
Clark County Ice Cream Company	Jeffersonville	Ice Cream
Clover Farms	Fishers	Milk
Cloverleaf Creameries, Inc	Decatur	Butter, Ice Cream
Cloverleaf Creameries, Inc	Huntington	Butter, Ice Cream
Cloverleaf Dairy	Culver	Milk, Butter
Cloverleaf Dairy	Elkhart	Milk
Cloverleaf Dairy	Gary	Milk, Butter
Collier Bros	Martinsville	Butter, Milk, Ice Cream
Columbus Creamery Company	Columbus	Butter, Ice Cream
Columbia Dairy	Columbia City	Milk
E. T. Conant and Son	Noblesville	Butter, Milk
Cook Bros. Dairy	Elkhart	Milk
County Line Cheese Factory	Auburn	Cheese
Covalt Dairy Company	Muncie, R. R.	Milk
Crescent Dairy Company	Kokomo	Milk, Butter
Crystal Dairy	Warsaw	Milk
Daisy Dairy Prod. Company	Gary	Milk
Dale Creamery Association	Dale	Butter
Daum Dairies	Connersville	Milk, Ice Cream, Condensed
Walter M. Denehie	Terre Haute	Milk
O. V. Dimmit Dairy	West Middletown	Milk
Dixie Dairy	Gary	Milk
Douglas-Skidmore Milk Company	Frankfort	Milk
East Chicago Dairy Company	East Chicago	Milk
East Hammond Dairy Company	Hammond	Milk
East Side Jersey Dairy	Anderson	Milk, Butter
Economy Creamery Company	Economy	Butter
Eel River Creamery Company	North Manchester	Butter
Elkhart Dairy	Elkhart	Milk
Ellsworth Ice Cream Company	Huntingburg	Milk, Butter, Ice Cream
Elmore's Creamery	Elwood	Milk, Ice Cream
Elwood Creamery Company	Elwood	Ice Cream
Eskay Dairy	Fort Wayne	Milk, Butter
Evansville Packing Company	Evansville	Butter
Excelsior Dairy	Wabash	Milk

Fairview Dairy Company	Anderson	Milk
Farmers Dairy	Carlos	Butter
Farmers Marketing Association	Columbus	Butter
Farmers Produce Association	Crawfordsville	Butter
Fertig Dairy	Franklin	Ice Cream
Fertile Acres Dairy	Lakeville	Milk
W. R. Fisher	Indianapolis	Milk
Fort Wayne Milk Producers Corp.	Fort Wayne	Milk
Fort Wayne Milk Producers Corp.	Garrett	Milk and Condensed
Franklin Pure Milk Company	Franklin	Milk, Butter and Ice Cream
Fraziers Dairy	Frankfort	Milk
Geo. Freese's Sons	Nappanee	Butter, Ice Cream
French Lick Hotel Company	French Lick	Butter
R. W. Furnas Ice Cream Company	Fort Wayne	Ice Cream
R. W. Furnas Ice Cream Company	Indianapolis	Milk, Ice Cream
R. W. Furnas Ice Cream Company	Morristown	Condensed
R. W. Furnas Ice Cream Company	South Bend	Ice Cream
F. H. George and Company	Fort Wayne	Butter
Frederick Glass	Madison	Milk, Ice Cream
Glen Echo Dairy Company	Evansville	Milk
Glen Park Dairy Company	Gary	Milk
Gnau Bros. Dairy	Tell City	Milk
Gold Medal Dairy Company	Evansville	Milk
Golden Guernsey Dairy	Frankfort	Milk
Golden Rule Creamery Company	Monticello	Milk, Butter
Golden Valley Pure Milk Company	Mishawaka	Milk
Goshen Milk Condensing Company	Goshen	Butter, Milk, Condensed
E. S. Grady Milk Depot	Elkhart	Milk
Graham Farms	Elnora	Cheese
Graham Farms	Washington	Cheese, Butter
Greek Candy Kitchen	Jasper	Ice Cream
Greenfield Creamery Company	Greenfield	Milk
Green and Son	Shelbyville	Milk
Greensburg Creamery Company	Greensburg	Milk
Greencastle Sanitary Dairy	Greencastle	Milk
Greendale Ice Cream Company	Lawrenceburg	Ice Cream
Grocers Dairy Products Company	Kokomo	Milk, Butter, Ice Cream, Condensed
Guernsey Milk and Ice Cream Co.	Lebanon	Milk, Ice Cream
Hagerstown Dairy	Hagerstown	Milk
Hall Dairy	Bloomington	Milk
Handy's Dairy	Greencastle	Milk, Butter
Harrison Hill Dairy	Fort Wayne	Milk
Hartford City Dairy	Hartford City	Milk
Hartley's Dairy	Portland	Milk
Haxson Dairy Company	Gary	Milk
Haxton Pure Milk Company	Hobart	Milk
Haynes Dairy	Garrett	Milk
Hillcrest Farm	Windfall	Milk

Hill's Dairy	Winchester, R. R. 4	Milk
Himes Bros. Dairy	Richmond	Milk
Holland Creamery Association	Holland	Butter
Holland Custard and Ice Cream Co.	Holland	Ice Cream
Fred Holle and Sons	Fort Wayne	Milk
Home Creamery Company	Morocco	Butter
Homestead Farm Cry. Company	Milan	Butter
Hoosier Condensed Milk Company	Bluffton	Condensed
Hoosier Dairy Products Company	Noblesville	Ice Cream
Hoosier Dairy Products Company	Rushville	Milk, Ice Cream
Hoosier State Creamery	Rensselaer	Butter
Hornaday Milk Company	Indianapolis	Milk, Butter
R. B. Hough Dairy	Richmond	Milk
Huff's Creamery	Bremen	Butter
Hunding Dairy Company	Wellsboro	Milk
Huntington Pure Milk Company	Huntington	Milk, Butter
Hy-Grade Dairy Products Company	Crawfordsville	Milk, Butter, Ice Cream
Ideal Pure Milk Company	Evansville	Milk, Butter, Ice Cream, Condensed
Indiana Condensed Milk Company	Lebanon	Condensed
Indiana Condensed Milk Company	Sheridan	Condensed
Indiana Dairy Company	South Bend	Milk, Butter
Indiana Dairy Marketing Ass'n	Muncie	Milk, Butter, Condensed
Indiana Ice and Dairy Company	Anderson	Milk, Butter, Condensed
Indiana Produce Company	Huntingburg	Butter
Indianapolis Milk Company	Indianapolis	Milk
International Dairy Company	Deep River	Milk
Jasper County Creamery	Rensselaer	Butter
Jersey Creamery Company	Newcastle	Milk, Butter, Ice Cream
Jersey Maid Dairy Company	Hammond	Milk
Jessup and Antrim Ice Cream Co.	Indianapolis	Ice Cream, Cond.
Johnson Butter Company	Terre Haute	Butter, Milk, Ice Cream
Johnson Creamery Company	Bedford	Milk
Johnson Creamery Company	Bloomington	Milk, Butter, Ice Cream
Keener Township Dairy Company	Demotte	Milk
Kelly Kindsey Dairy	Warsaw	Milk
Kimmel Farms, Inc.	Kendallville	Milk
A. W. King's Dairy	Richmond	Milk
King's Dairy	Fort Wayne	Milk
King's Sanitary Dairy	Terre Haute	Milk, Butter
Knispel Dairy	Fort Wayne	Milk
Koch Dairy Company	Evansville	Milk, Butter, Ice Cream
Kosanke Bros.	Argos	Butter
Kraft Cheese Company	Bloomfield	Cheese

Kraft Cheese Company	Fowlerton	Cheese
Kraft Cheese Company	Marshall	Cheese
Kraft Cheese Company	Paoli	Cheese
Kraft Cheese Company	Salem	Cheese
Kraft Cheese Company	Sharpsville	Cheese
Kraft Cheese Company	Shirley	Cheese
Kraft Cheese Company	Sullivan	Cheese
Kraft Cheese Company	Summitville	Cheese
Kraft Cheese Company	Sweetsers	Cheese
Kraft Cheese Company	Van Buren	Cheese
Kroger Grocery and Baking Co	Indianapolis	Milk
Kyle Creamery Association	Aurora, R. R	Butter
Lafayette Ice Cream Company	Lafayette	Milk, Ice Cream
Lake Shore Dairy	Indiana Harbor	Milk
Lake View Dairy	Gary	Milk
Lanesville Creamery Company	Lanesville	Butter
Lemont Dairy	Brook	Milk
Lenicks Dairy	LaPorte	Milk, Ice Cream
Leonard Creamery Company	Paoli	Ice Cream
Liberty Creamery Company	Liberty	Milk, Butter
Lima Creamery Company	Howe	Butter
Linton Milk Company	Linton	Milk
Mack and Company	Monon	Ice Cream
Madison Creamery Company	Madison	Butter
Marion Pure Milk Company	Marion	Milk
Marley Dairy	Monterey	Milk
Mathews Dairy	South Bend	Milk
Mayer Milk Company	Indianapolis	Milk
Maywood Milk Company	Maywood	Milk
Med-O-Bloom Dairy	Kokomo	Milk
Meadow Brook Farms	Hicksville, O	Butter
Elmer Mennen	Lafayette	Milk
Middlebury Co-operative Creamery	Middlebury	Butter
Miller Bros. Dairy	Goshen	Milk
Fred Miller Bakery and Ice Cream Co	Evansville	Ice Cream
J. M. Miller	Culver	Milk, Butter
Miller Yarling Dairy	Shelbyville	Milk
Mishawaka Farmers Dairy Co	Mishawaka	Milk
Model Creamery	Indianapolis	Milk
Model Ice Cream Company	Terre Haute	Butter, Milk, Ice Cream, Condensed
Morfis Dairy	Indiana Harbor	Milk
Mt. Vernon Creamery Company	Mt. Vernon	Butter, Milk, Ice Cream
Muncie Pure Milk Company	Muncie	Milk
Murfield Creamery	Mishawaka	Butter
Mutual Milk Company	Indianapolis	Milk
Nance's Creamery	Brazil	Butter, Milk, Ice Cream
Napoleon Creamery	Napoleon	Butter
Nappanee Dairy	Nappanee	Milk

National Dairy	Whiting	Milk
C. E. Naughton	Winamac	Butter
New Paris Creamery	New Paris	Butter, Milk
North Judson Cheese Company	North Judson	Cheese
North Side Sanitary Dairy Company	Mishawaka	Milk
Northwestern Milk Company	Indianapolis	Milk
Oakhurst Dairy	Evansville	Milk
Orchard Hill Creamery	Mitchell	Milk
Orleans Creamery Company	Orleans	Butter, Ice Cream
Orchard Knoll Farm Creamery	Moores Hill	Butter
Osterhaus Dairy	Fort Wayne	Milk
Page Milk Company	Shelbyville	Milk, Butter, Condensed
Pango Milk Chocolate Company	Warsaw	Condensed
Parlor City Creamery	Bluffton	Butter
V. C. Pelton	Fremont	Butter
Pendleton Creamery	Pendleton	Milk, Butter, Ice Cream
Peoples Dairy	Fort Wayne	Milk
Phend Dairy Company	Goshen	Milk
Plainfield Milk Company	Plainfield	Milk
Marco Plasterer	Huntington	Milk
Pleasant Hill Dairy Company	Fort Wayne	Milk
Polk Sanitary Milk Company, No. 1	Indianapolis	Milk
Polk Sanitary Milk Company, No. 2	Indianapolis	Butter
Prairie View Dairy	East Chicago	Milk
Prange-Flaugh Dairy	Fort Wayne	Milk
Producers Creamery	Hartford City	Cheese
Producers Creamery	Marion	Butter, Milk, Condensed
Producers Dairy Company	South Bend	Milk
Producers Dairy Prod. Company	Crawfordsville	Milk
Purdue University Creamery	Lafayette	Milk, Butter, Ice Cream
Pure Cream Products Company	Tell City	Butter, Ice Cream
Pure Dairy Products Company	Gary	Milk, Butter
Purity Dairy	North Manchester	Milk
Purity Dairy Company	Huntington	Milk
Purity Dairy Products Company	Evansville	Milk, Ice Cream
Purity Maid Products Company	New Albany	Butter, Milk, Ice Cream
Quality Dairy Company	Boonville	Milk, Butter, Ice Cream
Ray and Arnold	Logansport	Butter, Milk
Reid's Creamery	Vincennes	Milk
Reliable Dairy Company	South Bend	Milk, Butter
Rensselaer Creamery and Prod. Co.	Rensselaer	Butter
Rea Riggin and Sons	Muncie, R. R.	Milk, Butter
Richmilk Dairy	Fort Wayne	Milk
Rising Sun Creamery	Rising Sun	Butter
W. F. Ritzman	Lawrenceburg	Butter, Ice Cream

Riverside Dairy	Columbia City	Milk
Riverside Dairy Company	Mishawaka	Milk
Roanoke Creamery Company	Roanoke	Butter
W. H. Roberts and Sons	Indianapolis	Milk
Rock Bottom Dairy Farm	Flat Rock	Butter
Rush Creamery Company	Rushville	Butter
Samples Dairy	Connersville	Milk
Sanitary Dairy	Crown Point	Milk
Sanitary Milk and Ice Cream Co	Peru	Milk, Butter, Ice Cream, Condensed
Sausaman Dairy Company	Peru	Milk
Schapers Dairy	Fort Wayne	Milk
Schlosser Bros	Bremen	Milk
Schlosser Bros	Frankfort	Butter
Schlosser Bros	Fort Wayne	Butter, Ice Cream
Schlosser Bros	Indianapolis	Butter
Schlosser Bros	Plymouth	Butter, Ice Cream
Schlosser Bros	South Bend	Milk
Frank Schaniter's Dairy	Madison	Ice Cream
Scholl Dairy Company	LaPorte, R. R	Milk, Ice Cream, Butter
Shannon Dairy	Jeffersonville	Milk, Butter
Sherman White and Company	Fort Wayne	Butter
Sherman White and Company	Goodland	Butter
Shideler's Dairy	Roanoke	Milk
Shiveley Bros	Greenfield	Milk
Snyder Dairy	Seymour	Milk
South Bend Pure Milk Company	South Bend	Milk
Spring Brook Dairy	Bremen	Milk
Standard Dairy	Evansville	Milk
H. Suabedissen and Sons	South Bend	Milk
Sugar Creek Creamery Company	Evansville	Butter
Sugar Creek Creamery Company	Indianapolis	Butter
Summers and Son	Elwood	Milk
Sunrise Dairies	Laketon	Butter
Sunshine Creamery	Zanesville	Butter
Sunshine Dairy	Fort Wayne	Milk
Sunshine Farms	Lafayette	Milk, Butter, Condensed
Superior Dairy	Garrett	Milk.
Superior Milk and Ice Cream Co	Lafayette	Milk, Ice Cream
Swift & Company	Alexandria	Cheese
Swift & Company	Logansport	Butter
Swift & Company	Marion	Butter
Swift & Company	Wabash	Cheese
Tansy Milk Company	Indianapolis	Milk
Teegarden Milk Association	Teegarden	Milk
Terre Haute Pure Milk and Ice Cream Co	Terre Haute	Milk, Ice Cream, Butter, Condensed
Thomas Dairy	Elkhart	Milk

Thompson Dairy Company	North Vernon	Milk
Thompson Dairy Company	Seymour	Milk, Ice Cream
Thompson Sanitary Dairy	Richmond	Milk
Tipton Ice Cream Company	Tipton	Ice Cream, Milk
Tip Top Creamery Company	Princeton	Milk, Ice Cream
Tip Top Creamery Company	Vincennes	Butter, Milk, Ice Cream, Condensed
Tip Top Creamery Company	Washington	Milk, Ice Cream
Tonne Dairy	Fort Wayne	Milk
Turner Creamery Company	Paoli	Milk, Ice Cream, Butter
United Milk Products Corporation	Berne	Condensed
United Milk Products Corporation	Butler	Condensed
United Milk Products Corporation	Wolcottville	Condensed
United Milk Products Corporation	Yorktown	Condensed
Valparaiso Home Ice Company	Valparaiso	Milk, Ice Cream, Butter
VanCamp Milk Company	Angola	Condensed
Velvet Ice Cream Company	Wabash	Ice Cream
Vernon Farms Dairy	Elkhart	Milk
The Wadley Company	Indianapolis	Butter
The Wadley Company	Terre Haute	Butter
Wagner & Sons	Logansport	Milk
Wakarusa Co-operative Creamery	Wakarusa	Butter, Milk
Walnut Street Dairy	Hartford City	Milk
Wambaugh Sanitary Dairy	Elkhart	Milk
Sidney Wanzer and Sons	Servia	Milk
Warsaw Milk Company	Warsaw	Milk
Wayne Dairy Products Company	Richmond	Butter, Milk, Condensed
L. H. Weaver	Indianapolis	Milk
Weber Milk Company	Indianapolis	Milk, Butter
West End Milk Company	Newcastle	Milk
Western Reserve Creamery	Kokomo	Butter
White Eagle Dairy	Indiana Harbor	Milk
White Lily Milk and Ice Cream Co.	Evansville	Milk, Butter, Ice Cream
Whiting Dairy Company	Whiting	Milk, Butter
Williams Dairy	Richmond	Milk
Willida Dairy	South Bend	Milk
Willow Springs Dairy	Ligonier	Milk
Winamac Dairy	Winamac	Milk
Winchester Dairy Products Co.	Winchester	Milk
Winona Dairy	Winona Lake	Milk
Wittner Dairy	South Bend	Milk
Zanesville Creamery	Zanesville	Butter
Zapps Dairy	New Albany	Milk, Butter
Zufall Dairy Company	Williamsport	Milk

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MAR 11 1932
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INSPECTION OF AGRICULTURAL SEEDS

Fine Growth of Red Clover Resulting from Planting of Clean Seed.

Agricultural Experiment Station
Purdue University
Lafayette, Indiana

This circular contains a report of the Agricultural Seed Inspection for the year ending June 30, 1931. The complete analysis of 1,122 official seed samples is given with full particulars. In addition 2,553 free test samples of seed were tested during the year.

In accordance with a ruling of the State Seed Commissioner, wholesale seedsmen are required to attach at least one state label to each package of seed delivered to the retail seedsman, who, in turn, is required to attach sufficient additional labels to cover the weight of the package.

Since it is impossible to test all seed promptly during the rush season, directions are given for making germination tests at home.

Shipments of seed seriously misbranded were withdrawn from sale until dealers relabeled such seed correctly and made adequate refunds.

Proper use of this publication will enable purchasers to discriminate between seedsmen who handle good seed and those who handle poor seed. Before buying seed farmers are urged to examine Table VI, "The Standing of Seed Distributors," and Table VII, "The Results of Tests on 1,122 Official Samples."

INSPECTION OF AGRICULTURAL SEEDS

H. R. KRAYBILL, State Seed Commissioner

O. S. ROBERTS R. O. BITLER REGINA B. SCHULTE*
EDITH M. PATT PAULINE BALBACH

This circular contains the results of the inspection of agricultural seeds for the period from July 1, 1930, to June 30, 1931. The inspectors visited the seed dealers in all sections of the state and collected 1,568 official samples of seed. Complete analyses of these samples were made and reports were sent to the retail dealers as well as to the distributors of the seed. In addition 2,553 free test samples, 834 packets of garden seeds, and 38 Custom House samples were analyzed. The testing of these samples entailed the making of 3,201 purity tests, 18,528 germination tests, 25 examinations, and 114 identifications.

The Indiana Seed Law is essentially a correct labeling law. The law does not prevent the sale of poor seed. It merely requires that definite information be placed on the label in order that the purchaser may decide for himself whether he wishes to use good seed or poor seed. In order that the necessary information may be available the law requires that the seed be labeled with official Indiana State Labels showing the minimum percentage of purity and germination and the maximum number of each of the noxious weed seeds per pound. The purpose of the law is to give the purchaser sufficient information to enable him to buy good seed and also to protect the honest and reliable seed dealer and farmer from the practices of the unscrupulous, dishonest, and careless seedsman.

RESPONSIBILITIES OF THE WHOLESALE SEEDSMAN

The wholesale seedsman is required to attach at least one Indiana State Label to each package of seed delivered to the retail seedsman.

RESPONSIBILITIES OF THE RETAIL SEEDSMAN

The retail seedsman is required to attach sufficient state labels properly filled out to each package of seed to cover the total weight of the seed before the seed is offered or exposed for sale. These labels can be chosen of such denominations of weight so that they may be removed and attached to a portion of the seed which may be sold from the original package.

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* In cooperation with the Seed Laboratory, Bureau Plant Industry, U. S. D. A.

It should be remembered that every package of seed of one pound or more when sold for seeding purposes must have attached to it sufficient state labels properly filled out to cover the total weight of the package. It should also be remembered that it is just as much a violation of the state law to offer or expose seed for sale for seeding purposes without tagging to full weight as it is to sell the same without tagging.

RESPONSIBILITIES OF THE PURCHASER

The purchaser should examine the official label carefully before purchasing seed and ascertain whether the seed is of the quality he desires. He should insist that all seed which he purchases be tagged properly with official state labels. Attention should be paid to the date of germination on the seed tag. If the germination test was made more than six months before, in many cases it will be well to insist upon a more recent germination test. Table VI gives the standing of the distributors as determined by the 1931 inspection and Table VII shows the results of the analyses of 1,122 official samples. A study of these tables will enable you to determine the quality of seed handled by the various seedsmen and whether the seed which they sold met their guarantee. The seed law is designed to offer you protection but it will not give you that protection unless you make use of the opportunity which the law provides for you.

FARMERS' EXEMPTION

A farmer is exempt from the provisions of the seed law when the seed is grown, sold, and delivered by that farmer on his own premises to the purchaser himself. If, however, the seed is advertised for sale by the public press, circular or catalogue, or if the seed is delivered by a common carrier, the farmer is considered as a vendor and must comply with the provisions of the act. Seed taken to community sales for sale must be labeled in accordance with the law.

FREE TESTING OF SEEDS

During the past year 2,553 samples of seed were tested free of charge for farmers and seedsmen. The privilege of having these tests made is one of much value to the farmer and the smaller seed dealers who do not have facilities for testing seeds. Not all of the tests requested can be made promptly during the busy season from January to March. For that reason it is important that you send your samples in as early as possible, preferably from September to December.

Satisfactory tests may be made of the larger field seeds at home, leaving the laboratory facilities of the Experiment Station available for the grasses and clovers which are more difficult to analyze.

DIRECTIONS FOR MAKING YOUR OWN GERMINATION TESTS

The seed to be germinated should be mixed thoroughly and the required number of seeds (100 seeds of grains and 200 of clovers and other small seeds) counted out just as they come.

The plate germinator is satisfactory and very simple to operate. Place the seeds to be germinated between two thicknesses of folded blotting paper or cloth (heavy grade of muslin or canton flannel). This should be moistened and placed between ordinary tin or porcelain plates and kept in a warm room where the range in temperature is from approximately 85 degrees during the day to 65 degrees at night. Select a place for the test not too near a window, stove or register.

The time required for germination tests differs with different kinds of seed. Under favorable conditions grass and clover seeds begin to sprout in three or four days. Continue your tests ten days or two weeks.

Examine your tests every two days, making a record of the number of seeds that have sprouted. Also keep the blotting paper or cloth sufficiently moist. The number of seeds which germinate out of the 100 seeds will give the percentage of germination.

DIRECTIONS FOR TAKING OF SAMPLES

1. The minimum weight of seed forwarded for test should be approximately:
   (a) Two ounces (cupful) of grass seed of any kind or of white and alsike clover;
   (b) Five ounces (cupful) of red and crimson clover, alfalfa, millet, flax or seed of like size;
   (c) One pound (pint) of cereals or seed of like size.
2. They may be drawn:
   (a) With seed triers;
   (b) With long stickers;
   (c) By hand, taking approximately equal parts of the sample from at least three different places in the sack, including the top and opposite sides as near the bottom as practicable.
3. Samples should be drawn from each bag when there are not more than five bags in the lot, from every fifth bag when there are more than five bags, but never from less than five bags. Each sample so drawn is combined into one composite sample.

TOLERANCE

Under the most perfect and approved conditions of testing seeds variations will occur in purity and germination tests. For this reason the Association of Official Seed Analysts has adopted tolerances or allowances for purity and germination tests. Samples of seed with a guarantee within the tolerances are not considered to be seriously misbranded under the provisions of the Indiana Seed Law, but seed dealers will be expected to change the guarantee on the unsold portions to correspond to the analysis found by the Seed Commissioner.

TABLES OF TOLERANCES FOR GERMINATION TESTS

Percentage of Germination	Percentage of Allowable Variation
90 or over	6
80 or over and less than 90	7
70 or over and less than 80	8
60 or over and less than 70	9
50 or over and less than 60	10
40 or over and less than 50	10
30 or over and less than 40	9
20 or over and less than 30	8
10 or over and less than 20	7
0 or over and less than 10	6

TOLERANCE FOR PURITY TEST

In determining the tolerance for purity the sample shall be considered as being made up of two parts: (1) pure seed and (2) everything not pure seed. The tolerance allowed shall be two-tenths of 1 per cent plus 20 per cent of the lesser part. Example: Seed marked 98 per cent pure, the lesser part is 100 minus 98, or 2. Twenty per cent of 2 equals 0.4. Therefore, the tolerance allowed would be 0.2 plus 0.4, or 0.6.

VIOLATION OF THE LAW

It is a violation of the State Seed Law to offer, expose for sale or sell seed without having it tagged to full weight with official labels or to misbrand the seed. During the past year eight cases of non-tagging of seed and seven cases of misbranding were called to the attention of prosecuting attorneys. The cases resulted in thirteen convictions and two not reported by prosecuting attorney to date.

REFUNDS

Several cases of misbranding have been settled by the seedsman replacing the misbranded seed with new lots of seed or by refunding to the purchaser the cost of the seed. The payment of refunds and the exchange of the seed does not cancel the violation, but it does show the seedsman's good intentions and indicates that he is willing to do all that he can to correct the violation. During this year refunds amounting to $68.25 were paid by seedsmen to the consumer.

FILLING OUT OFFICIAL LABEL

Purity

The minimum purity means the percentage of pure seed of the kind and variety given on the official label. Statements of purity, as 97 per cent, including 2 per cent crop seeds, or 95 per cent and 2 per cent crop seeds, will not be permitted. In cases where the seed contains two or more kinds of agricultural seed, each present in excess of 5 per cent, the seed should be labeled with the green colored mixture labels, Style C.

The percentage of purity on the large seeds such as soybeans, corn, wheat, vegetable seeds, etc., must be given on the official label the same as on any other seed.

The filling out of the column "per cent of seed" on the mixture labels can be best explained by an example. For instance, if a mixture is composed of 60 per cent Kentucky Blue Grass with a purity of 80 per cent and 40 per cent of Red Top with a purity of 90 per cent, the per cent of Blue Grass should be given as 48 per cent, obtained by taking 80 per cent of 60. The Red Top should be given as 36 per cent, obtained by taking 90 per cent of 40.

Germination

There still appears to be some misunderstanding as to the method of stating the percentage of germination on the official label. The term minimum germination means the percentage of sprouts obtained in the prescribed time for the test. If the seed contains hard seeds this percentage should be stated after the term "hard seed" on the official label. In no case should the sum of the percentage of sprouts and hard seeds be given as percentage of minimum germination.

Distributors should not ship seed until the germination test is completed. The statement "In Test" on the official label does not meet the provisions of the seed law. Further, if there is a demand for the seed the dealer may be tempted to sell the seed before he receives a report on the germination, thus placing himself liable to prosecution.

Noxious Weed Seeds

The number per pound of each of the noxious weed seeds present must be listed on the reverse side of the tag irrespective of the number present. The term "trace" is not permissible. The statement of the noxious weeds in terms of per cent or in terms of proportion will not be permitted.

Place Where Grown

The official tag must give the name of the state, territory or foreign country where the seed was grown. Terms such as Domestic, U. S. A., Northwestern, and Central States do not meet the requirements of the law, and seed found so labeled will be immediately removed from sale until the tags have been corrected.

Certified, Verified and Affidavit Seed

Certified seed is seed whose purity, germination, and variety is certified to by some state certifying agency or an agency closely associated with some state office or department. The seed is shipped in sealed sacks with a certified seed tag attached. During the growing season the fields are inspected to ascertain trueness to variety of crop, and after the harvest the seed is tested to determine whether it meets the prescribed standards of the certifying agency. In Indiana the Indiana Corn Growers' Association certifies corn, wheat, and soybeans. The other most commonly certified seed found in the state is Grimm Alfalfa.

Verified-Origin seed is seed whose origin is attested to by certain government approved seed dealers. Seed verification service deals with origin only, meaning Place Where Grown, and gives no guarantee as to the variety, purity or viability of the seed. At the present time red clover and alfalfa are the only seeds verified as to origin. Verified seed is tagged with tags bearing the official verification emblem.

Affidavit Grimm is alfalfa seed for which the grower has made affidavit as to its being Grimm Alfalfa. This affidavit seed is not regulated by either State or Federal Government.

Bargain Seed

A considerable quantity of unclean, weedy, so-called pasture mixtures of low viability has been shipped into the state by certain mail order seedhouses. By means of extensive advertising in leading farm papers many unsuspecting buyers have been influenced in purchasing these dangerous and, in many cases, worthless lots of seed. These mixtures appear to consist of screenings, tailings, and low grade seed mixed together in order to disguise their real quality. The low price attracts the buyers who forget that good seed is not sold below the prevailing market price and that good seed is the cheapest in the end. Most of these cheap seeds lead to poor stands and infestation of the soil with many troublesome weeds.

Summary of 1931 Inspection

Most of the official samples examined during 1931 met their guarantee very closely and were equal in this respect to those of 1930, the best year of compliance since the passage of the seed law. However an examination of Table III shows clearly that the quality of much of the seed could be improved by more thorough cleaning.

With the exception of a few the seedsmen are showing an increased interest and desire to cooperate with the department in the enforcement of the seed law.

Tables IV and V show the percentage of official samples of red clover, alfalfa, sweet clover, alsike clover, and timothy having various noxious weed seeds. The most noticeable fact is that 28.79 per cent of red clover samples and 20.83 per cent of the alfalfa samples contained dodder seed. Compared with 1930, the red clover samples showed a slight decrease and the alfalfa samples a 50 per cent decrease in the presence of dodder seed. However there are too large a percentage of samples showing the presence of dodder seed when one considers that dodder is one of the worst noxious weeds in Indiana.

TABLE I.—AVERAGE ANALYSIS OF SAMPLES IN 1922 SEED INSPECTION

	Number of Samples	Purity per cent	Inert Matter per cent	Germ. per cent	Hard Seeds per cent	Number Weed Seeds per Pound	No. Noxious Weed Seeds per Pound
Alfalfa	33	99.19	0.33	81.42	10.44	1,228	128
Blue Grass	20	66.35	28.51	58.50	....	33,001	2,566
Alsike Clover	70	94.27	1.05	78.97	12.94	4,757	2,214
Red Clover	195	98.05	0.54	88.00	6.72	7,358	1,722
Sweet Clover	27	96.40	2.63	66.91	11.87	2,370	387
White Clover	7	95.28	0.62	79.30	14.68	15,650	10,843
Cowpeas	17	97.86	1.88	70.94	....	38	3
Millet	12	98.03	1.55	75.54	....	2,211	15
Oats	47	97.62	1.52	85.97	....	213	51
Orchard Grass	13	82.36	15.83	74.33	....	32,308	28,847
Rape	11	99.59	0.31	83.23	....	263	16
Red Top	19	83.69	12.56	81.37	....	75,163	3,810
Soy Beans	12	97.55	2.24	84.04	2.20	37	1
Sudan Grass	8	95.21	2.38	72.50	....	974	....
Timothy	85	98.90	0.55	86.72	....	2,792	1,278
Mixtures	11	76.79	11.97	57.55	11.19	81,833	26,825
Garden Seed	35	98.08	....	71.65	....	....	....
Miscellaneous	13	96.08	2.46	65.15	3.20	3,368	845

TABLE II.—AVERAGE ANALYSIS OF SAMPLES IN 1930 SEED INSPECTION

	Number of Samples	Purity per cent	Inert Matter per cent	Germ. per cent	Hard Seeds per cent	Number Weed Seeds per Pound	Number Noxious Weed Seeds per Pound	Range in Number Noxious Weed Seeds per Pound
Alfalfa	97	99.33	0.27	76.51	13.06	852	16	0– 189
Blue Grass	35	82.72	16.61	73.94	....	8,249	977	0– 6,750
Alsike Clover	92	97.83	0.68	83.40	10.21	2,897	2,087	0–36,801
Japan Clover	33	95.71	2.10	86.03	6.39	8,701	669	9– 4,077
Red Clover	249	98.63	0.34	86.29	7.44	2,151	1,230	0–43,191
Sweet Clover	161	99.47	0.24	76.06	7.53	552	35	0– 450
White Clover	6	95.45	0.38	74.71	14.42	4,815	3,165	0– 8,100
Corn	73	99.80	0.20	91.36	....	....	....	....
Cowpeas	3	96.54	3.41	72.67	....	4	....	....
Millet	7	98.71	0.34	88.14	....	2,957	....	....
Oats	5	98.24	0.96	74.80	....	59	14	0– 63
Orchard Grass	6	80.98	17.44	77.17	....	4,878	2,478	90– 7,200
Rape	4	99.80	0.13	90.28	....	56	45	0– 45
Red Top	29	89.11	9.20	87.35	....	31,490	4,149	0–36,900
Soy Beans	69	98.40	1.46	90.53	0.29	9	....	....
Sudan Grass	3	98.33	1.47	82.50	....	78	....	....
Timothy	106	99.16	0.26	89.04	....	1,141	651	0– 7,308
Mixtures	17	88.07	8.06	73.14	11.08	15,814	4,319	756–24,687
Garden Seed	47	99.92	0.07	90.96	....	10	....	....
Miscellaneous	3	97.92	0.80	82.67	....	3,780	150	0– 450

TABLE III.—AVERAGE ANALYSIS OF SAMPLES IN 1931 SEED INSPECTION

	Number of Samples	Purity per cent	Inert Matter per cent	Germ. per cent	Hard Seeds per cent	Number Weed Seeds per Pound	Number Noxious Weed Seeds per Pound	Range in Number Noxious Weed Seeds per Pound
Alfalfa	97	99.14	0.33	78.14	14.45	715	44	0– 2,430
Blue Grass	27	80.98	18.19	70.98	....	1,573	922	0– 8.550
Alsike Clover	111	97.30	0.64	87.32	8.16	3,328	1,372	0–22,500
Japan Clover	23	95.19	2.16	82.17	5.04	13,103	401	0– 2,250
Red Clover	277	99.00	0.33	88.73	6.83	2,004	937	0–33,210
Sweet Clover	180	99.37	0.26	77.92	7 89	815	35	0– 486
White Clover	3	97.28	0.34	86.08	5.75	3,537	2,337	36– 4,725
Corn	25	99.73	0.22	85.92	....	....	....	....
Cowpeas	3	99.23	0.74	87.33	....	....	....	....
Millet	6	99.28	0.51	91.92	....	1,046	15	0– 90
Oats	8	97.23	2.01	93.62	....	127	75	0– 198
Orchard Grass	8	82.52	16.27	83.75	....	6,676	2,711	0–11,925
Rape	4	99.90	0.08	84.25	....	56	....	....
Red Top	42	90.24	8.49	90.63	....	45,469	2,771	0–19,350
Soybeans	49	97.81	2.08	87.89	0.37	16	....	....
Sudan Grass	4	98.36	1.51	84.13	....	131	....	....
Timothy	170	99.21	0.31	97.06	....	1,610	501	0–11,475
Mixtures	44	89.98	6.63	75.84	12 62	14,027	3,472	0–18,450
Garden Seed	32	99.94	0.51	88.28	....	15	5	0– 45
Miscellaneous	9	97.20	1.97	81.78	5.11	1,243	43	0– 120

TABLE IV.—PERCENTAGE OF SAMPLES SHOWING THE PRESENCE OF EACH OF THE NOXIOUS WEED SEEDS

Noxious Weeds	Red Clover			Alfalfa			Sweet Clover		
	1923 per cent	1930 per cent	1931 per cent	1923 per cent	1930 per cent	1931 per cent	1923 per cent	1930 per cent	1931 per cent
Buckhorn	68.70	72.76	62.85	11.11	0.00	8.33	15.78	7.65	3.54
Bracted plantain	17.98	15.86	17.80	1.58	1.94	3.33	0.00	1.09	1.01
Canada thistle	2.51	2.03	1.09	0.00	0.00	0.83	13.15	14.21	13.13
Chicory	1.79	1.22	0.65	1.58	0.00	0.00	0.00	0.54	0.00
Common plantain	71.22	39.84	56.92	0.00	0.97	12.50	2.63	3.22	4.04
Corn cockle	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Curled dock	49.28	55.28	69.45	30.15	25.24	22.50	13.15	12.02	10.60
Dodder	18.70	28.46	28.79	47.61	43.69	20.83	0.00	1.64	0.50
Horse nettle	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mustard	3.23	2.03	3.07	0.00	2.91	5.00	18.40	46.45	47.47
Oxeye daisy	0.00	0.00	0.22	0.00	0.00	0.00	0.00	0.00	0.00
Prickly lettuce	5.75	0.81	3.07	1.58	0.00	2.50	0.00	0.54	0.00
Quack grass	0.00	0.00	0.00	0.00	0.00	0.83	0.00	3.83	4.55
Red sorrel	15.82	27.64	27.25	7.93	0.97	3.33	0.00	3.83	4.04
White top	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Wild carrot	18.34	15.45	18.46	0.00	0.00	1.66	2.63	0.54	0.00
Wild garlic or onion	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Yellow trefoil	5.75	17.48	9.01	4.76	1.94	3.33	7.89	5.46	3.03

TABLE V.—PERCENTAGE OF SAMPLES SHOWING THE PRESENCE OF EACH OF THE NOXIOUS WEED SEEDS

Noxious Weeds	Alsike Clover			Timothy		
	1923 per cent	1930 per cent	1931 per cent	1923 per cent	1930 per cent	1931 per cent
Buckhorn	13.58	40.38	16.83	11.03	38.98	44.00
Bracted plantain	2.46	3.85	0.99	1.29	10.17	9.50
Canada thistle	3.70	9.62	3.47	.64	3.39	0.50
Chicory	0.00	0.96	0.00	0.00	0.00	0.00
Common plantain	22.22	38.46	27.72	43.50	88.98	91.00
Corn cockle	0.00	0.00	0.00	0.00	0.00	0.00
Curled dock	59.25	46.15	38.12	22.00	17.80	25.81
Dodder	0.00	4.81	0.50	0.00	0.00	0.00
Horse nettle	0.00	0.00	0.00	0.00	0.00	0.00
Mustard	0.00	2.88	5.45	0.00	0.85	1.43
Oxeye daisy	1.23	0.00	0.50	1.94	6.78	2.40
Prickly lettuce	0.00	0.00	0.00	0.00	0.00	0.96
Quack grass	0.00	0.00	0.00	0.00	0.00	0.50
Red sorrel	34.56	54.81	45.05	28.57	55.08	43.02
White top	0.00	0.00	0.00	0.00	0.00	0.50
Wild carrot	0.00	0.00	1.49	0.64	1.69	3.82
Wild garlic or onion	0.00	0.00	0.00	0.00	0.00	0.00
Yellow trefoil	19.75	69.23	45.05	0.00	0.00	0.50

TABLE VI.—SUMMARY OF SEED INSPECTION, JULY 1, 1930 TO JULY 1, 1931

Name and Address of Certifier	Number of Samples Examined	Number of Samples Passed	Number Technically Misbranded	Number Seriously Misbranded	Number Unlabeled
Ainsworth Boone Co., Kentland, Ind.	6	6	......	......	......
American Field Seed Co., Chicago, Ill.	10	......	1	5	4
Associated Seed Growers, New Haven, Conn.	6	1	1	2	2
Ayres Seed Co., Cambridge City, Ind.	3	1	1	......	1
Bell Elevator Co., Cottage Grove, Ind.	2	2	......	......	......
Berry Seed Co., Chicago, Ill.	3	......	3	......	......
Berry Seed Co., Clarinda, Iowa	10	1	1	6	2
Bloomfield Mill & Elevator, Bloomfield, Ind.	1	1	......	......	......
Bolles Hardware Co., Brownstown, Ind.	1	......	1	......	......
Boonville Milling Co., Boonville, Ind.	1	1	......	......	......
Brewer Milling Co., Gosport, Ind.	1	1	......	......	......
Brigham, D. E., Decatur, Mich.	1	1	......	......	......
Brown Seed Co., Alfred J., Grand Rapids, Mich.	1	......	1	......	......
Burk Elevator Co., Decatur, Ind.	1	1	......	......	......
Byers Seed Co., Franklin, Ind.	22	4	8	10	......
Central States Elevator Corporation, Fountaintown, Ind.	1	1	......	......	......
Chambers Seed Co., Louisville, Ky.	13	1	2	10	......
Chance Brothers, Connersville, Ind.	2	......	......	2	......
Clayton Milling Co., Clayton, Ind.	2	1	......	1	......
Cloverdale Hardware Co., Cloverdale, Ind.	2	2	......	......	......
Cochrane Co., T. H., Portage, Wis.	1	......	......	......	1
Compton, W. E., Peru, Ind.	1	1	......	......	......
Condon Brothers, Rockford, Ill.	3	1	......	1	1
Co-operative Elevator Co., Winamac, Ind.	3	1	1	1	......
Council Bluffs Seed Co., Council Bluffs, Iowa	2	......	......	2	......
Crabbs Reynolds Taylor Co., Crawfordsville, Ind.	75	55	14	6	......
Crabbs Reynolds Taylor Co., Lafayette, Ind.	1	......	1	......	......
Crawfordsville Seed Co., Crawfordsville, Ind.	64	60	4	......	......
Crescent Mills, Crothersville, Ind.	3	1	......	2	......
Dauby & Sons, Joe, Tell City, Ind.	1	......	......	1	......
Daviess Co. Farm Bureau, Washington, Ind.	2	1	......	1	......
Davis Grain Co., Michigantown, Ind.	2	......	1	1	......
Dembufsky Seed Co., Goshen, Ind.	2	2	......	......	......
Deniston, Wm. H., Rochester, Ind.	3	1	2	......	......
Dickinson Co., The Albert, Chicago, Ill.	61	49	9	2	1
Eberts Grain Co., Scottsburg, Ind.	2	2	......	......	......
Etna Lumber & Elevator Co., Etna Green, Ind.	2	2	......	......	......
Farmers Coal & Feed Co., Bloomington, Ind.	1	1	......	......	......
Farmers Coop. Co., Centerville, Ind.	1	1	......	......	......
Farmers Coop. Co. of Indiana, Francesville, Ind.	1	1	......	......	......
Farmers Elevator Co., Garrett, Ind.	1	......	......	1	......

TABLE VI.—Continued

NAME AND ADDRESS OF CERTIFIER	Number of Samples Examined	Number of Samples Passed	Number Technically Misbranded	Number Seriously Misbranded	Number Unlabeled
Farmers Elevator Co., South Whitley, Ind	1		1		
Farmers Grain & Supply Co., Modoc, Ind	1		1		
Farmers Grain & Supply Co., Windfall, Ind	1	1			
Farmers Service Station, Corydon, Ind	2			2	
Farmers Supply Co., Danville, Ind	1	1			
Fayette Grain Co., Connersville, Ind	1	1			
Ferry-Morse Seed Co., Detroit, Mich	3	1	2		
Foster-Kendall Co., Carmel, Ind	14	11	1	2	
Fowler, Chester, Waynetown, Ind	2	2			
Gardner Seed Co., Rochester, New York	5		4	1	
Garten Feed Co., Indianapolis, Ind	6	4	1	1	
Goodrich Brothers, Winchester, Ind	18	8	7	3	
Grant Co. Farm Bureau, Marion, Ind	4	4			
Gunson & Co., L. P., Rochester, New York	2	1	1		
Guthrie, Frank E., Danville, Ind	2			2	
Haldeman-Baum Co., Akron, Ind	2	1		1	
Hardin, Hamilton & Lewman, Louisville, Ky	7		1	6	
Harlan Grain Co., Kentland, Ind	1			1	
Hayes, G. R., Columbia City, Ind	1	1			
Haynes Milling Co., Portland, Ind	4		1	3	
Heldt Co., The, Evansville, Ind	19	14	4	1	
Heldt & Voelker Co., Evansville, Ind	2		2		
Hemmerlein, Edw., Dubois, Ind	1		1		
Hirsch & Sons, Henry, Toledo, Ohio	1		1		
Holmes Supply Co., Kingsbury, Ind	3				3
Hoosier Grain & Supply Co., Bluffton, Ind	4	1	1	2	
Hooton-Davis Seed Co., Lebanon, Ind	40	33	5	2	
Huntertown Grain Co., Huntertown, Ind	2	2			
Indiana Farm Bureau Coop. Ass'n, Inc., Indianapolis, Ind.	44	29	13	2	
Indiana Seed Co., Indianapolis, Ind	41	26	9	6	
Isbell Seed Co., Jackson, Mich	1			1	
Johnson, Oliver J., Chicago, Ill	2			2	
Johnson & Chenoweth, Shoals, Ind	1				1
Kansas Seed Co., Salina, Kan	1				1
Kattman & Tilley Hardware Co., Brazil, Ind	1		1		
Kell Feed Store, Oakland City, Ind	1	1			
Kellogg Seed Co., Milwaukee, Wis	2	1	1		
Kenworthy & Son, Monrovia, Ind	1	1			
Kercher, Wheeler, Goshen, Ind	1	1			
Kiefer Feed & Supply Co., Elwood, Ind	1	1			
King Elevator Co., Wabash, Ind	1	1			
Knox Co. Farm Bureau, Vincennes, Ind	1	1			
Kraus, Sam, Ft. Wayne, Ind	23	11	5	6	1
Kraus & Apfelbaum, Ft. Wayne, Ind	54	30	17	5	2
Lake & Reagan, Colfax, Ind	15				15
Laughlin, R. B , Solsberry, Ind	1				1
Lawrence Co. Farm Bureau, Bedford, Ind	1				1
Leonard Seed Co., Chicago, Ill	1				1
Lesh Milling Co., Farmersburg, Ind	1		1		
Lewis Implement & Seed Co., Louisville, Ky	2		1	1	
Louisville Seed Co., Louisville, Ky	12	3	4	5	
Lowell Grain & Hay Co., Shelby, Ind	1			1	
McCarty Seed Co., J. A., Evansville, Ind	10	6	3	1	
McCarty Seed Co., J. A., Terre Haute, Ind	2	2			
McCullough Seed Co., J. Chas., Cincinnati, Ohio	38	23	9	6	
McGinnis, Willis, Newberry, Ind	2			2	
McMahan Seed Co., Valparaiso, Ind	10	1	5	4	
Mangledorf & Brothers, St. Louis, Mo	2			1	1
Manthey's Seed Store, Cincinnati, Ohio	7		1	6	
Market Gardeners Seed Co., Cincinnati, Ohio	3		1	2	
Marshall Cement & Grain Co., Greencastle, Ind	1	1			
Masters, Charles S., Brookville, Ind	1	1			
Mayer Grain Co., South Whitley, Ind	8	5	1	2	
Mazur Seed Co., Indianapolis, Ind	3	1	1	1	
Merkett, John, Leiters Ford, Ind	1				1
Moll, J. J., Mt. Vernon, Ind	1		1		
Moore, B., Atlanta, Ind	1	1			
Moore, Ralph, Nappanee, Ind	1	1			
Morris Grain & Seed Co., Morris, Ill	4	3		1	
Naber & Co., Chas. F., Alexandria, Ind	1	1			
Nading Grain Co., Adams, Ind	4	4			
National Seed Co., Louisville, Ky	1			1	
Northern Field Seed Co., Winona, Minn	1			1	
Nungesser-Dickinson Co., New York, N. Y	1			1	
Nutgrass, Alfred, Anderson, Ind	1				1

TABLE VI.—Continued

Name and Address of Certifier	Number of Samples Examined	Number of Samples Passed	Number Technically Misbranded	Number Seriously Misbranded	Number Unlabeled
Ohio Valley Seed Co., Evansville, Ind.	15	5	5	5	
Owen County Farm Bureau, Spencer, Ind.	1	1			
Peirson, W. A., Albany, Ind.	2				2
Purcell Seed Co., Evansville, Ind.	32	17	7	8	
Quinlan Seed Store, Terre Haute, Ind.	17	13	1	1	2
Quirk, J. B., North Madison, Ohio	2	2			
Ragsdale & Co., Chas., Bedford, Ind.	1		1		
Ragsdale & Owens, Bedford, Ind.	1			1	
Riggs & Son, W. G., Sullivan, Ind.	1	1			
Roper & Brown, Hobart, Ind.	1	1			
Ross Seed Co., Louisville, Ky.	14	7	5	2	
Schinbeckler, G. E., Columbia City, Ind.	1			1	
Schultheis, A. M., Haubstadt, Ind.	1	1			
Schultz, J. M., Dieterich, Ill.	19	6	8	5	
Shultz Seed Co., Olney, Ill.	2	2			
Scott & Sons Co., O. M., Marysville, O.	5	2	2	1	
Scott Seed Co., New Albany, Ind.	83	44	23	16	
Seberger Seed Co., Crown Point, Ind.	9	6	2	1	
Seedtown Products Co., Chicago, Ill.	1			1	
Shearer & Sons, Hobart, Ind.	1	1			
Snapp Grain Co., Ridgeville, Ind.	2	2			
Spittler & Son, Flora, Ind.	1	1			
Spurgin, Archie B., Columbus, Ind.	7	6	1		
Standard Seed Co., Des Moines, Iowa	1		1		
Steuben Co. Farm Bureau Coop. Ass'n, Angola, Ind.	1			1	
Steuben Co. Farm Bureau Coop. Ass'n, Pleasant Lake, Ind.	2		1	1	
Stiefel Grain Co., Avilla, Ind.	1		1		
Stoy & Heishman, Corydon, Ind.	1			1	
Sunfield Seed Service, Chicago, Ill.	24	13	5	6	
Syler, Clay, North Manchester, Ind.	3			1	2
Syler & Syler, Nappanee, Ind.	2	1	1		
Teweles Seed Co., L., Milwaukee, Wis.	28	24	4		
Thorn & Sons, L., New Albany, Ind.	1	1			
Tipton Milling Co., Tipton, Ind	3	1		2	
Troyer Seed Co., Goshen, Ind.	2	2			
Valker Christensen Co., Minot, N. D.	2				2
Van Camp Hardware Co., Indianapolis, Ind.	1			1	
Varner, J. M., Hamilton, Ind.	1	1			
Victoria Mill & Elevator, Jasper, Ind.	2	1		1	
Vonnegut Hardware Co., Indianapolis, Ind.	2		1	1	
Walker, W. A., Loogootee, Ind.	2	1		1	
Ward, Charles, Burney, Ind.	3				3
Warren Seed Co., Indianapolis, Ind.	4	4			
Warren-Teed Seed Co., Chicago, Ill.	4	4			
Waynetown Grain Co., Waynetown, Ind.	2		1	1	
Weer, F. W., Anderson, Ind.	3	3			
Werst & Co., Peter, Brookville, Ind.	3	2	1		
Wertheimer & Sons, N., Ligonier, Ind.	3		3		
Western S. Dakota Alfalfa Seed Growers Ex., Rapid City, S. D.	1				1
White, Frank, Crothersville, Ind.	1				1
Whitley Co. Farm Bureau, Columbia City, Ind.	1	1			
Whitney Eckstein Seed Co., Buffalo, N. Y.	2		1	1	
Wolf Seed Co., Ft. Wayne, Ind.	3	2	1		
Woodruff & Sons, F. H., Milford, Conn.	6	4	1	1	
Wyatt Seed & Feed Store, Petersburg, Ind.	3	2		1	

TABLE VII

ALFALFA

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, per cent	Inert Matter, per cent	Germination, per cent	Hard Seeds, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds		Number per Pound of each of the Noxious Weed Seeds Specified in the Law
1585	Ayers Seed Co., J. H., Cambridge City[1]	American Field Seed Co.	C	98.00	......	90.0	......	2-31	....	C	None
	Grimm Alfalfa ½, Lot 10574	Chicago, Ill.	F	96.47	3.05	52.0	26.0	4-31	1,737	F	Bracted plantain 9; prickly lettuce 18
948	Bloomfield Mill & Elevator, Bloomfield[2]	American Field Seed Co.	C	99.50	......	94.0	......	12-30	....	C	None
	Grimm Alfalfa, Lot 10521	Chicago, Ill.	F	99.55	0.31	71.0	23.5	3-31	180	F	None
624	Carney Hatcheries, Shelbyville	Byers Seed Co.	C	99.00	......	82.0	11.0	1-31	....	C	None
	Common Alfalfa, Lot Alf.	Franklin, Ind.	F	99.23	0.16	82.5	7.0	2-31	198	F	Large seeded alfalfa dodder 18
202	Bulleit & Son, V. H., Corydon	Chambers Seed Co.	C	99.00	......	90.0	......	8-30	....	C	None
	Common Alfalfa, Lot 78	Louisville, Ky.	F	99.70	0.18	83.5	6.0	11-30	540	F	None
826	†Chance Brothers, Connersville[3]	Northern Field Seed Co.	C	99.00	......	94.0	......	1-31	....	C	None
	Grimm Alfalfa	Winona, Minn.	F	98.34	0.25	71.0	22.5	3-31	738	F	Curled dock 9; mustard 9
1376	Bashore Feed Store, North Manchester	Crabbs Reynolds Taylor Co.	C	99.60	......	82.0	5.0	2-31	....	C	None
	Colorado Alfalfa, Lot 6-F.A.	Crawfordsville, Ind.	F	99.39	0.18	82.5	8.0	5-31	459	F	Dodder 9
616	Beck Grain & Feed Co., Shelbyville	Crabbs Reynolds Taylor Co.	C	99.25	......	80.0	5.0	8-30	....	C	None
	Alfalfa, Lot 2-F.A.	Crawfordsville, Ind.	F	98.55	0.60	84.5	4.0	3-31	549	F	Dodder 9
339	Crabbs Reynolds Taylor Co., Lafayette	Crabbs Reynolds Taylor Co.	C	99.25	......	80.0	5.0	8-30	....	C	None
	Alfalfa, Lot 2-F.A.	Crawfordsville, Ind.	F	98.76	0.43	82.5	6.0	1-31	900	F	None
142	Mooresville Milling Co., Mooresville	Crabbs Reynolds Taylor Co.	C	99.46	......	80.0	5.0	7-30	....	C	None
	Alfalfa, Lot F.U.	Crawfordsville, Ind.	F	98.90	0.46	73.5	12.5	9-30	2,547	F	Dodder 27
1443	Nixon & Van Deventer, Attica	Crabbs Reynolds Taylor Co.	C	99.74	......	80.0	5.0	2-30	....	C	None
	Colorado Alfalfa, Lot F.K.	Crawfordsville, Ind.	F	99.48	0.10	83.0	7.5	5-31	720	F	None
1554	Shirley, O. C., Knightstown	Crabbs Reynolds Taylor Co.	C	99.00	......	80.0	7.0	2-31	....	C	None
	Idaho Alfalfa, Lot 8-F.A.	Crawfordsville, Ind.	F	97.63	0.14	75.5	18.0	6-31	252	F	Curled dock 18; yellow trefoil 54
1492	Stoops Brothers, Wabash	Crabbs Reynolds Taylor Co.	C	99.38	......	80.0	10.0	2-31	....	C	None
	Idaho Common Alfalfa, Lot A.A.18	Crawfordsville, Ind.	F	99.38	0.08	74.5	20.0	5-31	99	F	Field dodder 9
916	Farmers Grain Co., Pershing	Crawfordsville Seed Co.	C	99.60	......	80.0	10.0	12-30	....	C	None
	Alfalfa, Lot 671	Crawfordsville, Ind.	F	99.90	0.08	82.0	14.5	4-31	90	F	None
918	Griffin & Bundy, Spiceland	Crawfordsville Seed Co.	C	99.60	......	85.0	8.0	12-30	....	C	None
	Alfalfa, Lot 673	Crawfordsville, Ind.	F	99.47	0.02	94.5	2.5	4-31	270	F	None
1006	Marshall Cement & Grain Co., Greencastle[3A]	Crawfordsville Seed Co.	C	99.60	......	85.0	8.0	1-31	....	C	None
	Alfalfa, Lot 673	Crawfordsville, Ind.	F	99.52	0.00	88.5	4.0	3-31	90	F	None
933	Newcastle Elevator Co., Newcastle	Crawfordsville Seed Co.	C	99.60	......	80.0	10.0	1-31	....	C	None
	Alfalfa, Lot 672	Crawfordsville, Ind.	F	99.58	0.26	82.5	11.0	4-31	720	F	None
523	Parke County Farm Bureau, Rockville	Crawfordsville Seed Co.	C	99.60	......	85.0	8.0	12-30	....	C	None
	Alfalfa, Lot 673	Crawfordsville, Ind.	F	99.48	0.06	89.5	4.0	3-31	369	F	Curled dock 9

422	Records & Son, L. N., Edinburg	Crawfordsville Seed Co.	C	99.60		80 0	10 0	12-30		C	None
	Alfalfa, Lot 671	Crawfordsville, Ind.	F	99.88	0.12	79.5	14.0	2 31		F	None
1483	Shelby Co. Farm Bureau, Coop. Ass'n,										
	Shelbyville[4]	Crawfordsville Seed Co.	C	99 60				1-31		C	None
	Grade Extra N.o 1 Blue Tag Grimm Alfalfa										
	Lot 676	Crawfordsville, Ind.	F	99.39	0.04	88.5	7.0	4-31	1,800	F	None
1066	Bloomington Milling Co., Bloomington	Dickinson Co., The Albert	C	99 56		73 0	20.0	1-31		C	None
	Alfalfa, Lot 28423	Chicago, Ill.	F	99.52	0.20	76.0	13.5	4 31	1,080	F	None
1132	Brown Supply Co., Valparaiso	Dickinson Co., The Albert	C	99 56		79.0	16.0	12-30		C	None
	Grimm Alfalfa, Lot 27185	Chicago, Ill.	F	99.88	0.12	80 0	18 0	4-31	18	F	Mustard 18
1133	Brown Supply Co., Valparaiso	Dickinson Co., The Albert	C	99 12		70 0	26.0	12 30		C	None
	Alfalfa, Lot 28378	Chicago, Ill.	F	99 43	0.22	75.0	14.0	4-31	180	F	None
1604	Keene & Son, A. C., Elkhart	Dickinson Co., The Albert	C	99 00		63.0	29.0	4-31		C	None
	Alfalfa, Lot 28570	Chicago, Ill.	F	99 64	0 02	71.5	21 5	5-31	369	F	Large seeded alfalfa dodder 9
750	Weed Hardware, W. H., Vincennes	Dickinson Co., The Albert	C	99 82		78.0	14 0	10-30		C	None
	Common Alfalfa, Lot 28330	Chicago, Ill.	F	99.74	0 16	78 5	14 5	4-31	270	F	None
1059	Bloomington Milling Co., Bloomington	Foster-Kendall Co.	C	98 00		66.0	23.0	12-30		C	None
	Grimm Alfalfa, Lot Prest	Carmel, Ind.	F	97 77	0.18	67.0	23 5	4 31	198	F	Curled dock 9; quack grass 9
1546	Pekin Flour Mills, Pekin[5]	Hardin, Hamilton and Lewman	C	98 50		90 0		12-30		C	None
	Grimm Alfalfa	Louisville, Ky.	F	97.93	0.20	72.5	23.0	4 31	1,476	F	Curled dock 27; sorrel 9
1335	Whitley Co. Farm Bureau, Columbia City	Hayes, G. R.	C	98 87		49 0	36.0	11-30		C	Common plantain 1,440
	Grimm Alfalfa, Lot 2	Columbia City, Ind.	F	98 20	0.28	54.5	32 5	4 31	3,510	F	Common plantain 2,430
1200	Victoria Mill & Elevator Co., Jasper	Heldt Co., The	C	99.51		86 0	10 0	8-30		C	None
	Thelco Western Alfalfa, Lot 2082	Evansville, Ind.	F	99.48	0.24	83 0	10 0	4-31	900	F	None
758	Walker Hardware Co., Vincennes	Heldt Co., The	C	99.53		86 0	9 0	10-30		C	Curled dock 90
	Blackfoot Grimm Alfalfa, Lot 2082	Evansville, Ind.	F	99.80	0 08	84.0	8.0	4-31	630	F	None
1500	Wells Co. Farm Bureau Coop. Ass'n, Bluffton	Hoosier Grain & Supply Co.	C	99.55		77.0	16.0	2-30		C	None
	Common Alfalfa, Lot 4	Bluffton, Ind.	F	99.46	0.40	88.5	5.0	4-31	270	F	None
942	Frazier & Sanders, Newcastle	Hooton-Davis Seed Co.	C	99 60		81 0	15.0	1-31		C	None
	Common Alfalfa, Lot F277	Lebanon, Ind.	F	99.84	0 04	68 0	20 5	4-31	594	F	Curled dock 45; dodder 9
1448	Johnson Co. Farm Bureau Coop. Ass'n, Inc.,										
	Franklin	Indiana Farm Bureau Coop. Ass'n, Inc.	C	99.60		73.0	21.0	10-30		C	None
	Common Alfalfa, Lot CA851	Indianapolis, Ind.	F	99 78	0 22	82.5	7 5	5 31		F	None
110	LaGrange Co. Farm Bureau Coop. Ass'n,										
	Inc., LaGrange	Indiana Farm Bureau Coop. Ass'n, Inc.	C	99.40		78 0	15.0	1-30		C	None
	Common Alfalfa, Lot CA842	Indianapolis, Ind.	F	99.54	0 38	74.0	11 0	9-30	279	F	Curled dock 9
1125	Lawrence Co. Farm Bureau Coop. Ass'n,										
	Bedford	Indiana Farm Bureau Coop. Ass'n, Inc.	C	99.40		70.0	22.0	11-30		C	None
	Common Alfalfa, Lot CA850	Indianapolis, Ind.	F	99.24	0.18	74 0	21 0	4-31	9	F	Curled dock 9
1100	Lawrence Co. Farm Bureau Coop. Ass'n,										
	Inc., Pedford	Indiana Farm Bureau Coop. Ass'n, Inc.	C	99.70		70 0	25 0	11-30		C	None
	Grimm Alfalfa, Lot GA750	Indianapolis, Ind.	F	99 78	0 02	70 0	24 0	4 31	630	F	None

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*Not labeled.
†Certified by retailer.
C and F stands, respectively, for Claimed and Found.
[1] Removed from sale. Misbranded. Returned to Distributor.
[2] Removed from sale. Misbranded.
[3] Removed from sale. Misbranded. All sold.
[3A] Sample secured from Indiana State Farm, Greencastle, Ind.
[4] Tag incomplete.
[5] Removed from sale. Misbranded.

ALFALFA—Continued

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor	Purity, per cent	Inert Matter, per cent	Germination, per cent	Hard Seeds, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds	Number per Pound of each of the Noxious Weed Seeds Specified in the Law
882	Wayne Co. Farm Bureau Coop. Ass'n, Inc., Richmond	Indiana Farm Bureau Coop. Ass'n, Inc. C	99.70	......	70.0	25.0	11-30	......	C None
	Grimm Alfalfa, Lot GA750	Indianapolis, Ind. F	99.76	0.06	86.5	10.5	4-31	540	F Curled dock 18; yellow trefoil 72
893	Wayne Co. Farm Bureau Coop. Ass'n, Inc., Richmond	Indiana Farm Bureau Coop. Ass'n, Inc. C	99.40	......	70.0	22.0	11-30	......	C None
	Common Alfalfa, Lot CA850	Indianapolis, Ind. F	99.60	0.14	74.5	20.0	4-31	90	F None
1329	Whitley Co. Farm Bureau Coop. Ass'n, Inc., Columbia City	Indiana Farm Bureau Coop. Ass'n, Inc. C	99.40	......	78.0	15.0	1-30	......	C None
	Common Alfalfa, Lot CA842	Indianapolis, Ind. F	99.80	0.08	88.0	6.0	3-31	90	F None
663	Fagan Seed Store, Indianapolis	Indiana Seed Co. C	99.25	......	72.0	22.0	12-30	......	C None
	Common Alfalfa, Lot 16772	Indianapolis, Ind. F	99.42	0.26	78.5	13.5	3-31	270	F None
921	Griffin & Bundy, Spiceland	Indiana Seed Co. C	99.25	......	72.0	22.0	12-30	......	C None
	Common Alfalfa, Lot 16772	Indianapolis, Ind. F	99.12	0.62	80.0	14.0	4-31	99	F Mustard 9
935	Griffin & Bundy, Spiceland	Indiana Seed Co. C	99.40	......	80.0	15.0	7-30	......	C None
	Common Alfalfa, Lot 942	Indianapolis, Ind. F	99.20	0.40	86.0	5.0	3-31	1,260	F None
1594	Adamson, E. B., Hagerstown	Kraus & Apfelbaum, Inc. C	99.00	......	80.0	12.0	......	......	C None
	Alfalfa, Lot 26	Ft. Wayne, Ind. F	98.63	0.26	70.0	20.0	4-31	387	F Buckhorn 9; common plantain 9; dodder 9
1503	Burke Elevator Co., Decatur	Kraus & Apfelbaum, Inc. C	99.50	......	80.0	12.0	2-31	......	C None
	Common Alfalfa, Lot 4	Ft. Wayne, Ind. F	99.44	0.40	79.0	15.5	4-31	378	F Dodder 18
1250	Campbell & Co., Angola	Kraus & Apfelbaum, Inc. C	99.50	......	80.0	12.0	1-31	......	C None
	Common Alfalfa, Lot 2	Ft. Wayne, Ind. F	99.64	0.24	89.5	3.5	4-31	315	F Curled dock 45
881	Farmers Coop. Co., Centerville[6]	Kraus & Apfelbaum, Inc. C	97.50	......	80.0	12.0	1-31	......	C None
	Common Alfalfa, Lot 1	Ft. Wayne, Ind. F	98.48	0.12	62.5	27.5	4-31	639	F Curled dock 9
1245	Kraus & Apfelbaum, Auburn	Kraus & Apfelbaum, Inc. C	99.50	......	80.0	12.0	2-31	......	C None
	Common Alfalfa, Lot 4	Ft. Wayne, Ind. F	99.60	0.22	71.0	20.0	4-31	369	F Curled dock 9
176	Lemler, Noah, Bourbon	Kraus & Apfelbaum, Inc. C	99.50	......	91.0	2.0	1-30	......	C None
	Grimm Alfalfa, Lot Blue Tag	Ft. Wayne, Ind. F	99.64	0.04	90.5	1.5	10-30	1,089	F Field dodder 9
604	New Haven-Thurman Equity Ex., New Haven	Kraus & Apfelbaum, Inc. C	99.50	......	80.0	12.0	1-31	......	C None
	Common Alfalfa, Lot 2	Ft. Wayne, Ind. F	99.49	0.31	88.5	4.0	3-31	225	F Curled dock 36; mustard 9
257	Owens' Son, Thomas, Angola	Kraus & Apfelbaum, Inc. C	99.48	......	68.0	23.0	6-30	......	C None
	Grimm Alfalfa	Ft. Wayne, Ind. F	99.48	0.46	73.0	16.5	11-30	189	F Field dodder 9
1248	Steuben Co. Farm Bureau Coop. Ass'n, Inc., Angola	Kraus & Apfelbaum, Inc. C	99.50	......	80.0	18.0	1-31	......	C None
	Montana Grimm Alfalfa, Lot 1	Ft. Wayne, Ind. F	99.47	0.45	79.5	15.5	4-31	90	F None

1256	Steuben Co. Farm Bureau Coop. Ass'n, Inc., Angola	Kraus & Apfelbaum, Inc.	C	99.50		80.0	12.0	2–31		C	None
	Common Alfalfa, Lot 4	Ft. Wayne, Ind.	F	98.96	0.38	72.0	15.0	4–31	828	F	Curled dock 18
1288	Steuben Co. Farm Bureau Coop. Ass'n, Inc., Pleasant Lake	Kraus & Apfelbaum, Inc.	C	99.50		80.0	12.0	1–31		C	None
	Common Alfalfa, Lot 4	Ft. Wayne, Ind.	F	99.41	0.22	73.0	21.5	4–31	1,287	F	Curled dock 18; dodder 9
1319	Farmers Elevator Co., South Whitley	Kraus, Sam	C	99.54		72.0	21.0	2–31		C	None
	Alfalfa, Lot 28421	Ft. Wayne, Ind.	F	99.24	0.26	72.0	14.0	3–31	360	F	None
633	Kraus, Sam, Ft. Wayne	Kraus, Sam	C	99.25		90.0		8–30		C	None
	Common Alfalfa, Lot 2783	Ft. Wayne, Ind.	F	99.42	0.18	79.0	5.0	3–31	900	F	None
111	Lima Elevator Co., Howe[7]	Kraus, Sam	C	99.10		82.0	11.5	5–30		C	None
	Common Alfalfa, Lot 5115	Ft. Wayne, Ind.	F	97.58	1.31	65.0	17.0	9–30	2,997	F	Curled dock 9; field dodder 9; prickly lettuce 9
875	Richmond Feed Milling Co., Richmond	Kraus, Sam	C	99.54		72.0	21.0	2–31		C	None
	Alfalfa, Lot 24421	Ft. Wayne, Ind.	F	99.46	0.16	76.5	19.5	4–31	360	F	None
876	Richmond Feed Milling Co., Richmond	Kraus, Sam	C	99.00		78.0	14.0	1–30		C	Common plantain 630
	Common Alfalfa, Lot I	Ft. Wayne, Ind.	F	98.76	0.04	66.0	29.0	4–31	1,854	F	Buckhorn 36; common plantain 738
716	Doerflein, Chas. E., Cedar Grove	McCullough Seed Co., The J. Chas.	C	99.78		82.0	11.0	1–31		C	None
	Western Alfalfa, Lot 4765	Cincinnati, Ohio	F	99.64	0.18	76.5	21.5	3–31	900	F	None
694	Pieper & Smith, Dillsboro	McCullough Seed Co., The J. Chas.	C	99.78		82.0	11.0	12–30		C	None
	Kansas Alfalfa, Lot 4165	Cincinnati, Ohio	F	99.72	0.18	79.5	15.5	3–31	540	F	None
439	Sample, John L., Madison	McCullough Seed Co., The J. Chas.	C	99.66		86.0	9.0	9–30		C	None
	Alfalfa, Lot 4479	Cincinnati, Ohio	F	99.68	0.32	87.5	8.0	2–31		F	None
1172	†Walker, W. A., Loogootee	McCullough Seed Co., The J. Chas.	C	99.78		82.0	11.0	12–30		C	None
	Alfalfa, Lot 4765	Cincinnati, Ohio	F	99.45	0.29	76.5	15.5	5–31	1,089	F	Dodder 9
1158	McMahan Seed Co., The, Valparaiso	McMahan Seed Co., The	C	99.00		88.0	7.0	1–31		C	None
	Grimm Alfalfa, Lot Thedan	Valparaiso, Ind.	F	98.53	0.60	77.0	5.5	4–31	90	F	None
651	†Garten Feed Co., Indianapolis, Ind.	Mangelsdorf & Brothers, Ed. F.	C	99.50		78.0	12.0	8–30		C	None
	Verified Origin Alfalfa, Lot 5995	St. Louis, Mo.	F	99.22	0.60	75.5	9.5	2–31	900	F	None
845	Muff Grain & Coal Co., Liberty[8]	Manthey's Seed Store	C	98.00		92.0		12–30		C	None
	Alfalfa, Lot D	Cincinnati, Ohio	F	95.53	0.06	88.0	4.5	3–31	7,164	F	Curled dock 18; dodder 36
1209	Graves Implement Co., Tell City	Ohio Valley Seed Co.	C	99.50		90.0		2–31		C	None
	Alfalfa, Lot F144	Evansville, Ind.	F	99.14	0.48	79.5	14.0	4–31	1,170	F	None
1168	Johnson & Chenoweth, Shoals	Ohio Valley Seed Co.	C	99.50		90.0		12–30		C	None
	Alfalfa, Lot C511	Evansville, Ind.	F	99.60	0.28	81.0	12.0	4–31	540	F	None
784	Kindermann's Sons, Wm., Boonville[9]	Ohio Valley Seed Co.	C	99.50		94.0		1–31		C	None
	Alfalfa, Lot F18	Evansville, Ind.	F	98.60	0.84	79.5	10.5	3–31	720	F	None
1216	Turley, James E., English[10]	Purcell Seed Co.	C	99.50		95.0		7–30		C	None
	"Tru Val" Kansas Alfalfa, Lot 9000	Evansville, Ind.	F	99.48	0.44	78.5	12.0	4–31	360	F	None
437	Sample, John L., Madison	Ross Seed Co.	C	99.66		82.5	14.0	11–30		C	None
	Alfalfa, Lot 998	Louisville, Ky.	F	99.46	0.32	75.0	14.5	2–31	810	F	None
159	Spurgin, Archie B., Columbus	Ross Seed Co.	C	99.75		80.0	12.0	8–30		C	None
	Alfalfa, Lot 996	Louisville, Ky.	F	99.66	0.28	74.5	14.5	10–30	270	F	None

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*Not labeled.

†Certified by retailer.

C and F stands, respectively, for Claimed and Found.

[6] Removed from sale. Misbranded. All sold.

[7] Removed from sale. Misbranded. All sold.

[8] Removed from sale. Misbranded. Retagged.

[9] Removed from sale. Misbranded. Retagged.

[10] Removed from sale. Misbranded. Used on own farm.

ALFALFA—Continued

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, per cent	Inert Matter, per cent	Germination, per cent	Hard Seeds, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds		Number per Pound of each of the Noxious Weed Seeds Specified in the Law
1331	Whitley Co. Farm Bureau Coop. Ass'n, Inc., Columbia City[11]	Schinbeckler G. E.	C	99 20	......	61 5	30 0	12-30	....	C	Common plantain 90
	Grimm Alfalfa, Lot II	Columbia City, Ind.	F	97.47	1 63	63.5	21.0	4-31	2,547	F	Common plantain 18; curled dock 9
974	Linton Hardware Co., Linton	Schultz, J. M.	C	99.50	......	92.0	......	12-30	....	C	None
	Reliable Alfalfa	Dieterick, Ill.	F	99.61	0.33	78.5	17.0	3-31	279	F	Common plantain 9
1302	Bulleit and Son, V. H., Corydon	Scott Seed Co.	C	99.00	......	85.0	9.0	1-31	....	C	None
	Alfalfa, Lot 1503	New Albany, Ind.	F	99.28	0.20	71.5	20.0	3-31	2,169	F	Curled dock 9
1292	Farmers & Merchants Exchange, New Albany	Scott Seed Co.	C	99.25	......	82.0	10.0	11-30	....	C	None
	Alfalfa, Lot 1503	New Albany, Ind.	F	99.27	0.71	82.0	14.0	5-31	216	F	Dodder 36
1314	Gienger & Co., J., Jeffersonville	Scott Seed Co.	C	99.00	......	85.0	9.0	1-31	....	C	None
	Alfalfa, Lot 1503	New Albany, Ind.	F	99.80	0.14	78.5	14.5	5-31	396	F	Dodder 36
1171	Johnson & Chenoweth, Shoals	Scott Seed Co.	C	99.00	......	80.0	12.0	1-31	....	C	None
	Grimm Alfalfa, Lot 1509	New Albany, Ind.	F	98.42	0.24	79.5	16.0	4-31	180	F	None
1094	Norman, G. M., & Roberts, Bedford	Scott Seed Co.	C	99.00	......	80.0	14 0	1-31	....	C	None
	Grimm Alfalfa, Lot 1509	New Albany, Ind.	F	98.88	0.08	67.5	18.0	4-31	450	F	None
1121	Ragsdale & Owens, Bedford	Scott Seed Co.	C	99.00	......	80.0	12.0	1-31	....	C	None
	Alfalfa, Lot 1503	New Albany, Ind.	F	99.34	0.60	76.5	18.5	4-31	450	F	None
1225	Wiseman & Son, Wm. H. P., Corydon	Scott Seed Co.	C	99 00	......	82.0	12.0	12-30	....	C	None
	Alfalfa, Lot 1503	New Albany, Ind.	F	99.52	0.40	76.0	19.0	4-31	189	F	Dodder 9
1260	Steuben Co. Farm Bureau Coop. Ass'n, Inc., Angola[11A]	Steuben Co. Farm Bureau Coop. Ass'n, Inc.	C	99.00	......	80.0	......	2-31	....	C	None
	Common Alfalfa, Lot 1	Angola, Ind.	F	98.85	0 24	62.5	25.5	3-31	756	F	Buckhorn 9; Canada thistle 9; common plantain 108
507	Burnettsville Elevator Co., Burnettsville[12]	Sunfield Seed Service	C	......	......	94.0	......	12-30	....	C	None
	Montana State Certified Grimm Alfalfa, Lot 10510	Chicago, Ill.	F	99.60	0.40	70.0	26.5	2-31	....	F	None
528	Burnettsville Elevator Co., Burnettsville	Sunfield Seed Service	C	99 50	......	49.0	......	12-30	....	C	None
	Idaho Alfalfa, Lot 10527	Chicago, Ill.	F	98.81	0.50	77.5	15.5	2-31	360	F	None
668	Central States Elevator Corp., Scircleville[13]	Sunfield Seed Service	C	99.50	......	94.0	......	12-30	....	C	None
	Dakota Grown Alfalfa, Lot 10532	Chicago, Ill.	F	99.38	0.58	75.0	13 0	3 31	270	F	None
1193	Gutwein Milling Co., Francesville[14]	Sunfield Seed Service	C	99.50	......	94.0	......	12-30	....	C	None
	Dakota Grown Alfalfa, Lot 10532	Chicago, Ill.	F	99.66	0.28	72.0	16.5	3-31	90	F	None
1195	Gutwein Milling Co., Francesville	Sunfield Seed Service	C	99 50	......	94.0	......	8 30	....	C	None
	Grimm Alfalfa, Lot 10468	Chicago, Ill.	F	99.26	0 53	92 5	3.0	3-31	720	F	None

1149	McMahan Seed Co., The, Valparaiso	Teweles Seed Co., L	C	99.50	......	81.0	15.0	2–31	....	C	None
	Grimm Alfalfa, Lot 6933 Badger Brand	Milwaukee, Wis	F	99.46	0.44	77.0	20.5	4–31	270	F	None
993	Pritchard & Rattert, Inc., Pendleton	Teweles Seed Co., L	C	99.50	......	87.0	7.0	1–31	....	C	None
	Alfalfa, Lot Badger Brand	Milwaukee, Wis	F	99.32	0.34	85.0	6.5	4–31	1,710	F	None
1081	Syler & Syler, Plymouth	Teweles Seed Co., L	C	99.70	......	81.0	14.0	2–31	....	C	None
	Idaho Grimm Alfalfa, Lot Badger Brand	Milwaukee, Wis	F	99.70	0.12	81.0	16.5	4–31	90	F	None
1083	Syler & Syler, Plymouth	Teweles Seed Co., L	C	99.50	......	87.0	7.0	2–31	....	C	None
	Kansas Alfalfa, Lot Badger Brand	Milwaukee, Wis	F	99.66	0.16	85.0	4.5	4–31	1,080	F	None
1603	Troyer Seed Co., Goshen	Teweles Seed Co., L	C	99.60	......	80.0	16.0	4–31	....	C	None
	Idaho Alfalfa, Lot Badger Brand	Milwaukee, Wis	F	99.34	0.06	75.0	20.5	5–31	1,008	F	Curled dock 18
490	*Decatur Co. Coop. Co., Greensburg[15]	Valker-Christensen Co., Inc	C	......	......	......	......	......	....	C	
	Grade No. 1 Blue Tag Certified Alfalfa	Minot, N. D	F	99.62	0.22	78.5	14.0	2–31	180	F	None
491	*Decatur Co. Coop. Co., Greensburg[16]	Valker-Christensen Co., Inc	C	......	......	......	......	......	....	C	
	Alf Grimm Alfalfa	Minot, N. D	F	98.83	0.99	72.0	24.0	2–31	270	F	None
662	†Warren Seed Co., Indianapolis	Warren-Teed Seed Company	C	99.78	......	88.0	5.5	12–29	....	C	None
	Common Alfalfa, Lot F157	Chicago, Ill	F	99.64	0.04	91.0	0.5	3–31	360	F	None
1486	Peru Grain & Coal Co., Peru[17]	Wertheimer & Sons, N	C	99.50	......	90.0	......	1–31	....	C	None
	Fullworth Alfalfa, Lot 30601	Ligonier, Ind	F	99.32	0.16	65.0	27.5	4–31	9	F	Curled dock 9
781	*Lindley, Dr. S. E., Sullivan[18]	Western-Southern Dakota Alfalfa Seed Growers Exchange	C	......	......	......	......	......	....	C	
	Alfalfa	Rapid City, S. D	F	93.25	0.85	65.0	22.5	3–31	2,097	F	Curled dock 9; dodder 18
125	Fretz Feed Store, R. C., Waterloo	Wolf Seed Co	C	99.28	......	78.5	13.5	3–30	....	C	None
	Common Alfalfa, Lot 5109	Ft. Wayne, Ind	F	99.38	0.46	82.0	7.0	9–30	810	F	None
1501	Hartman & Dotterer, Bluffton	Wolf Seed Co	C	99.50	......	72.5	21.5	11–30	....	C	None
	Hi-Test Utah Alfalfa, Lot 5120	Ft. Wayne, Ind	F	99.34	0.30	69.5	23.5	4–31	540	F	None

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*Not labeled.

†Certified by retailer.

C and F stands, respectively, for Claimed and Found.

[11] Removed from sale. Misbranded. Returned to Distributor.

[11A] Removed from sale. Misbranded.

[12] Tag incomplete.

[13] Removed from sale. Misbranded. Retagged.

[14] Removed from sale. Misbranded. Retagged.

[15] Not tagged. Labels furnished.

[16] Not tagged. Labels furnished.

[17] Removed from sale. Misbranded. Retagged.

[18] Contains 5.36% Sweet Clover with 73.0% Germination and 22.0% Hard Seeds.

BLUE GRASS

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, per cent	Inert Matter, per cent	Germination, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds		Number per Pound of each of the Noxious Weed Seeds Specified in the Law
925	Newcastle Elevator Co., Newcastle	Crabbs Reynolds Taylor Co.	C	80.00	....	85.0	1-31	....	C	None
	21 lb. Kentucky Blue Grass, Lot 4GC	Crawfordsville, Ind.	F	78.77	20.11	72.0	5-31	6,300	F	None
100	Weer, F. W., Anderson	Crabbs Reynolds Taylor Co.	C	85.00	....	84.0	2-30	....	C	None
	Blue Grass, Lot 5GA	Crawfordsville, Ind.	F	87.84	11.10	75.0	10-30	23,850	F	None
338	Crabbs Reynolds Taylor Co., Lafayette	Crabbs Reynolds Taylor Co.	C	80.00	....	85.0	9-30	....	C	None
	Kentucky Blue Grass, Lot 4GA	Lafayette, Ind.	F	87.71	12.00	71.0	2-31	4,500	F	None
443	Marshall Cement & Grain Co., Greencastle	Crawfordsville Seed Co.	C	85.00	....	87.0	8-30	....	C	None
	Blue Grass, Lot 918	Crawfordsville, Ind.	F	81.52	18.28	79.5	2-31	900	F	Red sorrel 450
1584	Heightschmidt, A. C., Michigan City	Dickinson Co., The Albert	C	83.20	....	75.0	4-31	....	C	Buckhorn 135; oxeye daisy 70; red sorrel 270
	Kentucky Blue Grass, Lot 32440	Chicago, Ill.	F	77.08	20.79	67.5	6-31	42,914	F	Buckhorn 164; red sorrel 900
1509	†Kattman & Tilley Co., Brazil	Dickinson Co., The Albert	C	81.00	....	70.0	3-31	....	C	Buckhorn 672; oxeye daisy 160; red sorrel 320
	Kentucky Blue Grass, Lot 032212	Chicago, Ill.	F	74.56	23.76	71.5	6-31	32,409	F	Buckhorn 450; red sorrel 450
1058	Bloomington Milling Co., Bloomington[19]	Hardin, Hamilton & Lewman	C	80.00	....	70.0	1-31	....	C	None
	Kentucky Blue Grass, Lot O	Louisville, Ky.	F	68.32	29.90	68.5	5-31	33,300	F	Red sorrel 1,800
858	Heldt Co., The, Evansville	Heldt Co., The	C	80.57	....	80.5	7-30	....	C	None
	Blue Grass, Lot 1912	Evansville, Ind.	F	84.48	15.14	83.5	5-31	2,700	F	None
690	Eckert Hardware, Osgood[20]	Hooton-Davis Seed Co.	C	85.00	....	78.0	10-30	....	C	None
	Kentucky Blue Grass, Lot B-211	Lebanon, Ind.	F	80.99	18.64	83.5	4-31	4,050	F	Buckhorn 450; red sorrel 1,350
1106	Lawrence Co. Farm Bureau Coop. Ass'n, Inc., Bedford	Indiana Farm Bureau Coop. Ass'n, Inc.	C	85.00	....	80.0	11-30	....	C	None
	Kentucky Blue Grass, Lot BG	Indianapolis, Ind.	F	87.19	12.63	71.0	5-31	3,150	F	None
889	Wayne Co. Farm Bureau Coop. Ass'n, Inc., Richmond[21]	Indiana Farm Bureau Coop. Ass'n, Inc.	C	85.00	....	80.0	12-30	....	C	None
	Kentucky Blue Grass, Lot BG	Indianapolis, Ind.	F	86.94	12.87	63.5	5-31	3,150	F	None
1055	Clark Feed Store, Bloomington[22]	Indiana Seed Co.	C	78.00	....	70.0	8-30	....	C	Red sorrel 450
	Kentucky Blue Grass, Lot 318	Indianapolis, Ind.	F	84.12	15.41	52.0	5-31	9,450	F	Red sorrel 450
708	Culbertson, Clyde, Vevay	McCullough Seed Co., The J. Chas.	C	77.20	....	80.0	9-30	....	C	Red sorrel 450
	Fancy Kentucky Blue Grass, Lot 4474	Cincinnati, Ohio	F	75.31	24.31	80.0	4-31	3,750	F	Red sorrel 150
681	Indiana State Highway Commission, Indianapolis	McCullough Seed Co., The J. Chas.	C	77.60	....	80.0	1-31	....	C	Red sorrel 450
	Fancy Kentucky Blue Grass, Lot 4474	Cincinnati, Ohio	F	80.06	19.47	80.0	3-31	5,925	F	Red sorrel 75
1463	Municipal Airport, Losch, Purchasing Agent, Indianapolis	Mazur Seed Co.	C	88.00	....	70.0	12-30	....	C	None
	21 lb. Kentucky Blue Grass	Indianapolis, Ind.	F	77.95	21.20	68.5	4-31	25,650	F	Red sorrel 8,550

	Kinderman Sons, Wm., Boonville	Ohio Valley Seed Co.	C	83.50	......	83.0	12-30	......	C Curled dock 90; red sorrel 270
	Blue Grass, Lot E29	Evansville, Ind.	F	85.19	14.52	83.0	4-31	3,273	F Curled dock 123
761	Adams & Morrow, Inc., Princeton	Purcell Seed Co.	C	84.00	......	80.0	12-30	......	C Buckhorn 900; red sorrel 800
	"Tru Val" Blue Grass, Lot 9141	Evansville, Ind.	F	84.11	15.70	78.5	5-31	1,882	F Red sorrel 82
78	Easton, Elza D., Bedford	Ross Seed Co.	C	75.82	......	74.5	3-30	......	C None
	Blue Grass, Lot 869	Louisville, Ky.	F	78.60	21.21	63.5	9-30	2,250	F None
659	Mazur Seed Co., Indianapolis	Ross Seed Co.	C	80.00	......	70.0	12-30	......	C Red sorrel 2,700
	Kentucky Blue Grass, Lot 881	Louisville, Ky.	F	75.46	23.89	62.0	4-31	17,100	F Red sorrel 3,150
1297	Farmers & Merchants Exchange, New Albany[23]	Scott Seed Co.	C	80.00	......	70.0	9-30	......	C None
	Kentucky Blue Grass, Lot 46	New Albany, Ind.	F	77.35	20.37	61.5	5-31	44,100	F Red sorrel 900
1167	Paoli Hardware Co., Paoli[24]	Scott Seed Co.	C	85.00	......	80.0	1-31	......	C None
	Blue Grass, Lot 46	New Albany, Ind.	F	75.64	22.64	61.5	5-31	30,150	F Buckhorn 900; red sorrel 900
467	Trow Co., W., Madison[25]	Scott Seed Co.	C	80.00	......	70.0	9-30	......	C None
	Kentucky Blue Grass, Lot 46	New Albany, Ind.	F	77.26	20.55	68.0	2-31	42,750	F Red sorrel 1,800
1227	Wiseman & Son, Wm. H. P., Corydon	Scott Seed Co.	C	80.00	......	70.0	9-30	......	C None
	Blue Grass, Lot 46	New Albany, Ind.	F	79.44	18.54	54.5	5-31	44,100	F Red sorrel 900
1462	Griener Co., Inc., C. E., Indianapolis	Scott & Sons Company, O. M.	C	94.00	......	88.0	12-30	......	C None
	Kentucky Blue Grass, Lot Heavy	Marysville, Ohio	F	93.99	5.82	84.0	5-31	2,700	F None
1467	Griener Co., Inc., C. E., Indianapolis[26]	Scott & Sons Company, O. M.	C	85.00	......	80.0	7-30	......	C None
	Kentucky Blue Grass, Lot 21	Marysville, Ohio	F	76.13	23.30	55.5	6-31	10,800	F None
1071	Protsman & Son, Geo. L., Plymouth	Teweles Seed Co., L.	C	86.03	......	80.0	2-31	......	C None
	Kentucky Blue Grass, Lot Badger Brand	Milwaukee, Wis.	F	80.25	19.47	88.0	5-31	6,750	F None
1466	Vonnegut Hardware Co., Indianapolis[27]	Whitney-Eckstein Seed Co.	C	82.40	......	75.0	1-31	......	C None
	Choice Kentucky Blue Grass	Buffalo, N. Y.	F	90.32	9.48	69.5	6-31	6,750	F Red sorrel 900

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*Not labeled.

†Certified by retailer.

C and F stands, respectively, for Claimed and Found.

[19] Removed from sale. Misbranded. All sold.

[20] Removed from sale. Misbranded. Retagged.

[21] Removed from sale. Misbranded. Retagged.

[22] Removed from sale. Misbranded.

[23] Removed from sale. Misbranded. Retagged.

[24] Removed from sale. Misbranded.

[25] Removed from sale. Misbranded. Retagged.

[26] Removed from sale. Misbranded. Retagged.

[27] Removed from sale. Misbranded. Sample secured from Indianapolis Municipal Airport, Indianapolis, Ind.

ALSIKE

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, per cent	Inert Matter, per cent	Germination, per cent	Hard Seeds, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds		Number per Pound of each of the Noxious Weed Seeds Specified in the Law
1589	Ayres Seed Co., Cambridge City[28]	American Field Seeds Co.	C	98.50	......	92.0	......	2-31	....	C	None
	Alsike Clover, Lot 11134	Chicago, Ill.	F	97.08	0.64	91.0	6.50	4-31	1,098	F	Canada thistle 36; common plantain 18; red sorrel 144
1005	Indiana State Farm, Greencastle	Berry Seed Co.	C	98.25	......	94.0	12.00	11-30	....	C	None
	Alsike Clover, Lot 11545	Clarinda, Iowa	F	97.86	0.24	81.5	16.75	3-30	2,061	F	Common plantain 18; yellow trefoil 18
425	Byers Seed Co., Franklin[28A]	Byers Seed Co.	C	99.40	......	......	......	1-31	....	C	None
	Alsike Clover, Lot A	Franklin, Ind.	F	98.43	0.57	88.25	10.75	2-31	....	F	None
643	Carney Hatchery, Greenwood	Byers Seed Co.	C	99.40	......	90.00	......	1-31	....	C	None
	Alsike Clover, Lot A	Franklin, Ind.	F	97.62	0.05	90.75	8.75	2-31	2,043	F	Canada thistle 18
628	Carney Hatcheries, Inc., Shelbyville	Byers Seed Co.	C	99.40	......	90.00	......	1-31	....	C	None
	Alsike Clover, Lot A	Franklin, Ind.	F	99.18	0.29	87.25	9.25	2-31	1,629	F	Curled dock 18; mustard 36
1001	Cloverdale Hardware & Lumber Co., Cloverdale	Byers Seed Co.	C	98.40	......	90.00	......	1-31	....	C	None
	Alsike Clover, Lot A	Franklin, Ind.	F	97.72	0.15	90.25	8.75	3-31	1,350	F	None
971	Cloverdale Hardware & Lumber Co., Cloverdale[29]	Byers Seed Co.	C	98.40	......	90.00	......	1-31	....	C	None
	Alsike Clover, Lot A	Franklin, Ind.	F	96.04	0.05	92.00	7.50	3-31	5,886	F	Dodder 36
1028	Cooperative Elevator Co., Winamac[30]	Cooperative Elevator Co.	C	99.00	......	90.00	......	11-30	....	C	None
	Alsike Clover, Lot JS	Winamac, Ind.	F	96.15	0.98	88.00	6.75	3-31	6,345	F	Curled dock 72; red sorrel 648; yellow trefoil 3,375
746	Allen, J. P., Farmersburg	Crabbs Reynolds Taylor Co.	C	98.58	......	85.00	7.50	10-30	....	C	None
	Alsike Clover, Lot 2AD	Crawfordsville, Ind.	F	98.81	0.45	94.25	5.25	4-31	36	F	Yellow trefoil 36
703	Aurora Farmers Supply Co., Aurora	Crabbs Reynolds Taylor Co.	C	98.56	......	85.00	7.50	10-30	....	C	None
	Alsike Clover, Lot 2AD	Crawfordsville, Ind.	F	98.75	0.55	94.25	4.75	4-31	18	F	Curled dock 18
621	Beck Grain & Feed Co., Shelbyville	Crabbs Reynolds Taylor Co.	C	98.56	......	85.00	7.50	10-30	....	C	None
	Alsike Clover, Lot 2AD	Crawfordsville, Ind.	F	98.78	0.49	97.25	1.75	2-31	72	F	Yellow trefoil 72
336	Crabbs Reynolds Taylor Co., Lafayette	Crabbs Reynolds Taylor Co.	C	98.81	......	90.00	4.00	9-30	....	C	None
	Alsike Clover, Lot 2AD	Crawfordsville, Ind.	F	98.46	0.50	90.00	6.25	1-31	837	F	Buckhorn 18; curled dock 18; mustard 18; red sorrel 18; yellow trefoil 90
1048	Farmers Coal & Feed Co., Bloomington	Crabbs Reynolds Taylor Co.	C	98.56	......	92.00	6.00	10-30	....	C	None
	Alsike Clover, Lot 2AD	Crawfordsville, Ind.	F	97.96	0.48	93.00	4.50	4-31	6,354	F	Yellow trefoil 54
1190	Farmers Coop. Co. of Indiana, Francesville	Crabbs Reynolds Taylor Co.	C	98.10	......	86.00	6.00	2-31	....	C	None
	Alsike Clover, Lot 1AE	Crawfordsville, Ind.	F	97.99	1.15	93.25	4.75	4-31	3,069	F	Common plantain 18; curled dock 72; sorrel 18; yellow trefoil 36

342	Lauramie Grain Co., Stockwell	Crabbs Reynolds Taylor Co.	C	98.56	......	85.00	7.50	10-30	....	C	None
	Alsike Clover, Lot 2AD	Crawfordsville, Ind.	F	98.58	0.20	89.50	6.25	2-31	594	F	Red sorrel 18; yellow trefoil 126
163	Sample, John L., Madison	Crabbs Reynolds Taylor Co.	C	98.07	......	85.00	......	8-30	....	C	None
	Alsike Clover, Lot 7AC	Crawfordsville, Ind.	F	98.61	0.74	71.25	18.75	10-30	1,008	F	Common plantain 18; curled dock 72; red sorrel 18
855	†Bell Elevator Co., Cottage Grove	Crawfordsville Seed Co.	C	99.00	......	85.00	......	12-30	....	C	None
	Alsike Clover, Lot 335	Crawfordsville, Ind.	F	99.16	0.20	97.25	1.50	4-31	297	F	Red sorrel 18; yellow trefoil 54
556	Decatur Co. Coop. Co., Greensburg	Crawfordsville Seed Co.	C	99.00	......	85.00	10.00	1-31	....	C	None
	Alsike, Lot 334	Crawfordsville, Ind.	F	98.92	0.49	80.25	15.75	3-31	423	F	Common plantain 18; yellow trefoil 180
488	Decatur Co. Coop. Co., Newpoint	Crawfordsville Seed Co.	C	99.00	......	85.00	10.00	8-30	....	C	None
	Alsike Clover, Lot 335	Crawfordsville, Ind.	F	98.94	0.43	94.25	1.00	2-31	369	F	Curled dock 18; yellow trefoil 126
849	Demoret Grain Co., Bath	Crawfordsville Seed Co.	C	99.00	......	85.00	10.00	10-30	....	C	None
	Alsike Clover, Lot 335	Crawfordsville, Ind.	F	98.53	0.44	96.50	1.50	4-31	423	F	Yellow trefoil 198
856	Demoret Grain Co., Bath	Crawfordsville Seed Co.	C	99.00	......	85.00	10.00	1-31	....	C	None
	Alsike Clover, Lot 334	Crawfordsville, Ind.	F	99.08	0.19	88.25	10.00	4-31	333	F	Yellow trefoil 108
886	Farmers Coop. Co., Centerville	Crawfordsville Seed Co.	C	99.00	......	85.00	10.00	12-30	....	C	None
	Alsike Clover, Lot 334	Crawfordsville, Ind.	F	98.93	0.49	89.00	9.00	4-31	180	F	Yellow trefoil 180
404	Farmers Coop. Co., Southport	Crawfordsville Seed Co.	C	99.00	......	85.00	10.00	10-30	....	C	None
	Alsike Clover, Lot 335	Crawfordsville, Ind.	F	98.94	0.38	95.50	1.50	2-31	477	F	Yellow trefoil 252
945	Farmers Grain Co., Germantown, Post Office, Pershing	Crawfordsville Seed Co.	C	99.00	......	85.00	10.00	12-30	....	C	None
	Alsike Clover, Lot 334	Crawfordsville, Ind.	F	99.04	0.15	84.50	13.75	4-31	405	F	Common plantain 18; yellow trefoil 162
380	Grant Co. Farm Bureau, Marion	Crawfordsville Seed Co.	C	99.00	......	85.00	10.00	12-30	....	C	None
	Alsike Clover, Lot 335	Crawfordsville, Ind.	F	98.92	0.49	95.25	1.50	2-31	162	F	Yellow trefoil 162
944	Newcastle Elevator Co., Newcastle	Crawfordsville Seed Co.	C	99.00	......	85.00	10.00	1-31	....	C	None
	Alsike Clover, Lot 336	Crawfordsville, Ind.	F	99.16	0.30	96.50	1.50	4-31	612	F	Curled dock 18; yellow trefoil 144
520	Parke Co. Farm Bureau, Rockville	Crawfordsville Seed Co.	C	99.00	......	85.00	10.00	12-30	....	C	None
	Alsike Clover, Lot 334	Crawfordsville, Ind.	F	99.03	0.48	89.75	9.00	3-31	126	F	Curled dock 18; yellow trefoil 108
991	Pritchard & Rafert, Inc., Pendleton	Crawfordsville Seed Co.	C	99.00	......	85.00	10.00	12-30	....	C	None
	Alsike Clover, Lot 335	Crawfordsville, Ind.	F	99.27	0.24	96.75	1.00	4-31	297	F	Yellow trefoil 72
614	Shelby Co. Farm Bureau Coop. Ass'n, Inc., Shelbyville	Crawfordsville Seed Co.	C	99.00	......	85.00	10.00	12-30	....	C	None
	Alsike Clover, Lot 334	Crawfordsville, Ind.	F	99.26	0.30	81.50	16.75	2-31	465	F	Yellow trefoil 240
463	Trow Co., W., Madison	Crawfordsville Seed Co.	C	99.00	......	85.00	10.00	12-30	....	C	None
	Alsike Clover, Lot 335	Crawfordsville, Ind.	F	99.16	0.15	92.50	2.00	2-31	315	F	Curled dock 18; yellow trefoil 72
954	Daviess Co. Farm Bureau, Washington[31]	Daviess Co. Farm Bureau	C	97.00	......	90.00	......	2-31	....	C	Curled dock 1,200
	Alsike Clover, Lot 4	Washington, Ind.	F	96.30	2.83	76.00	15.00	4-31	3,546	F	Buckhorn 72; common plantain 1,116; curled dock 1,008
1129	Brown Supply Co., Valparaiso	Dickinson Co., The Albert	C	92.75	......	74.00	18.00	10-30	....	C	Red sorrel 64; yellow trefoil 2,880
	Alsike Clover, Lot 21895	Chicago, Ill.	F	93.33	0.34	80.25	14.50	4-31	9.783	F	Red sorrel 306; yellow trefoil 702

*Not labeled.

†Certified by retailer.

C and F stands, respectively, for Claimed and Found.

[28] Removed from sale. Misbranded. Returned to Distributor.

[28A] Tag incomplete.

[29] Removed from sale. Misbranded. Retagged.

[30] Removed from sale. Misbranded. Retagged.

[31] Removed from sale. Misbranded. All sold.

ALSIKE—Continued

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, per cent	Inert Matter, per cent	Germination, per cent	Hard Seeds, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds		Number per Pound of each of the Noxious Weed Seeds Specified in the Law
824	Chance Brothers, Connersville	Dickinson Co., The Albert	C	98.65		86.00	8.00	8-30		C	None
	Alsike Clover, Lot 21870	Chicago, Ill.	F	98.92	0.05	89.00	6.25	4-31	243	F	Curled dock 18
180	Culver City Grain & Coal Co., Culver	Dickinson Co., The Albert	C	99.60		76.00	18.00	8-30		C	None
	Alsike Clover, Lot 21876	Chicago, Ill.	F	99.47	0.29	81.75	9.25	10-30	693	F	Red sorrel 18
462	Hunger, C. G., Madison	Dickinson Co., The Albert	C	98.65		86.00	8.00	8-30		C	None
	Alsike Clover, Lot 21914	Chicago, Ill.	F	99.26	0.30	82.50	9.00	3-31	72	F	Common plantain 18; curled dock 18; yellow trefoil 36
504	Loughry Bros. Milling & Grain Co., Monticello	Dickinson Co., The Albert	C	98.65		86.00	8.00	8-30		C	None
	Alsike Clover, Lot 21870	Chicago, Ill.	F	98.56	0.94	89.50	9.00	3-31		F	None
574	†Nading Grain Co., Adams	Dickinson Co., The Albert	C	99.25		81.00	13.00	8-30		C	None
	Alsike Clover, Lot 21873	Chicago, Ill.	F	99.18	0.48	86.50	8.00	3-31		F	None
1130	†Shearer & Sons, Hobart	Dickinson Co., The Albert	C	98.00		82.00	11.00	1-31		C	Common plantain 64; red sorrel 320
	Alsike Clover, Lot 21949	Chicago, Ill.	F	98.37	0.62	92.50	4.25	4-31	2,727	F	Curled dock 18; red sorrel 234
1375	Strauss & Son, J. W., North Manchester	Dickinson Co., The Albert	C	98.55		73.00	20.00	2-31		C	Yellow trefoil 225
	Alsike Clover, Lot 021217	Chicago, Ill.	F	98.51	0.50	87.50	8.75	5-31	927	F	Curled dock 18; yellow trefoil 234
315	Way, C. B., LaPorte[32]	Dickinson Co., The Albert	C	97.00		87.00	7.00	7-30		C	None
	Alsike Clover, Lot 21866	Chicago, Ill.	F	97.60	0.04	79.25	7.50	1-31	3,681	F	Buckhorn 36; common plantain 36; curled dock 36; red sorrel 1,170; yellow trefoil 378
754	Weed Hardware, W. H., Vincennes	Dickinson Co., The Albert	C	99.25		81.00	13.00	8-30		C	None
	Alsike Clover, Lot 21873	Chicago, Ill.	F	98.11	0.34	83.50	11.50	4-31	3,258	F	Curled dock 18; red sorrel 90; yellow trefoil 2,475
204	Woods & Pritsch, Sheridan	Dickinson Co., The Albert	C	98.65		86.00	8.00	8-30		C	None
	Alsike Clover, Lot 21870	Chicago, Ill.	F	98.96	0.49	74.00	14.75	10-30	558	F	Common plantain 54; red sorrel 36; yellow trefoil 18
1345	Brownstown Feed Exchange, Brownstown[33]	Foster-Kendall Co.	C	97.50		73.00	20.00	12-30		C	None
	Alsike Clover, Lot 101	Carmel, Ind.	F	95.23	0.68	83.00	8.00	4-31	2,898	F	Buckhorn 36; common plantain 270; curled dock 108; red sorrel 936; yellow trefoil 198
1548	Oneal, W. S., Rushville	Foster-Kendall Co.	C	99.12		85.00	12.00	12-30		C	None
	Alsike Clover, Lot 109	Carmel, Ind,	F	98.82	0.25	86.25	12.75	4-31	765	F	Yellow trefoil 540
1530	Crete Elevator Co., The, Crete	Goodrich Brothers Co.	C	99.25		88.00	8.00	12-30		C	None
	Alsike Clover, Lot Lark	Winchester, Ind.	F	99.36	0.39	88.75	10.00	4-31	540	F	Common plantain 18; yellow trefoil 72

1513	Morrison-Teagarden Co., Saratoga[34] Alsike Clover, Lot Quail	Goodrich Brothers Co. Winchester, Ind.	C	95.55	......	95.00	.....	1-31	....	C	None
			F	97.13	0.20	87 25	7 75	4-31	108	F	Buckhorn 90; wild carrot 18
470	Haynes Milling Co., The, Portland[35] Alsike Clover, Lot A	Haynes Milling Co., The Portland, Ind.	C	99.70	......	95 00	3.00	1-31	....	C	None
			F	96.80	1.15	82.00	9 50	2-31	2,637	F	Common plantain 180; curled dock 126; mustard 36; red sorrel 522; wild carrot 18; yellow trefoil 180
759	Murphy Co., Princeton[36] Alsike Clover, Lot 1984	Heldt Co., The Evansville, Ind.	C	71.16	......	84 00	10.00	4-30	....	C	Common plantain 1,125; red sorrel 7,875
			F	73.92	1.65	63 25	5.25	4-31	17,856	F	Canada thistle 72; common plantain 666; curled dock 18; red sorrel 7,875
763	Strain, A. F., Princeton Phelco Alsike Clover, Lot 2066	Heldt Co., The Evansville, Ind.	C	93.67	......	88.00	7.00	8-30	....	C	Curled dock 225; red sorrel 3,600; yellow trefoil 225
			F	92.53	0.48	89.25	6.50	5-31	15,435	F	Common plantain 54; curled dock 144; red sorrel 9,900; yellow trefoil 162
748	Walker Hardware Co., Vincennes[37] Alsike Clover, Lot 2151	Heldt Co., The Evansville, Ind.	C	90.32	......	87.00	9.00	1-31	....	C	Common plantain 450; red sorrel 1,350; yellow trefoil 3,600
			F	85.70	0 34	73.00	1.50	3-31	12,618	F	Common plantain 162; red sorrel 306; yellow trefoil 3,150
1575	Holmes Supply Co., Kingsbury[38] Alsike Clover, Lot 1	Holmes Supply Co. Kingsbury, Ind.	C	94.03	......	......	......	......	....	C	None
			F	96 04	0.63	70.50	27.00	4-31	34,011	F	Curled dock 36; red sorrel 22,500
1498	Wells Co. Farm Bureau Coop. Ass'n, Inc., Bluffton[39] Alsike Clover	Hoosier Grain & Supply Co. Bluffton, Ind.	C	98.78	......	97.25	......	2-31	....	C	None
			F	98.73	0 34	86.25	9.25	4-31	1,557	F	Common plantain 18; curled dock 18; red sorrel 396
667	Bunkerhill Elevator Co., Bunkerhill Alsike Clover, Lot A-209	Hooton-Davis Seed Co. Lebanon, Ind.	C	99.45	......	83.75	10 25	11-30	....	C	None
			F	99.62	0 24	93 50	5 75	3-31	72	F	Curled dock 54; yellow trefoil 18
929	Frazier & Sanders, Newcastle Alsike Clover, Lot A-209	Hooton-Davis Seed Co. Lebanon, Ind.	C	99.45	......	83 15	10 25	10-30	....	C	None
			F	99.41	0 39	88 75	9.75	4-31	315	F	Curled dock 36; yellow trefoil 54
1538	Glenwood Grain Co , Glenwood Alsike Clover, Lot A-213	Hooton-Davis Seed Co. Lebanon, Ind.	C	98 74	......	85.00	13 00	10-30	....	C	None
			F	99.33	0.38	92.00	5 25	5-31	90	F	Yellow trefoil 90
1033	Logansport Elevator Co., (South Side), Logansport Alsike Clover, Lot 209	Hooton-Davis Seed Co. Lebanon, Ind.	C	99 45	......	83.75	10 25	10 30	....	C	None
			F	99 40	0.45	95 50	3 00	3-31	486	F	Curled dock 36
1271	Huntertown Grain Co., Huntertown Alsike Clover, Lot 33987	Huntertown Grain Co. Huntertown, Ind.	C	94.65	......	84 00	13 00	1-30	....	C	None
			F	97.53	0 94	90.25	5 00	3-31	1,440	F	Common plantain 36; curled dock 18; red sorrel 18; yellow trefoil 18
815	Fayette Co. Farm Bureau, Connersville Alsike Clover, Lot K-450	Indiana Farm Bureau Coop. Ass'n, Inc. Indianapolis, Ind.	C	98.25	......	93 00	......	1-31	....	C	None
			F	98.23	0 00	91 00	6 75	3-31	1,602	F	Red sorrel 252

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*Not labeled.

†Certified by retailer.

C and F stands, respectively, for Claimed and Found.

[32] Removed from sale. Misbranded.

[33] Removed from sale. Misbranded. Seed returned.

[34] Sample secured from Newton Mayer, R. R. 3, Ridgeville, Ind.

[35] Removed from sale. Misbranded.

[36] Removed from sale. Misbranded. All sold. Contains 16.17% Timothy with 85.25% Germination.

[37] Contains 9.04% White Clover with 94.0% Germination and 3.5% Hard Seeds.

[38] Not tagged. Labels furnished.

[39] Tag incomplete. Seed returned to Distributor.

ALSIKE—Continued

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor	Purity, per cent	Inert Matter, per cent	Germination, per cent	Hard Seeds, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds	Number per Pound of each of the Noxious Weed Seeds Specified in the Law
419	Johnson Co. Farm Bureau Coop. Ass'n, Inc., Franklin Alsike Clover, Lot K-441	Indiana Farm Bureau Coop. Ass'n, Inc. C	98.50	......	92.00	......	12-30	....	C None
		Indianapolis, Ind. F	99.05	0.35	92.50	4.75	1-31	180	F Red sorrel 54; yellow trefoil 126
1103	Lawrence Co. Farm Bureau Coop. Ass'n, Inc., Bedford Alsike, Lot K-450	Indiana Farm Bureau Coop. Ass'n, Inc. C	98.25	......	93.00	....	1-31	....	C None
		Indianapolis, Ind. F	97.77	0.05	94.00	4.00	4-31	1,530	F Red sorrel 180
1056	Morgan Co. Farm Bureau Coop Ass'n, Inc., Martinsville Alsike, Lot K-450	Indiana Farm Bureau Coop. Ass'n, Inc. C	98.25	......	93.00	.....	1-31	....	C None
		Indianapolis, Ind. F	98.08	0.05	95.00	3.25	4-31	1,431	F Red sorrel 306
900	Wayne Co. Farm Bureau Coop. Ass'n, Inc., Richmond Alsike Clover, Lot K-450	Indiana Farm Bureau Coop. Ass'n, Inc. C	98.25	......	93.00	.....	1-31	....	C None
		Indianapolis, Ind. F	98.50	0.10	92.25	5.57	3-31	702	F Red sorrel 252
562	Branch Grain & Seed Co., Martinsville Alsike Clover, Lot B	Indiana Seed Co. C	96.57	......	88.00	8.00	12-30	....	C None
		Indianapolis, Ind. F	95.32	0.48	90.75	4.50	2-31	13,104	F Canada thistle 54; common plantain 108; curled dock 36; red sorrel 126; yellow trefoil 1,980
711	Krick & Son, A., Milan Alsike Clover, Lot 1430	Indiana Seed Co. C	98.00	......	82.00	7.00	7-30	....	C Curled dock 90
		Indianapolis, Ind. F	98.27	0.48	79.75	7.25	4-31	2,097	F Common plantain 36; curled dock 36
1446	Mellencamp, L. W., Edinburg Alsike Clover, Lot 1529	Indiana Seed Co. C	99.30	......	87.00	5.00	12-30	....	C None
		Indianapolis, Ind. F	99.10	0.30	89.50	7.00	4-31	36	F Yellow trefoil 36
105	Risk, C. B., Knightstown Alsike Clover, Lot 21491	Indiana Seed Co. C	98.28	......	80.00	16.00	11-29	....	C None
		Indianapolis, Ind. F	98.77	0.49	75.00	10.50	9-30	1,053	F Red sorrel 36; yellow trefoil 342
413	Throckmorton Seed Store, Franklin Alsike Clover, Lot 1429	Indiana Seed Co. C	99.25	......	82.00	12.00	8-30	....	C None
		Indianapolis, Ind. F	99.35	0.35	83.75	15.25	2-31	486	F Buckhorn 36
735	McCarty Seed Co., J. A., Terre Haute Alsike Clover, Lot Quinc	Kellogg Seed Co. C	93.85	......	91.00	7.00	8-30	....	C Common plantain 225; red sorrel 2,500; yellow trefoil 450
		Milwaukee, Wis. F	93.70	0.24	79.75	14.25	3-31	12,060	F Canada thistle 18; curled dock 54; red sorrel 4,500; yellow trefoil 288
745	McCarty Seed Co., J. A., Terre Haute Alsike Clover, Lot Gean	Kellogg Seed Co. C	97.30	......	92.00	3.00	11-30	....	C Common plantain 900; yellow trefoil 225
		Milwaukee, Wis. F	97.70	0.19	89.25	8.50	4-31	3,510	F Common plantain 126; curled dock 18; red sorrel 90; yellow trefoil 126

591	Campbell & Co., Angola	Kraus & Apfelbaum, Inc.	C	99.00	......	86.00	11.00	8-30	......	C	None
	Alsike Clover, Lot 9	Ft. Wayne, Ind.	F	99.05	0.40	87.75	11.50	2-31	72	F	Buckhorn 18; red sorrel 54
1237	Campbell & Co., Kendallville	Kraus & Apfelbaum, Inc.	C	99.00	......	86.00	11.00	8-31	......	C	None
	Alsike Clover, Lot 9	Ft. Wayne, Ind.	F	99.02	0.44	89.00	10.00	3-31	333	F	Curled dock 18; red sorrel 90
883	Farmers Coop. Co., Centerville	Kraus & Apfelbaum, Inc.	C	97 50	......	87.00	6.00	12-30	......	C	None
	Alsike Clover, Lot 2069B	Ft. Wayne, Ind.	F	98.32	1.48	84.50	0.25	3-31	243	F	Common plantain 18
1328	Farmers Elevator Co., South Whitley	Kraus & Apfelbaum, Inc.	C	97 50	......	87.00	6.00	12-30	......	C	None
	Alsike Clover, Lot 2069B	Ft. Wayne, Ind.	F	98.38	1.23	81.75	0.50	4-31	243	F	Common plantain 18
1280	Huntertown Grain Co., Huntertown	Kraus & Apfelbaum, Inc.	C	98 25	......	86.00	7.00	1-31	......	C	Red sorrel 270
	K. K. Alsike Clover, Lot 11	Ft. Wayne, Ind.	F	98.15	0.97	85.75	11.75	4-31	1,296	F	Common plantain 54; red sorrel342
1369	Kraus & Apfelbaum, Argos	Kraus & Apfelbaum, Inc.	C	98.25	......	86.00	7.00	2-31	......	C	None
	K. K. Alsike, Lot 20	Ft. Wayne, Ind.	F	97.38	0.20	87.75	11.25	4-31	711	F	Common plantain 18; red sorrel 18
1285	Kraus & Apfelbaum, Auburn[40]	Kraus & Apfelbaum, Inc.	C	97.70	......	86.00	7.00	1-31	......	C	None
	Alsike Clover, Lot 14	Ft. Wayne, Ind.	F	97.27	0.20	89.75	7.00	3-31	7,569	F	Buckhorn 126; common plantain 18; red sorrel 7,425
1146	Kraus & Apfelbaum, Nappanee	Kraus & Apfelbaum, Inc.	C	98 25	......	86.00	7.00	1-31	......	C	Red sorrel 270
	Alsike Clover, Lot 11	Ft. Wayne, Ind.	F	98.49	0.97	90.75	7.00	4-31	432	F	Red sorrel 396; yellow trefoil 36
1494	Markle Elevator, Markle[41]	Kraus & Apfelbaum, Inc.	C	......	......	......	......	......	......	C	
	K. K. Alsike	Ft. Wayne, Ind.	F	99.41	0.49	92.75	6 25	4-31	315	F	Yellow trefoil 90
1038	Phillips, J. C., Star City	Kraus & Apfelbaum, Inc.	C	99.00	......	86.00	7.00	1-31	......	C	None
	Alsike Clover, Lot 10	Ft. Wayne, Ind.	F	99.21	0.29	92.25	7.50	3-31	333	F	Mustard 36; red sorrel 54; yellow trefoil 18
1555	Sunshine Feed Store, Greenfield	Kraus & Apfelbaum, Inc.	C	99.00	......	86.00	7.00	1-31	......	C	None
	Alsike Clover, Lot 10	Ft. Wayne, Ind.	F	99.45	0.15	88.00	10.00	4-31	279	F	Common plantain 18; mustard 18; red sorrel 18
879	Richmond Feed Milling Co., Richmond[42]	Kraus, Sam	C	98.10	......	92 00	......	12-30	......	C	Curled dock 90
	Alsike Clover, Lot 59	Ft. Wayne, Ind.	F	92.87	1.60	79.50	8.00	3-31	5,589	F	Common plantain 54; curled dock 144; mustard 198; red sorrel 918
586	*Harrison, Clifford, Greensburg	Lake & Reagan	C	......	......	......	......	......	......	C	
	Alsike Clover	Colfax, Ind.	F	94.82	4.84	91.50	7.75	2-31	828	F	Curled dock 378
578	*Reed & Son, George N., Greensburg R. R. 3	Lake & Reagan	C	......	......	......	......	......	......	C	
	Alsike Clover	Colfax, Ind.	F	95.43	3.97	90.75	7.75	2 31	747	F	Curled dock 72
577	*Sparks, Joe, Greensburg, R. R. 2	Lake & Reagan	C	......	......	......	......	......	......	C	
	Alsike Clover	Colfax, Ind.	F	94.47	5.03	92.75	6.25	2-31	1,764	F	Buckhorn 18; curled dock 396
720	Doerflein, Charles E., Cedar Grove	McCullough Seed Co., The J. Chas.	C	98.60	......	78.00	20.00	12 30	......	C	None
	Alsike Clover, Lot 4358	Cincinnati, Ohio	F	98 28	1.13	73.25	23.75	4-31	747	F	Red sorrel 36; yellow trefoil 36
1153	McMahan Seed Co., The, Valparaiso	McMahan Seed Co., The	C	99 40	......	95.00	......	1-31	......	C	None
	Alsike Clover	Valparaiso, Ind.	F	98.72	0.89	90.25	4.00	3-31	765	F	Yellow trefoil 90
1156	McMahan Seed Co., The, Valparaiso	McMahan Seed Co., The	C	99.60	......	95.00	......	1-31	......	C	None
	Alsike Clover	Valparaiso, Ind.	F	98.96	0.59	93.25	1.75	3-31	531	F	Buckhorn 18; common plantain 18; curled dock 18; red sorrel 234; yellow trefoil 18

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*Not labeled.
†Certified by retailer.
C and F stands, respectively, for Claimed and Found.

[40] Removed from sale. Misbranded. Retagged.
[41] Not tagged. Labels furnished.
[42] Removed from sale. Misbranded. All sold

ALSIKE—Continued

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor	Purity, per cent	Inert Matter, per cent	Germination, per cent	Hard Seeds, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds	Number per Pound of each of the Noxious Weed Seeds Specified in the Law
1159	McMahan Seed Co., The, Valparaiso[43]	McMahan Seed Co., The C	99.00	......	92.00	......	1-31	....	C None
	Alsike Clover	Valparaiso, Ind. ..... F	86.73	2.08	87.50	10.25	3-31	59,958	F Buckhorn 108; red sorrel 11,700
846	Muff Grain & Coal Co., Liberty[43A]	Manthey's Seed Store C	97.15	......	92.00	......	1-31	......	C None
	Alsike Clover, Lot 959	Cincinnati, Ohio ..... F	92.58	0.25	88.75	9.25	3-31	9,081	F Buckhorn 144; common plantain 36; curled dock 54; red sorrel 4,275; yellow trefoil 72
1263	Mayer Grain Co., Churubusco	Mayer Grain Co. C	98.50	......	80.00	6.00	1-31	....	C None
	Alsike Clover	South Whitley, Ind. ..... F	98.30	0.24	96.25	2.75	3-31	12,447	F Buckhorn 36; common plantain 18; curled dock 18; red sorrel 12,150
1194	Farmers Coop. Elevator, Francesville	Morris Grain & Seed Co. C	97.79	......	90.00	5.00	3-29	....	C Curled dock 32
	Alsike Clover, Lot 50E	Morris, Ill. ..... F	98.36	1.39	93.75	4.75	3-31	162	F Yellow trefoil 162
1431	Farmers Grain Co., Rensselaer[43B]	Morris Grain & Seed Co. C	99.87	......	95.00	5.00	12-30	....	C None
	Alsike Clover, Lot 91	Morris, Ill. ..... F	98.75	0.29	89.50	6.25	4-31	36	F Yellow trefoil 36
869	Ohio Valley Seed Co., Evansville[44]	Ohio Valley Seed Co. C	86.83	......	90.00	......	1-31	....	C Curled dock 48; red sorrel 1,100
	Alsike Clover, Lot F15	Evansville, Ind. ..... F	87.10	0.40	91.25	1.25	3-31	10,278	F Common plantain 144; red sorrel 1,584; yellow trefoil 2,700
736	Sartor & Clark, Oaktown[45]	Ohio Valley Seed Co. C	97.00	......	92.00	......	1-31	....	C Curled dock 180
	Alsike Clover, Lot E613	Evansville, Ind. ..... F	97.88	1.33	75.75	15.25	3-31	2,394	F Buckhorn 36; curled dock 72; red sorrel 36
772	Gibson Co. Shipping Ass'n, Haubstadt	Purcell Seed Co. C	99.25	......	90.00	......	1-31	....	C Curled dock 9; yellow trefoil 9
	Alsike Clover, Lot 9158	Evansville, Ind. ..... F	99.46	0.34	89.00	7.50	3-31	693	F Yellow trefoil 18
785	Kinderman's Sons, Wm., Boonville	Purcell Seed Co. C	99.25	......	90.00	......	8-30	....	C Curled dock 9; yellow trefoil 9
	"Tru Val" Alsike Clover, Lot 9158	Evansville, Ind. ..... F	98.32	0.49	86.25	11.25	4-31	2,979	F Mustard 36; yellow trefoil 18
1211	Turley, James E., English	Purcell Seed Co. C	99.25	......	90.00	......	1-31	....	C Dodder 9; yellow trefoil 9
	Alsike Clover, Lot 9158	Evansville, Ind. ..... F	98.76	0.40	89.75	10.25	3-31	1,404	F Yellow trefoil 54
1356	†Bolles Hardware Co., Brownstown	Ross Seed Co. C	99.00	......	83.50	12.50	11-30	....	C None
	Alsike Clover, Lot 1067	Louisville, Ky. ..... F	99.41	0.10	71.00	25.50	4-31	18	F Common plantain 18
977	Linton Hardware Co., Linton[46]	Schultz, J. M., ... C	99.29	......	92.00	......	12-30	....	C Buckhorn 64; curled dock 336; red sorrel 768
	Alsike Clover	Dieterich, Ill. ..... F	99.37	2.23	76.00	8.25	3-31	4,464	F Buckhorn 450; curled dock 378; ox-eye daisy 18; red sorrel 1,800; yellow trefoil 18
1350	Crescent Mills, Crothersville	Scott Seed Co. C	97.34	......	86.00	8.00	11-30	....	C None
	Alsike Clover, Lot 356	New Albany, Ind. ..... F	96.71	0.25	86.25	6.25	4-31	9,126	F Curled dock 36; red sorrel 90; yellow trefoil 6,750

1295	Farmers & Merchants Exchange, New Albany	Scott Seed Co.	C	97.54	......	86.00	8.00	11-30	....	C	Red sorrel 225; yellow trefoil 1,800
	Alsike Clover, Lot 356	New Albany, Ind.	F	97.02	0.35	89.25	8.00	5-31	7,065	F	Curled dock 18; red sorrel 72; yellow trefoil 4,725
1174	Johnson & Chenoweth, Shoals	Scott Seed Co.	C	97.34	......	86.00	8.00	11-30	....	C	Red sorrel 225
	Alsike Clover, Lot 356	New Albany, Ind.	F	96.80	0.24	92.00	6.50	4-31	7,587	F	Buckhorn 18; common plantain 36; red sorrel 108; yellow trefoil 4,275
1110	Norman, G. M. & Roberts, Bedford	Scott Seed Co.	C	97.34	......	86.00	8.00	11-30	....	C	Red sorrel 225; yellow trefoil 1,200
	Alsike Clover, Lot 356	New Albany, Ind.	F	97.49	0.15	90.00	6.50	4-31	5,922	F	Buckhorn 36; red sorrel 36; yellow trefoil 4,050
477	Sawdon, R. A., Aurora	Scott Seed Co.	C	97.34	......	86.00	8.00	11-30	....	C	Red sorrel 225; yellow trefoil 1,80
	Alsike Clover, Lot 356	New Albany, Ind.	F	96.43	0.20	85.25	10.00	2-31	8,847	F	Buckhorn 36; red sorrel 36; yellow trefoil 6,525
508	Burnettsville Elevator Co., Burnettsville[47]	Sunfield Seed Service	C	99.50	......	94.00	......	12-30	....	C	None
	Alsike Clover, Lot 11129	Chicago, Ill.	F	98.45	0.48	90.25	8.00	2-31	1,593	F	Buckhorn 54; Canada thistle 18; red sorrel 486; yellow trefoil 360
671	Central States Elevator Corp., Scircleville[48]	Sunfield Seed Service	C	99.50	......	94.00	......	1-31	....	C	None
	Alsike Clover, Lot 11129	Chicago, Ill.	F	98.34	0.24	92.50	4.00	2-31	3,123	F	Buckhorn 36; red sorrel 594; yellow trefoil 468
725	Classmeyer, Henry, Mulberry[49]	Sunfield Seed Service	C	98.34	......	92.00	......	1-31	....	C	None
	Alsike Clover, Lot 11131	Chicago, Ill.	F	96.59	0.97	81.50	6.25	3-31	3,978	F	Red sorrel 306; yellow trefoil 72
1246	Fretz, R. C., Waterloo	Teweles Seed Co., L.	C	98.75	......	92.00	5.00	2-31	....	C	None
	Alsike Clover, Lot Badger Brand	Milwaukee, Wis.	F	99.15	0.35	95.00	4.50	3-31	747	F	Common plantain 18; yellow trefoil 54
526	Tipton Milling Co., Greentown[50]	Tipton Milling Co.	C	99.00	......	90.00	2.00	1-31	....	C	None
	Alsike, Lot H	Tipton, Ind.	F	93.91	0.19	80.25	12.75	2-31	1,359	F	Common plantain 54; curled dock 54; red sorrel 576
1452	Waynetown Grain Co., Waynetown[51]	Waynetown Grain Co.	C	97.00	......	70.00	12.00	12-30	....	C	None
	Alsike Clover, Lot P-29	Waynetown, Ind.	F	84.25	0.97	85.25	9.50	4-31	1,548	F	Bracted plantain 180; buckhorn 108; common plantain 54; curled dock 126; red sorrel 162; yellow trefoil 18
1187	Leonard Co., Wakarusa	Wertheimer & Sons, N.	C	99.00	......	90.00	......	1-31	....	C	None
	"Fullworth" Alsike Clover, Lot 155	Ligonier, Ind.	F	98.28	1.57	76.00	20.00	3-31	450	F	None

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*Not labeled.

†Certified by retailer.

C and F stands, respectively, for Claimed and Found.

[43] Removed from sale. Misbranded. Blended with Timothy and sold. Contains 5.15% White Clover with 65.0% Germination and 33.0% Hard Seeds.

[43A] Removed from sale. Misbranded. All sold.

[43B] Removed from sale. Misbranded. For own use.

[44] Contains 8.52% White Clover with 95.5% Germination and 1.00% Hard Seeds.

[45] Removed from sale. Misbranded. All sold.

[46] Removed from sale. Misbranded. All sold.

[47] Removed from sale. Misbranded. Returned to Shipper.

[48] Removed from sale. Misbranded. Returned to Distributor.

[49] Removed from sale. Misbranded. Returned to Distributor. Sample secured from Orval Rothenberger, R. R. 1, Mulberry, Ind.

[50] Removed from sale. Misbranded. Returned to Seller. Contains 5.75% White Clover with 61.5% Germination and 34.5% Hard Seeds.

[51] Removed from sale. Misbranded. Contains 10.42% White Clover with 72.5% Germination and 22.75% Hard Seeds.

JAPAN CLOVER

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor	Purity, per cent	Inert Matter, per cent	Germination, per cent	Hard Seeds, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds	Number per Pound of each of the Noxious Weed Seeds Specified in the Law
1173	Paoli Hardware Co., Paoli	Crabbs Reynolds Taylor Co. C	95.46		90.00		1–31		C Bracted plantain 270; prickly lettuce 90
	Japan Clover, Lot 9630	Crawfordsville, Ind. F	95.24	1.41	92.50	2.00	5–31	6,507	F Bracted plantain 99; curled dock 18
1065	Bloomington Milling Co., Bloomington[52]	Hardin, Hamilton & Lewman C	98.00		90.00		12–30		C None
	Japan Clover, Lot J	Louisville, Ky. F	92.44	2.66	81.00	5.50	4–31	42,966	F Bracted plantain 207; dodder 9
1511	Clay Co. Farm Bureau Coop. Ass'n, Inc., Brazil	Indiana Farm Bureau Coop. Ass'n, Inc. C	97.50		88.00		1–31		C None
	Common Japan Clover, Lot Jap 2	Indianapolis, Ind. F	97.12	1.38	89.50	3.00	4–31	5,805	F Bracted plantain 36; buckhorn 9
1050	Farmers Coal & Feed Co., Bloomington	Indiana Farm Bureau Coop. Ass'n, Inc. C	97.50		88.00		1–31		C None
	Common Lespedeza, Lot Jap 1	Indianapolis, Ind. F	98.85	0.42	87.50	8.50	3–31	2,061	F Bracted plantain 351
1061	Morgan Co. Farm Bureau Coop. Ass'n, Inc., Martinsville	Indiana Farm Bureau Coop. Ass'n, Inc. C	97.50		88.00		1–30		C None
	Common Lespedeza, Lot Jap 1	Indianapolis, Ind. F	98.07	0.87	89.50	4.00	4–31	3,429	F Bracted plantain 180; dodder 9
898	Wayne Co. Farm Bureau Coop. Ass'n, Inc., Richmond	Indiana Farm Bureau Coop. Ass'n, Inc. C	97.50		88.00		1–31		C None
	Common Lespedeza, Lot Jap 1	Indianapolis, Ind. F	98.40	0.38	91.00	4.00	3–31	2,655	F Bracted plantain 405
84	Bulleit & Sons, B. H., Corydon	Louisville Seed Co. C	98.00		90.00		1–30		C None
	Japan Clover	Louisville, Ky. F	97.91	1.50	88.00	4.50	8–30	2,088	F Bracted plantain 9; red sorrel 9
678	Indiana State Highway Commission, Indianapolis	Louisville Seed Co. C	92.00		72.00	20.00	12–30		C Bracted plantain 300
	Japan Clover, Lot J8	Louisville, Ky. F	95.47	2.23	78.50	16.50	2–31	13,086	F Bracted plantain 108; dodder 18
903	Kelle, E. C., Sumerville[53]	Ohio Valley Seed Co. C	96.00		85.00		1–31		C None
	Japan Clover, Lot F-55	Evansville, Ind. F	91.27	3.45	79.00	5.50	4–31	16,650	F None
1510	Kattmann & Tilley, Brazil	Purcell Seed Co. C	93.00		90.00	5.00	3–30		C Bracted plantain 450
	"Judge" Jap Clover, Lot 8506	Evansville, Ind. F	90.85	7.22	84.00	6.50	4–31	7,605	F Bracted plantain 45
1126	Reynolds-Brooks Hardware Co., Loogootee[54]	Purcell Seed Co. C	99.20		90.00		1–31		C Bracted plantain 180
	Japan Clover, Lot 8224	Evansville, Ind. F	94.54	3.92	47.50	7.50	5–31	7,875	F Bracted plantain 36; curled dock 9
1178	Walker & Co., W. A., Loogootee[55]	Purcell Seed Co. C	99.20		90.00		1–31		C Bracted plantain 180
	Japan Clover, Lot 8224	Evansville, Ind. F	96.29	2.39	60.50	4.50	4–31	6,858	F Bracted plantain 9; buckhorn 9
983	Perry, Chas. S., Linton	Quinlin Seed Co. C	95.59		75.00	15.00	2–31		C Bracted plantain 486; buckhorn 45; common plantain 9; dodder 144
	Japan Clover, Lot 7485	Terre Haute, Ind. F	95.92	3.17	78.50	7.50	4–31	6,669	F Bracted plantain 234; curled dock 9; dodder 36
545	Holton & Son, S. E., Patricksburg	Schultz, J. M. C	92.00		93.00		12–30		C None
	Reliable Japan Clover	Dieterich, Ill. F	97.22	1.64	95.50	2.00	2–31	3,798	F Buckhorn 18

975	Linton Hardware Co., Linton Japan Clover	Schultz, J. M. Dieterich, Ill.	C	93.00	......	92.00	......	12-30	....	C	None
			F	93.64	2.58	82.00	12.50	3-31	28,845	F	Bracted plantain 216; white top 9
89	Pentecost & Craft Co., Terre Haute[56] Reliable Lespedeza	Schultz, J. M. Dieterick, Ill.	C	98.40	......	90.00	......	1-30	....	C	None
			F	89.59	2.73	58.50	11.00	9-30	45,387	F	Bracted plantain 1,260; buckhorn 18; common plantain 18; curled dock 54; dodder 27
731	Pentecost & Craft Co., Terre Haute Lespedeza, Clover, Lot 33	Schultz, J. M. Dieterich, Ill.	C	92.87	......	93.00	......	12-30	....	C	None
			F	93 80	3.54	91.50	3.00	3-31	14,229	F	Bracted plantain 9
1299	Bulleit and Son, V. H., Corydon[57] Japan Clover, Lot 90	Scott Seed Co. New Albany, Ind.	C	97.00	......	80.00	10.00	1-31	....	C	Buckhorn 180
			F	92.20	2.40	87.00	2.00	4-31	33,588	F	Bracted plantain 270; buckhorn 99; dodder 9
1296	Farmers & Merchants Exchange, New Albany Korean Clover, Lot 89	Scott Seed Co. New Albany, Ind.	C	95.00	......	80 00	12.00	1-31	....	C	Bracted plantain 180; curled dock 180
			F	97.01	0.68	84.50	4.00	4-31	5,094	F	Bracted plantain 36; common plantain 900; curled dock 9; dodder 9
1109	Ragsdale & Owens, Bedford[58] Japan Clover, Lot 90	Scott Seed Co. New Albany, Ind.	C	97.00	......	80.00	......	1-31	....	C	Bracted plantain 80
			F	94.12	2.15	86.50	3.00	4-31	17,901	F	Bracted plantain 225; buckhorn 162; common plantain 36; dodder 18
440	Sample, John L., Madison Japan Clover	Scott Seed Co. New Albany, Ind.	C	96.00	......	80.00	10.00	10-30	....	C	Bracted plantain 180
			F	95.96	1.23	79.50	4.00	2-31	11,394	F	Bracted plantain 693; buckhorn 63; dodder 18
452	Trow Co., W., Madison Japan Clover, Lot 86	Scott Seed Co. New Albany, Ind.	C	96 00	......	80 00	10.00	10-30	....	C	Bracted plantain 180
			F	97.05	1.00	84 50	3 50	2-31	9,864	F	Bracted plantain 441; buckhorn 36; dodder 27
1212	Turley, James E., English[59] Korean Clover, Lot 89	Scott Seed Co. New Albany, Ind.	C	98.00	......	80.00	10.00	1-31	....	C	Bracted plantain 180; curled dock 180
			F	96.45	0.73	93.50	1.50	4-31	7,020	F	Common plantain 2,250; dodder 306; large seeded alfalfa dodder 9; yellow trefoil 225

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*Not labeled.

†Certified by retailer.

C and F stands, respectively, for Claimed and Found.

[52] Removed from sale. Misbranded. All sold.

[53] Removed from sale. Misbranded. Used on own Farm.

[54] Removed from sale. Misbranded. Retagged.

[55] Removed from sale. Misbranded. Retagged.

[56] Removed from sale. Misbranded. Seed returned to Distributor.

[57] Removed from sale. Misbranded. Retagged.

[58] Removed from sale. Misbranded. All sold.

[59] Removed from sale. Misbranded. All sold.

RED CLOVER

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor	Purity, per cent	Inert Matter, per cent	Germination, per cent	Hard Seeds, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds	Number per Pound of each of the Noxious Weed Seeds Specified in the Law
1383	Sentz, Mrs. Alta, Fowler	American Field Seed Co. C	97.50	......	90.00	......	1–31	....	C None
	Medium Red Clover, Lot 12240	Chicago, Ill. F	95.40	2.60	90.00	4.50	3–31	9,594	F Bracted plantain 18; buckhorn 126; common plantain 171; curled dock 36; dodder 45; red sorrel 18
1591	Ayres Seed Co., Cambridge City	Ayres Seed Co. C	99.00	......	90.00	......	......	....	C None
	English Red Clover, Lot 307	Cambridge City, Ind. F	99.48	0.44	84.00	8.50	4–31	351	F Buckhorn 9; common plantain 99; curled dock 153
728	Perry, O. C., R. R. 1, Noblesville	Berry Seed Co. C	93.39	......	91 00	11.00	11–30	....	C None
	Medium Red Clover, Lot 12	Clarinda, Iowa F	88.63	2.43	82.50	10.00	3–31	38,880	F Bracted plantain 9; common plantain 36; curled dock 36; dodder 99
949	Bloomfield Mill & Elevator, Bloomfield	Bloomfield Mill & Elevator C	93.29	......	75.00	14.00	2–31	....	C Curled dock 9,090; red sorrel 90
	English Red Clover, Lot B	Bloomfield, Ind. F	93 08	3.54	75.00	13.50	4–31	7,587	F Bracted plantain 36; buckhorn 198; common plantain 963; curled dock 3,060
561	Brewer Milling Co., Gosport	Brewer Milling Co. C	99.60	......	88.50	9.00	12–30	....	C Buckhorn 180
	Medium Red Clover, Lot 51526	Gosport, Ind. F	99.54	0.30	89.50	8.00	3-31	675	F Bracted plantain 18; buckhorn 486; common plantain 81
1504	Burk Elevator Co., Monroe	Burk Elevator Co. C	97.68	......	85.00	8.50	12–30	....	C Common plantain 1,890
	Little Red Clover	Decatur, Ind. F	98.49	1.09	96.00	1.50	5–31	1,917	F Buckhorn 54; common plantain 486; curled dock 9; wild chicory 18
423	Byers Seed Co., Franklin[60]	Byers Seed Co. C	98.40	......	88.00	6.00	1–31	....	C None
	Red Clover, Lot Star	Franklin, Ind. F	95.40	0 24	83 00	14.50	1–31	1,026	F Dodder 18; yellow trefoil 378
602	Byers Seed Co., Franklin	Byers Seed Co. C	99 25	......	88.00	7.00	1–31	....	C None
	Mammoth Red Clover, Lot A	Franklin, Ind. F	98 23	0.26	93.50	3.50	2–31	1,548	F Curled dock 288
639	Carney Hatchery, Greenwood[61]	Byers Seed Co. C	99.42	......	92.00	......	1–31	....	C None
	Idaho Red Clover, Lot Star	Franklin, Ind. F	96.04	0.12	87.00	11.50	2–31	1,449	F Curled dock 9; dodder 36; yellow trefoil 594
640	Carney Hatchery, Greenwood[62]	Byers Seed Co. C	99.25	......	88.00	7.00	1–31	....	C None
	Mammoth Red Clover, Lot A	Franklin, Ind. F	99.64	0.16	88.00	10.00	2–31	351	F Buckhorn 27; dodder 324
641	Carney Hatchery, Greenwood	Byers Seed Co. C	99.30	......	88.00	5.00	1–31	....	C None
	Red Clover, Lot A	Franklin, Ind F	99 60	0.20	90 00	6 50	2–31	315	F Buckhorn 63; common plantain 27; curled dock 27; wild carrot 18

618	Carney Hatcheries, Inc., Shelbyville[63] Red Clover, Lot Star	Byers Seed Co. Franklin, Ind.	C F	99.42 95.71	...... 0.08	92.00 86 00	...... 12 00	1-31 2-31	 1,800	C F	None Yellow trefoil 1,080
626	Carney Hatcheries, Inc., Shelbyville M. Red Clover, Lot A	Byers Seed Co. Franklin, Ind.	C F	99 25 99.19	...... 0.18	88.00 91.50	7 00 5 00	1-31 2-31	 27	C F	None Curled dock 9; dodder 9; red sorrel 9
627	Carney Hatcheries, Inc., Shelbyville Indiana Red Clover, Lot A	Byers Seed Co. Franklin, Ind.	C F	99 30 99.68	...... 0 22	88.00 89.00	6.00 5.50	1-31 2-31	 225	C F	None Buckhorn 180; common plantain 36; curled dock 9
631	Carney Hatcheries, Inc., Shelbyville[64] Medium Red Clover, Lot A	Byers Seed Co. Franklin, Ind.	C F	99.30 99.62	...... 0 20	88.00 94.00	6.00 5.00	1-31 4-31	 675	C F	None Buckhorn 252; common plantain 9; curled dock 54
1436	Central States Elevator Corp., Fountaintown English Red Clover, Lot 51475	Central States Elevator Corp. Fountaintown, Ind.	C F	96 90 97.73	..... 1.03	76.00 90.50	17.00 6 50	12-30 5-31	 4,374	C F	Common plantain 2,610; curled dock 360; dodder 90 Bracted plantain 9; buckhorn 1,080; common plantain 2,340; curled dock 360; dodder 153; prickly lettuce 18; wild carrot 54
1346	Crescent Mills, Crothersville[65] Sapling Red Clover, Lot 340	Chambers Seed Co. Louisville, Ky.	C F	99 00 98 57	...... 0 52	90 00 91.50	5.00 5 50	1-31 4-31	 3,285	C F	Buckhorn 225; curled dock 225 Buckhorn 1,710; common plantain 243; curled dock 549; dodder 9; red sorrel 9; wild carrot 135
1309	Eberts Grain Co., Memphis[66] Sapling Red Clover, Lot 340	Chambers Seed Co. Louisville, Ky.	C F	99.00 98 45	...... 0 71	90 00 88 50	...... 8 00	1-31 4-31	 2,853	C F	None Buckhorn 1,170; common plantain 297; curled dock 585; dodder 9; red sorrel 36; wild carrot 216
1311	Eberts Grain Co., Memphis Red Clover, Lot 205	Chambers Seed Co. Louisville, Ky.	C F	99.75 99.18	...... 0.80	90 00 85 50	...... 10 00	1-31 3-31	 18	C F	Buckhorn 225 Common plantain 9; curled dock 9
1347	Eberts Grain Co., Scottsburg[67] Sapling Red Clover, Lot 340	Chambers Seed Co. Louisville, Ky.	C F	99 00 98.80	...... 0.60	90 00 91.50	5 00 3 50	1-31 4-31	 1,935	C F	Bracted plantain 225; curled dock 225 Buckhorn 1,080; common plantain 63; curled dock 585; red sorrel 36; wild carrot 171
1364	Scottsburg Elevator, Scottsburg[68] Red Clover	Chambers Seed Co. Louisville, Ky.	C F	95.00 92.07	...... 1.76	90 00 84 50	...... 9 00	1-31 4-31	 2,259	C F	Buckhorn 6; curled dock 200 Curled dock 279; mustard 81; red sorrel 9
1456	Hendricks Co. Feed Co., Danville[69] Big English Clover	Clayton Milling Co. Clayton, Ind.	C F	99 00 98 28	...... 0.26	87 00 86 00	7 00 10 50	1-31 4-31	 738	C F	None Bracted plantain 72; buckhorn 126; common plantain 207; curled dock 153

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*Not labeled.
†Certified by retailer.
C and F stands, respectively, for Claimed and Found.
[60] Removed from sale. Misbranded. Retagged.
[61] Removed from sale. Misbranded. Returned to Distributor.
[62] Removed from sale. Misbranded. Returned to Distributor.
[63] Removed from sale. Misbranded. Returned to Distributor.
[64] Sample secured from Shelby Co. Farm Bureau Co-operative Ass'n, Inc., Shelbyville, Ind.
[65] Removed from sale. Misbranded. Retagged.
[66] Removed from sale. Misbranded. Returned to Distributor.
[67] Removed from sale. Misbranded. Seed returned to Distributor.
[68] Removed from sale. Misbranded. All sold.
[69] Removed from sale. Misbranded. All sold.

RED CLOVER—Continued

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor	Purity, per cent	Inert Matter, per cent	Germination, per cent	Hard Seeds, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds	Number per Pound of each of the Noxious Weed Seeds Specified in the Law
973	Gosport Hardware & Lumber Co., Gosport	Cloverdale Hardware & Lumber Co. C	99 43	......	78.00	12.00	9–30	....	C Buckhorn 153; curled dock 45 wild carrot 9
	Mammoth Red Clover, Lot ES	Cloverdale, Ind. F	99.48	0.16	86.00	8.00	4–31	279	F Buckhorn 63; curled dock 36
327	Hazelrigg, J. S., Cambridge City[70]	Cochrane Co., T. H. C	......	......	......	......	......	....	C
	Mammoth Red Clover, Lot 129	Portage, Wis. F	99.44	0.24	92.50	4 00	1–31	1,044	F Common plantain 36; curled dock 90; red sorrel 108
723	†Masters, Chas. S., Brookville	Cochrane Co., T. H. C	99.40	......	90 00	......	12–30	....	C None
	Red Clover	Portage, Wis. F	99.90	0.06	89 00	9.50	3–31	99	F Red sorrel 9
1040	Cooperative Elevator Co., Winamac	Cooperative Elevator Co. C	99.25	......	91.00	7 00	1–31	....	C None
	Medium Red Clover, Lot MAH	Winamac, Ind. F	99.78	0.16	97 00	2.00	3–31	....	F None
1043	Cooperative Elevator Co., Winamac	Cooperative Elevator Co. C	99.40	......	93.00	4.00	1–31	....	C None
	Mammoth Red Clover, Lot SAA	Winamac, Ind. F	99.60	0.34	95.50	1.50	3 31	486	F Bracted plantain 9; curled dock 18; red sorrel 459
704	Aurora Farmers Supply Co., Aurora	Crabbs Reynolds Taylor Co. C	99.64	......	90.00	4.00	12·30	....	C None
	Medium Red Clover, Lot 5RM	Crawfordsville, Ind. F	99 80	0.06	93 50	2 00	4–31	360	F None
611	Beck Grain & Feed Co., Shelbyville	Crabbs Reynolds Taylor Co. C	99.72	......	91 00	5 00	11–30	....	C None
	Medium Red Clover, Lot 6RL	Crawfordsville, Ind. F	99.84	0.06	95.00	3.50	3–31	306	F Buckhorn 27; curled dock 9
114	Chance Brothers, Connersville	Crabbs Reynolds Taylor Co. C	99.68	......	92.00	3.00	7–	....	C None
	Mammoth Red Clover, Lot 1MB	Crawfordsville, Ind. F	99.52	0.19	90.50	2.50	9–30	229	F Buckhorn 45; curled dock 99
999	Cloverdale Hardware & Lumber Co., Cloverdale	Crabbs Reynolds Taylor Co. C	99.74	......	90.00	4.00	9–30	....	C None
	Medium Red Clover, Lot 3-R1	Crawfordsville, Ind. F	99.84	0.10	94.00	4.00	4·31	126	F Curled dock 36
335	Crabbs Reynolds Taylor Co., Lafayette	Crabbs Reynolds Taylor Co. C	99.70	......	90.00	3.00	6–30	....	C None
	Medium Red Clover, Lot 4RG	Crawfordsville, Ind. F	99.78	0.14	94.50	2.50	1–31	198	F Buckhorn 9; curled dock 9
340	Crabbs Reynolds Taylor Co., Lafayette	Crabbs Reynolds Taylor Co. C	99.74	......	90.00	4.00	9–30	....	C None
	Medium Red Clover, Lot 3RI	Crawfordsville, Ind. F	99 86	0.02	88.50	8.00	1–31	252	F Curled dock 72
899	†Farmers Cooperative Co., Centerville	Crabbs Reynolds Taylor Co. C	99.70	......	90.00	3.00	10–30	....	C None
	Medium Red Clover, Lot 9RK	Crawfordsville, Ind. F	99.70	0.06	92.00	3.00	4–31	90	F None
1046	Farmers Feed & Coal Co., Bloomington	Crabbs Reynolds Taylor Co. C	99 64	......	90.00	4.00	12–30	....	C None
	Medium Red Clover, Lot 5RM	Crawfordsville, Ind. F	99.88	0.02	93.50	3.00	4–31	279	F Buckhorn 9
399	Galveston Farmers Elevator Co., Galveston	Crabbs Reynolds Taylor Co. C	99.72	......	91 00	5.00	11–30	....	C None
	Medium Red Clover, Lot 6RL	Crawfordsville, Ind. F	99.66	0.18	91.00	5.50	2–31	90	F None
343	Lauramie Grain Co., Stockwell	Crabbs Reynolds Taylor Co. C	99.70	......	90.00	3 00	11–30	....	C None
	Mammoth Red Clover, Lot 5MD	Crawfordsville, Ind. F	99 98	0.02	94.50	1.00	2–31	9	F Buckhorn 9
344	Lauramie Grain Co., Stockwell	Crabbs Reynolds Taylor Co. C	99.72	......	91.00	5.00	11–30	....	C None
	Medium Red Clover, Lot 6RL	Crawfordsville, Ind. F	99.88	0.04	90.50	4.50	1–31	189	F Buckhorn 9

1019	Mowry, R. E., Brownsburg	Crabbs Reynolds Taylor Co.	C	99.70	......	90.00	3.00	1-31	....	C	None
	Medium Red Clover, Lot 9RK	Crawfordsville, Ind.	F	99.84	0.10	91.50	4.00	4-31	27	F	Buckhorn 18; curled dock 9
325	Nedderman, Roy, Sunman	Crabbs Reynolds Taylor Co.	C	99.66	......	90.00	4.00	10-30	....	C	None
	Medium Red Clover, Lot 5RK	Crawfordsville, Ind.	F	99.72	0.22	91.00	4.50	1-31	108	F	Buckhorn 9; curled dock 9
326	Nedderman, Roy, Sunman	Crabbs Reynolds Taylor Co.	C	99.54	......	90.00	4.00	9-30	....	C	Curled dock 90
	Mammoth Clover, Lot 7MB	Crawfordsville, Ind.	F	99.39	0.33	88.00	4.50	1-31	540	F	Curled dock 360
1176	Paoli Hardware Co., Paoli	Crabbs Reynolds Taylor Co.	C	99.18	......	91.00	6.00	1-31	....	C	Curled dock 45
	Medium Red Clover, Lot 7RK	Crawfordsville, Ind.	F	99.24	0.26	88.50	6.00	4-31	873	F	Buckhorn 54; curled dock 9
1107	Reynolds Brooks Hardware Co., Loogootee	Crabbs Reynolds Taylor Co.	C	99.68	......	90.00	3.00	12-30	....	C	None
	Mammoth Red Clover, Lot 8MD	Crawfordsville, Ind.	F	99.82	0.04	94.00	2.00	4-31	252	F	Curled dock 72
1550	Shirley, O. C., Knightstown	Crabbs Reynolds Taylor Co.	C	99.64	......	90.00	3.00	12-30	....	C	None
	Medium Red Clover, Lot 2RN	Crawfordsville, Ind.	F	99.66	0.16	97.00	0 0	5-31	126	F	Buckhorn 9; curled dock 27
887	Whelan, Omer G., Richmond	Crabbs Reynolds Taylor Co.	C	98.74	......	83.00	9.00	10-30	....	C	Curled dock 144
	Medium Red Clover, Lot 1RL	Crawfordsville, Ind.	F	98.26	0.36	89.00	1.50	4-31	315	F	Curled dock 135
803	Yum-Yum Feed Mill, Inc., Brookville	Crabbs Reynolds Taylor Co.	C	99.55	......	85.00	10.00	1-31	....	C	Curled dock 18
	Medium Red Clover, Lot 2RL	Crawfordsville, Ind.	F	99.70	0.22	90.50	7.00	4-31	387	F	Curled dock 27
804	Yum-Yum Feed Mill, Inc., Brookville	Crabbs Reynolds Taylor Co.	C	99.70	......	90.00	3.00	11-30	....	C	None
	Mammoth Red Clover, Lot 5MD	Crawfordsville, Ind.	F	99.94	0.06	91.50	3.00	3-31	9	F	Curled dock 9
112	Chance Brothers, Connersville	Crawfordsville Seed Co.	C	99.50	......	92.00	5.00	7-30	....	C	None
	Mammoth Red Clover, Lot 227	Crawfordsville, Ind.	F	99.76	0.02	90.50	0 0	9-30	9	F	Curled dock 9
823	Chance Brothers, Connersville	Crawfordsville Seed Co.	C	99.75	......	90.00	5.00	1-31	....	C	None
	Medium Red Clover, Lot 132	Crawfordsville, Ind.	F	99.68	0.08	92.00	2.00	4-31	378	F	Common plantain 9; curled dock 9
553	Decatur Co. Coop. Co., Greensburg	Crawfordsville Seed Co.	C	99.75	......	90.00	5.00	1-31	....	C	None
	Mammoth Red Clover, Lot 243	Crawfordsville, Ind.	F	99.90	0.04	96.00	1.00	3-31	....	F	None
554	Decatur Co. Coop. Co., Greensburg	Crawfordsville Seed Co.	C	99.75	......	90.00	5.00	1-31	....	C	None
	Medium Red Clover, Lot 109	Crawfordsville, Ind.	F	99.94	0.02	96.50	0.50	3-31	....	F	None
851	Demoret Grain Co., Bath	Crawfordsville Seed Co.	C	99.75	......	90.00	5.00	1-31	....	C	None
	Mammoth Red Clover, Lot 243	Crawfordsville, Ind.	F	99.84	0.06	96.00	1.00	4-31	18	F	Curled dock 18
853	Demoret Grain Co., Bath	Crawfordsville Seed Co.	C	99.95	......	90.00	5.00	1-31	....	C	None
	Medium Red Clover, Lot 109	Crawfordsville, Ind.	F	99.94	0.04	97.00	1.00	4-31	....	F	None
930	Farmers Grain Co., Pershing	Crawfordsville Seed Co.	C	97.00	......	85.00	10.00	12-30	....	C	None
	Medium Red Clover, Lot 120	Crawfordsville, Ind.	F	97.86	0.04	93.00	4.50	4-31	2,196	F	Curled dock 18; yellow trefoil 108
1037	Farmers Grain & Supply Co., Oak	Crawfordsville Seed Co.	C	99.75	......	90.00	5.00	1-31	....	C	None
	Medium Red Clover, Lot 115	Crawfordsville, Ind.	F	99.94	0.02	96.00	0.50	4-31	....	F	None
827	†Fayette Grain Co., Connersville	Crawfordsville Seed Co.	C	99.75	......	90.00	5.00	1-31	....	C	None
	Medium Clover, Lot 115	Crawfordsville, Ind.	F	99.94	0.02	96.50	1.50	3-31	90	F	None
381	Grant Co. Farm Bureau, Marion	Crawfordsville Seed Co.	C	99.75	......	90.00	5.00	12-30	....	C	None
	Medium Clover, Lot 116	Crawfordsville, Ind.	F	99.88	0.04	97.00	3.00	2-31	108	F	Curled dock 18
926	Griffin & Bundy, Spiceland	Crawfordsville Seed Co.	C	99.75	......	90.00	5.00	12-30	....	C	None
	Mammoth Red Clover, Lot 243	Crawfordsville, Ind.	F	99.88	0.06	91.50	1.50	4-31	18	F	Curled dock 18
936	Griffin & Bundy, Spiceland	Crawfordsville Seed Co.	C	99.75	......	90.00	5.00	12-30	....	C	None
	Medium Red Clover, Lot 109	Crawfordsville, Ind.	F	99.80	0.00	95.00	1.50	4-31	....	F	None
946	Griffin & Bundy, Spiceland	Crawfordsville Seed Co.	C	99.75	......	90.00	5.00	12-30	....	C	None
	Medium Clover, Lot 115	Crawfordsville, Ind.	F	99.92	0.02	93.00	2.00	4-31	99	F	Curled dock 9

C and F stands, respectively, for Claimed and Found.

⁷⁰Not tagged. Labels furnished.

*Not labeled.

†Certified by retailer.

RED CLOVER—Continued

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, per cent	Inert Matter, per cent	Germination, per cent	Hard Seeds, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds		Number per Pound of each of the Noxious Weed Seeds Specified in the Law
511	Logansport Elevator Co., North Side, Logansport	Crawfordsville Seed Co.	C	99.75	......	90.00	5.00	12-30	....	C	None
	Medium Red Clover, Lot 109	Crawfordsville, Ind.	F	99.96	0.00	98.00	1.00	3-31	....	F	None
922	Newcastle Elevator Co., Newcastle	Crawfordsville Seed Co.	C	99.75	......	90.00	5.00	1-31	....	C	None
	Mammoth Red Clover, Lot 243	Crawfordsville, Ind.	F	99.96	0.02	97.00	1.00	4-31	18	F	Curled dock 18
932	Newcastle Elevator Co., Newcastle	Crawfordsville Seed Co.	C	99.75	......	90.00	5.00	1-31	....	C	None
	Medium Red Clover, Lot 109	Crawfordsville, Ind.	F	99.88	0.02	97.00	2.00	4-31	9	F	Curled dock 9
519	Parke Co. Farm Bureau, Rockville	Crawfordsville Seed Co.	C	99.75	......	90.00	5.00	12-30	....	C	None
	Medium Red Clover, Lot 115	Crawfordsville, Ind.	F	99.88	0.00	92.00	2.00	3-31	90	F	None
416	Records & Son, L. N., Edinburg	Crawfordsville Seed Co.	C	97.75	......	90.00	5.00	12-30	....	C	None
	Medium Red Clover, Lot 115	Crawfordsville, Ind.	F	99.86	0.10	95.50	1.50	1-31	94	F	Red sorrel 9
612	Shelby Co. Farm Bureau Coop. Ass'n, Inc., Shelbyville	Crawfordsville Seed Co.	C	99.75	......	90.00	5.00	12-30	....	C	None
	Mammoth Red Clover, Lot 243	Crawfordsville, Ind.	F	99.82	0.12	91.50	1.50	3-31	9	F	Curled dock 9
615	Shelby Co. Farm Bureau Coop. Ass'n, Inc., Shelbyville	Crawfordsville Seed Co.	C	99.75	......	90.00	5.00	12-30	....	C	None
	Medium Red Clover, Lot 115	Crawfordsville, Ind.	F	99.98	0.02	97.00	0.50	2-31	....	F	None
421	Throckmorton Seed Co., Franklin	Crawfordsville Seed Co.	C	97.00	......	85.00	10.00	12-30	....	C	None
	Medium Red Clover, Lot 120	Crawfordsville, Ind.	F	97.10	0.00	94.00	3.50	2-31	2,313	F	Curled dock 9; dodder 9; yellow trefoil 45
885	Wayne Co. Farm Bureau Coop. Ass'n. Inc., Richmond	Crawfordsville Seed Co.	C	99.75	......	90.00	5.00	1-31	....	C	None
	Medium Red Clover, Lot 109	Crawfordsville, Ind.	F	99.94	0.00	94.00	3.00	4-31	....	F	None
897	Wayne Co. Farm Bureau Coop. Ass'n, Inc., Richmond	Crawfordsville Seed Co.	C	99.75	......	90.00	5.00	1-31	....	C	None
	Mammoth Red Clover, Lot 243	Crawfordsville, Ind.	F	99.84	0.02	94.00	2.00	4-31	54	F	Curled dock 36; red sorrel 18
958	Daviess Co. Farm Bureau, Washington	Daviess Co. Farm Bureau	C	98.42	......	94.50	1.50	1-31	....	C	Buckhorn 4,140
	Red Clover, Lot 1	Washington, Ind.	F	97.60	0.20	87.00	8.50	4-31	7,893	F	Bracted plantain 18; buckhorn 7,740; common plantain 90; curled dock 27; dodder 18
582	Dodge, John, Rte. 3, Greensburg	Davis Grain Co.	C	97.00	......	92.00	......	1-31	....	C	None
	Medium Red Clover	Michigantown, Ind.	F	99.72	0.20	86.50	9.50	2-31	612	F	Common plantain 225; curled dock 9; dodder 18
584	Dodge, John, Rte. 3, Greensburg[71]	Davis Grain Co.	C	98.00	......	92.00	......	1-31	....	C	None
	Medium Red Clover, Lot 1 Med	Michigantown, Ind.	F	99.49	0.20	85.50	13.00	2-31	2,106	F	Buckhorn 117; common plantain 900; dodder 9

1183	Dembufsky Seed Co., Goshen	Dembufsky Seed Co.	C	98.00	......	90.00	......	12-30	......	C	None
	Little Red Clover, Lot B	Goshen, Ind.	F	99.90	0.06	91.00	8.00	3-31	72	F	Buckhorn 36; common plantain 36
1185	Dembufsky Seed Co., Goshen	Dembufsky Seed Co.	C	99.25	......	90.00	......	12-30	......	C	Buckhorn 90
	Big Red Clover, Lot A	Goshen, Ind.	F	99.70	0.18	94.50	1.00	4-31	126	F	Buckhorn 81; curled dock 45
1399	Deniston, Wm. H., Rochester	Deniston, Wm. H.	C	99.22	......	73.50	14.50	2-31	......	C	Buckhorn 1,440; common plantain 180
	Medium Red Clover, Lot 48852	Rochester, Ind.	F	99.50	0.06	80.00	15.50	5-31	1,782	F	Buckhorn 1,170; common plantain 27; curled dock 9; dodder 36
1402	Deniston, Wm. H., Rochester	Deniston, Wm. H.	C	99.62	......	80.00	9.50	9-30	......	C	Curled dock 90; red sorrel 450
	Mammoth Red Clover, Lot 36433	Rochester, Ind.	F	99.66	0.06	82.00	15.00	5-31	1,827	F	Buckhorn 45; curled dock 72; red sorrel 1,710
1403	Deniston, Wm. H., Rochester	Deniston, Wm. H.	C	99.86	......	86.00	12.50	9-30	......	C	None
	Medium Red Clover, Lot 36432	Rochester, Ind.	F	99.58	0.28	90.00	5.00	4-31	477	F	Buckhorn 18; red sorrel 342; wild carrot 27
1062	Bloomington Milling Co., Bloomington	Dickinson Co., The Albert	C	99.38	......	84.00	9.00	1-31	......	C	None
	Little Red Clover, Lot 24803	Chicago, Ill.	F	99.86	0.02	91.50	5.50	4-31	369	F	Curled dock 9
1063	Bloomington Milling Co., Bloomington	Dickinson Co., The Albert	C	99.54	......	82.00	12.00	1-31	......	C	None
	Big English Red Clover, Lot 23764	Chicago, Ill.	F	99.52	0.14	89.50	1.00	4-31	450	F	None
113	Chance Brothers, Connersville	Dickinson Co., The Albert	C	99.02	......	92.00	......	8-30	......	C	None
	Red Clover, Lot 24495	Chicago, Ill.	F	98.49	0.00	83.50	3.50	9-30	3,528	F	Curled dock 18
818	Chance Brothers, Connersville	Dickinson Co., The Albert	C	97.20	......	77.00	14.00	2-31	......	C	None
	Red Clover, Lot 24825	Chicago, Ill.	F	97.57	0.10	83.50	14.50	4-31	5,139	F	Yellow trefoil 9
655	†Garten Feed Co., Indianapolis	Dickinson Co., The Albert	C	99.42	......	84.00	11.00	10-30	......	C	None
	Medium Red Clover, Lot 24673	Chicago, Ill.	F	99.51	0.20	89.50	5.00	3-31	1,026	F	Curled dock 9; red sorrel 9; yellow trefoil 18
656	†Garten Feed Co., Indianapolis	Dickinson Co., The Albert	C	99.76	......	83.00	12.00	9-30	......	C	None
	Mammoth Red Clover, Lot 23737	Chicago, Ill.	F	99.66	0.10	89.00	8.50	3-31	792	F	Bracted plantain 9; curled dock 36; dodder 18; red sorrel 9
457	Hunger, C. G., Madison	Dickinson Co., The Albert	C	99.76	......	83.00	14.00	9-30	......	C	None
	Mammoth Red Clover, Lot 23732	Chicago, Ill.	F	99.94	0.02	93.00	3.50	2-31	135	F	Bracted plantain 9; curled dock 108; red sorrel 18
461	Hunger, C. G., Madison	Dickinson Co., The Albert	C	99.22	......	83.00	11.00	10-30	......	C	None
	Medium Red Clover, Lot 24647	Chicago, Ill.	F	99.07	0.04	75.00	19.50	2-31	2,349	F	Buckhorn 9
566	†Nading Grain Co., Adams	Dickinson Co., The Albert	C	99.72	......	95.00	......	11-30	......	C	None
	Mammoth Red Clover, Lot 23758	Chicago, Ill.	F	99.68	0.02	96.00	2.50	2-31	261	F	Curled dock 27; dodder 9; red sorrel 45
576	†Nading Grain Co., Adams	Dickinson Co., The Albert	C	99.00	......	95.00	......	11-30	......	C	None
	Medium Red Clover, Lot 24778	Chicago, Ill.	F	98.92	0.20	88.00	8.50	3-31	819	F	Yellow trefoil 9
988	Prichard & Rafert, Inc., Pendleton	Dickinson Co., The Albert	C	99.70	......	84.00	15.00	10-30	......	C	None
	Medium Red Clover, Lot 24650	Chicago, Ill.	F	99.58	0.20	88.00	8.50	4-31	747	F	Buckhorn 45; curled dock 45; dodder 27
989	Prichard & Rafert, Inc., Pendleton	Dickinson Co., The Albert	C	97.62	......	80.00	17.00	11-30	......	C	None
	Medium Red Clover, Lot 24693	Chicago, Ill.	F	97.70	0.00	89.50	8.00	4-31	2,844	F	Curled dock 54
1560	Prichard & Rafert, Inc., Pendleton	Dickinson Co., The Albert	C	97.16	......	82.00	13.00	2-31	......	C	Curled dock 64
	Medium Red Clover, Lot 24840	Chicago, Ill.	F	98.05	0.31	87.00	12.00	5-31	1,620	F	Curled dock 18; yellow trefoil 162

*Not labeled.
†Certified by retailer.

C and F stands, respectively, for Claimed and Found.
[71]Sample secured from Harry Tomson, R. R. 4, Greensburg.

RED CLOVER—Continued

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, per cent	Inert Matter, per cent	Germination, per cent	Hard Seeds, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds		Number per Pound of each of the Noxious Weed Seeds Specified in the Law
740	Riggs & Son, W. G., Sullivan	Dickinson Co., The Albert	C	93.20	......	77.00	18.00	11-30	......	C	None
	Red Clover, Lot 24700	Chicago, Ill.	F	94.51	0.12	84.00	14.00	4-31	5,949	F	Curled dock 9
1367	Strauss & Son, J. W., North Manchester	Dickinson Co., The Albert	C	99.34	......	74.00	18.00	2-31	....	C	None
	Medium Red Clover, Lot 24835	Chicago, Ill.	F	98.83	0.10	87.50	8.00	5-31	1,116	F	Dodder 27; yellow trefoil 9
965	Woodbury-Elliott Grain Co., Muncie	Dickinson Co., The Albert	C	93.20	......	77.00	18.00	11-30	....	C	None
	Medium Red Clover, Lot 24700	Chicago, Ill.	F	95.82	0.00	84.50	12.50	4-31	4,509	F	Curled dock 9
966	Woodbury-Elliott Grain Co., Muncie	Dickinson Co., The Albert	C	99.38	....	70.00	24.00	1-31	....	C	None
	Medium Red Clover, Lot 24804	Chicago, Ill.	F	99.00	0.20	82.00	14.00	4-31	1,548	F	Dodder 18
205	Woods & Pritch, Sheridan	Dickinson Co., The Albert	C	99.22	......	80.00	16.00	9-30	....	C	None
	Pine Tree Domestic Red Clover, Lot 24573	Chicago, Ill.	F	99.85	0.10	75.50	22.00	11-30	3,159	F	Common plantain 9
1140	Etna Lumber & Elevator Co., Etna Green	Etna Lumber & Elevator Co.	C	98.68	......	83.00	14.00	1-31	....	C	Curled dock 270; red sorrel 900
	Mammoth Red Clover, Lot A	Etna Green, Ind.	F	98.92	0.14	94.00	3.00	4-31	1,062	F	Curled dock 72; red sorrel 990
1145	Etna Lumber & Elevator Co., Etna Green	Etna Lumber & Elevator Co.	C	99.90	......	78.00	17.00	1-31	......	C	None
	Medium Red Clover, Lot B	Etna Green, Ind.	F	99.78	0.06	84.00	10.00	3-31	621	F	Bracted plantain 9; common plantain 54; red sorrel 18
1242	Farmers Elevator Co., Garrett[73]	Farmers Elevator Co.	C	99.08	......	86.50	......	2-31	....	C	Common plantain 540
	Medium Red Clover	Garrett, Ind.	F	97.33	1.01	94.50	3.00	4-31	9,090	F	Common plantain 6,030
1323	Farmers Elevator Co., South Whitley	Farmers Elevator Co.	C	95.95	......	92.00	6.50	2-31	....	C	None
	Little Red Clover, Lot 3500	South Whitley, Ind.	F	96.58	0.50	90.50	5.00	4-31	10,584	F	Buckhorn 99; common plantain 225
1533	Farmers Grain & Supply Co., Modoc	Farmers Grain & Supply Co.	C	99.36	......	90.00	......	3-31	....	C	Buckhorn 360; common plantain 1,440
	Medium Red Clover, Lot 15	Modoc, Ind.	F	98.80	0.34	80.00	13.00	5-31	4,698	F	Buckhorn 1,530; common plantain 2,250; curled dock 9; wild carrot 9
397	Farmers Grain & Supply Co., Windfall	Farmers Grain & Supply Co.	C	99.42	......	87.00	9.00	10-30	....	C	None
	Medium Red Clover, Lot 1	Windfall, Ind.	F	99.11	0.10	91.00	4.00	2-31	3,438	F	Curled dock 18
1097	Heise Brothers & Co., Mitchell	Foster-Kendall Co.	C	99.40	......	89.00	7.00	12-30	....	C	None
	Mammoth Red Clover	Carmel, Ind.	F	99.06	0.12	89.50	3.00	4-31	72	F	Buckhorn 54; curled dock 18
722	Masters, Chas. S., Brookville	Foster-Kendall Co.	C	99.40	......	87.00	9.00	12-30	....	C	Curled dock 18
	Mammoth Red Clover	Carmel, Ind.	F	99.80	0.14	88.50	6.00	3-31	18	F	Common plantain 18
1531	Crete Elevator Co., The, Crete	Goodrich Brothers	C	99.00	......	90.00	......	12-30	....	C	Buckhorn 360; curled dock 180
	Medium Red Clover, Lot Lark	Winchester, Ind.	F	99.08	0.48	90.00	5.00	4-31	549	F	Buckhorn 27; common plantain 81; curled dock 36; red sorrel 45

1524	Goodrich Brothers, Farmland	Goodrich Brothers	C	99.46	......	92.00	......	1-31	....	C	None
	Mammoth Red Clover, Lot 107	Winchester, Ind.	F	98.70	0.72	88.50	3.50	4-31	729	F	Buckhorn 207; common plantain 117; curled dock 18; mustard 9; red sorrel 9; wild carrot 9
1525	Goodrich Brothers, Farmland[74]	Goodrich Brothers	C	99.48	......	96.00	......	1-31	....	C	Common plantain 90
	Medium Red Clover, Lot Lark 205	Winchester, Ind.	F	98.39	0.33	90.50	2.50	4-31	792	F	Buckhorn 153; curled dock 9
1485	Mexico Elevator Co., Mexico	Goodrich Brothers	C	99.50	......	94.00	......	1-31	....	C	None
	Medium Red Clover, Lot Lark	Winchester, Ind.	F	99.12	0.28	93.00	2.00	4-31	1,638	F	Bracted plantain 9; buckhorn 54; common plantain 144; curled dock 45; red sorrel 18; dodder 9; wild carrot 9
1401	Wynn, Arlie S., Rochester	Goodrich Brothers	C	99.50	......	90.00	......	12-30	....	C	None
	Medium Red Clover, Lot Lark	Winchester, Ind.	F	99.78	0.14	85.00	9.50	3-31	99	F	Common plantain 9
1406	Wynn, Arlie S., Rochester	Goodrich Brothers	C	99.74	......	90.00	......	12-30	....	C	None
	Mammoth Red Clover, Lot Lark	Winchester, Ind.	F	99.11	0.20	91.00	2.50	4-31	297	F	Buckhorn 18; curled dock 72; red sorrel 27
1472	Spurgin, Archie B., Columbus	Goodrich Brothers	C	99.20	......	94.00	......	12-30	....	C	None
	Medium Red Clover, Lot 106	Winchester, Ind.	F	99.38	0.28	90 00	5.00	4-31	558	F	Bracted plantain 9; buckhorn 18; common plantain 54; curled dock 189; red sorrel 18
1473	Spurgin, Archie B., Columbus	Goodrich Brothers	C	99 24	......	94.00	......	12-30	....	C	None
	Mammoth Red Clover, Lot Lark	Winchester, Ind.	F	99.06	0.20	86.50	5.50	4-31	684	F	Buckhorn 9; common plantain 18; curled dock 90; red sorrel 27
1457	Disney, Hursel, Rte. 3, Danville	Guthrie, Frank E.	C	97 00	......	87.00	......	1-31	....	C	None
	Mammoth Red Clover	Danville, Ind.	F	98.08	1.48	91.50	3.00	4-31	4,761	F	Buckhorn 9; common plantain 4,230; curled dock 252
1507	Stevenson, Raymond, R. R., Danville[75]	Guthrie, Frank E.	C	90 00	......	77.00	18.00	3-31	....	C	None
	Red Clover	Danville, Ind.	F	97.86	1.92	91.50	7.50	4-31	1,530	F	Buckhorn 45; common plantain 1,350; curled dock 18; wild carrot 27
1368	Haldeman-Baum Co., Akron[75A]	Haldeman-Baum Co.	C	99.50	......	78.00	8 50	1-31	....	C	Buckhorn 90; common plantain 90; red sorrel 180
	Medium Red Clover, Lot 37627	Akron, Ind.	F	98.13	0 60	86 50	11 00	4-31	4,194	F	Buckhorn 90; common plantain 36; red sorrel 18
1377	Haldeman-Baum Co., Akron	Haldeman-Baum Co.	C	99.30	......	86.50	7.50	2-31	....	C	Buckhorn 270; curled dock 90; dodder 90; red sorrel 630
	Mammoth Red Clover, Lot 38077	Akron, Ind.	F	99.54	0.12	90.50	8.50	4 31	2,277	F	Buckhorn 153; common plantain 180; curled dock 234; red sorrel 1,440

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*Not labeled.

†Certified by retailer.

C and F stands, respectively, for Claimed and Found.

[73] Removed from sale. Misbranded. Retagged.

[74] Removed from sale. Misbranded. All sold.

[75] Removed from sale. Misbranded.

[75A] Removed from sale. Misbranded. Retagged.

RED CLOVER—Continued

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor	Purity, per cent	Inert Matter, per cent	Germination, per cent	Hard Seeds, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds	Number per Pound of each of the Noxious Weed Seeds Specified in the Law
1505	Cauble, O. L., Pekin[76]	Hardin, Hamilton & Lewman ... C	97.50	......	90.00	......	12–30	....	C None
	Red Clover, Lot Mary	Louisville, Ky. ... F	91.42	0.85	80.50	7.50	4–31	9,045	F Bracted plantain 27; buckhorn 729; chicory 9; common plantain 108; curled dock 450; dodder 27; mustard 9; red sorrel 171; wild carrot 135
1223	Stoy & Heishman, Corydon[77]	Hardin, Hamilton & Lewman ... C	95.00	......	98.00	......	1–31	....	C None
	Red Clover, Lot 85	Louisville, Ky. ... F	96.04	0.64	82.00	5.00	3–31	5,805	F Bracted plantain 18; buckhorn 432; chicory 9; common plantain 81; curled dock 216; dodder 27; red sorrel 189; wild carrot 108; yellow trefoil 45
1224	†Farmers Service Station, Corydon[78]	Hardin, Hamilton & Lewman ... C	95.00	......	90.00	......	1–31	....	C None
	Red Clover	Louisville, Ky. ... F	93.16	0.86	58.00	5.50	3–31	19,053	F Bracted plantain 45; buckhorn 99; Canada thistle 18; common plantain 117; curled dock 1,620; dodder 99; prickly lettuce 27; red sorrel 2,430; wild carrot 36; yellow trefoil 63
1137	Harlan Grain Co., Kentland[79]	Harlan Grain Co. ... C	98.12	......	66.00	9.00	10–30	....	C Buckhorn 180; common plantain 2,160; curled dock 360
	Little Red Clover, Lot 1	Kentland, Ind. ... F	96.87	2.12	89.50	2.00	4–31	3,528	F Buckhorn 333; common plantain 2,160; curled dock 198; wild carrot 27
468	Haynes Milling Co., The, Portland[80]	Haynes Milling Co., The ... C	99.80	......	95.00	4.00	1–31	....	C None
	Medium Red Clover, Lot H	Portland, Ind. ... F	99.10	0.45	83.00	7.50	2–31	864	F Bracted plantain 9; buckhorn 72; common plantain 459; curled dock 18; dodder 18; wild carrot 18
473	Haynes Milling Co., The, Portland[81]	Haynes Milling Co., The ... C	99.50	......	96.00	......	2–29	....	C Canada thistle 180; curled dock 90
	Mammoth Red Clover, Lot B	Portland, Ind. ... F	95.77	0.76	76.50	17.00	2–31	1,053	F Buckhorn 27; common plantain 135; curled dock 297; mustard 45; yellow trefoil 9
859	Heldt Co., The, Evansville	Heldt Co., The ... C	95.85	......	90.00	7.00	1–31	....	C Buckhorn 90; yellow trefoil 270
	Red Clover, Lot 2160	Evansville, Ind. ... F	95.86	0.32	85.00	12.50	3–31	1,674	F Curled dock 288; dodder 9; yellow trefoil 207

65	Murphy & Co., Princeton Red Clover, Lot 2,166	Heldt Co., The Evansville, Ind.	C	97.32	......	90.00	6.00	1-31	......	C	Buckhorn 2,880; common plantain 4,410; curled dock 180
			F	95.46	0.70	83.00	14.00	4-31	15,048	F	Bracted plantain 36; buckhorn 14,310; common plantain 702
770	Murphy & Co., Princeton Red Clover, Lot 2160	Heldt Co., The Evansville, Ind.	C	95.85	......	90.00	6.00	1-31	......	C	Buckhorn 90; yellow trefoil 270
			F	95.33	0.18	86.50	11.50	3-31	1,494	F	Canada thistle 18; curled dock 99; yellow trefoil 207
764	Strain, A. F., Princeton Red Clover, Lot 2154	Heldt Co., The Evansville, Ind.	C	99.31	......	90.00	5.00	1-31	......	C	Buckhorn 90
			F	99.38	0.50	89.00	4.00	3-31	702	F	Buckhorn 288; common plantain 405; curled dock 9
829	Heldt & Voelker Co., The, Evansville Red Clover, Lot 9888	Heldt & Voelker Co., The Evansville, Ind.	C	98.32	......	85.00	7.00	2-31	......	C	Buckhorn 5,490
			F	97.59	0.28	86.50	9.00	3-31	927	F	Buckhorn 792; common plantain 135
830	Heldt & Voelker Co., The, Evansville Red Clover, Lot 9889	Heldt & Voelker Co., The Evansville, Ind.	C	99.63	......	85.00	......	2-31	......	C	Buckhorn 90
			F	99.72	0.26	84.00	13.50	3-31	99	F	Buckhorn 90; dodder 9
1170	Hoosier Hardware Co., Paoli Sapling Red Clover, Lot 2	Hemmerlein, Edw. Dubois, Ind.	C	99.20	......	91.00	......	12-30	......	C	Bracted plantain 32; buckhorn 420; common plantain 56; curled dock 14
			F	98.77	0.34	88.00	8.00	4-31	2,853	F	Bracted plantain 18; buckhorn 2,520; curled dock 36; red sorrel 180; wild carrot 9
1588	Ayres Seed Co., Cambridge City Red Clover, Lot 2179	Hersch & Sons, Henry Toledo, Ohio	C	95.00	......	87.00	7.00	2-31	......	C	None
			F	96.33	0.30	83.00	15.50	4-31	1,863	F	Curled dock 45; dodder 18
1497	Wells Co. Farm Bureau Coop. Ass'n, Inc., Bluffton Medium Red Clover	Hoosier Grain & Supply Co. Bluffton, Ind.	C	99.66	......	94.00	6.00	1-31	......	C	None
			F	99.68	0.12	95.00	2.00	4-31	657	F	Buckhorn 63; dodder 54
666	Bunker Hill Elevator Co., Bunker Hill Medium Red Clover, Lot M244	Hooton-Davis Seed Co. Lebanon, Ind.	C	99.72	......	93.00	5.00	11-30	......	C	None
			F	99.60	0.24	90.50	7.50	3-31	405	F	Buckhorn 36; wild carrot 9
115	Chance Brothers, Connersville Mammoth Red Clover, Lot 175	Hooton-Davis Seed Co. Lebanon, Ind.	C	99.24	......	89.00	6.00	11-29	......	C	None
			F	99.62	0.24	94.50	2.00	9-30	45	F	Curled dock 36; field dodder 9
1021	Doty Hardware Co., Brownsburg Medium Red Clover, Lot M242	Hooton-Davis Seed Co. Lebanon, Ind.	C	99.25	......	91.00	4.00	11-30	......	C	None
			F	98.84	0.42	94.00	2.00	4-31	801	F	Buckhorn 45; dodder 9; wild carrot 18; yellow trefoil 9
1047	Farmers Feed & Coal Co., Bloomington Mammoth Red Clover, Lot E259	Hooton-Davis Seed Co. Lebanon, Ind.	C	98.54	......	90.00	3.00	12-30	......	C	None
			F	97.90	0.18	92.50	1.50	4-31	756	F	Curled dock 18; mustard 9; red sorrel 9
938	Farmers Grain Co., Pershing Medium Red Clover, Lot M247	Hooton-Davis Seed Co. Lebanon, Ind.	C	99.60	......	92.00	4.00	1-31	......	C	None
			F	99.54	0.16	87.00	9.00	4-31	522	F	Buckhorn 72
1458	†Farmers Supply Co., Danville Medium Red Clover, Lot M249	Hooton-Davis Seed Co. Lebanon, Ind.	C	99.50	......	86.00	8.00	11-30	......	C	None
			F	99.62	0.20	90.00	6.50	4-31	198	F	Buckhorn 18; curled dock 36; dodder 18; red sorrel 36

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*Not labeled.

†Certified by retailer.

C and F stands, respectively, for Claimed and Found.

[76] Removed from sale. Misbranded. All sold.

[77] Removed from sale. Misbranded. Sample secured from Farmers Service Station, Corydon, Ind.

[78] Removed from sale. Misbranded.

[79] Removed from sale. Misbranded. Part sold. Part retagged.

[80] Removed from sale. Misbranded.

[81] Removed from sale. Misbranded.

RED CLOVER—Continued

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, per cent	Inert Matter, per cent	Germination, per cent	Hard Seeds, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds		Number per Pound of each of the Noxious Weed Seeds Specified in the Law
943	Frazier & Sanders, Newcastle Mammoth Red Clover, Lot E256	Hooton-Davis Seed Co. Lebanon, Ind.	C	99.71	......	90.00	2.00	12-30	....	C	None
			F	99.90	0.04	95.00	2.00	4-31	....	F	None
696	Hunter & Son, Wm., Versailles Mammoth Red Clover, Lot E259	Hooton-Davis Seed Co. Lebanon, Ind.	C	98.54	......	90.00	2.00	12-30	....	C	None
			F	98.15	0.16	94.00	0.50	4-31	1,179	F	Buckhorn 18; common plantain 36; curled dock 27; mustard 18
1557	Oneal, W. S., Rushville Medium Red Clover, Lot M254	Hooton-Davis Seed Co. Lebanon, Ind.	C	99.00	......	89.00	2.00	12-30	....	C	None
			F	98.29	0.40	89.50	2.50	5-31	1,746	F	Buckhorn 108; curled dock 9; dodder 27; red sorrel 45; yellow trefoil 27
1270	Huntertown Grain Co., Huntertown Medium Red Clover, Lot 38178	Huntertown Grain Co. Huntertown, Ind.	C	98.96	......	90.00	9.50	2-	....	C	Buckhorn 180; common plantain 1,170
			F	99.42	0.40	83.50	12.00	5-31	513	F	Common plantain 180; curled dock 18; wild carrot 45
134	Carroll County Farm Bureau Coop. Ass'n, Inc., Delphi[32] Medium Red Clover, Lot RC146	Indiana Farm Bureau Coop. Ass'n, Inc. Indianapolis, Ind.	C	99.25	......	80.00	15.00	2-30	....	C	None
			F	98.96	0.36	85.00	13.00	9-30	1,881	F	Buckhorn 18; curled dock 153; yellow trefoil 900
816	Fayette County Farm Bureau, Connersville Mammoth Red Clover, Lot MC250	Indiana Farm Bureau Coop. Ass'n, Inc. Indianapolis, Ind.	C	99.40	......	85.00	9.00	1-31	....	C	None
			F	99.68	0.16	94.00	3.00	3-31	198	F	Buckhorn 72; curled dock 27; dodder 9
820	Fayette County Farm Bureau, Connersville Medium Red Clover, Lot RC154	Indiana Farm Bureau Coop. Ass'n, Inc. Indianapolis, Ind.	C	99.00	......	80.00	15.00	1-31	....	C	None
			F	98.47	0.46	88.00	10.50	3-31	3,825	F	Curled dock 45
1553	Hancock County Farm Bureau Coop. Ass'n, Inc., Greenfield Medium Red Clover, Lot RC150	Indiana Farm Bureau Coop. Ass'n, Inc. Indianapolis, Ind.	C	99.36	......	80.00	15.00	11-30	....	C	None
			F	99.20	0.40	79.00	18.50	5-31	162	F	Curled dock 72
920	Henry County Farm Bureau, Newcastle Mammoth Red Clover, Lot MC251	Indiana Farm Bureau Coop. Ass'n, Inc. Indianapolis, Ind.	C	99.50	......	87.00	7.00	1-31	....	C	None
			F	99.74	0.08	87.50	7.50	4-31	189	F	Common plantain 81; curled dock 18
923	Henry County Farm Bureau, Newcastle Medium Red Clover, Lot RC154	Indiana Farm Bureau Coop. Ass'n, Inc. Indianapolis, Ind.	C	99.00	......	80.00	15.00	1-31	....	C	None
			F	98.63	0.40	91.00	6.00	4-31	3,879	F	Curled dock 9
415	Johnson Co. Farm Bureau Coop. Ass'n, Inc., Franklin Medium Red Clover, Lot RC154	Indiana Farm Bureau Coop. Ass'n, Inc. Indianapolis, Ind.	C	99.00	......	80.00	14.00	1-31	....	C	None
			F	98.72	0.47	91.00	3.00	1-31	3,258	F	Curled dock 18

1447	Johnson Co. Farm Bureau Coop. Ass'n, Inc., Franklin	Indiana Farm Bureau Coop. Ass'n, Inc.	C	99.50	......	74.00	20.00	12–30	....	C	None
	Medium Red Clover, Lot RC152	Indianapolis, Ind.	F	99.60	0.12	76.00	21.00	5–31	756	F	Curled dock 9; dodder 9; yellow trefoil 18
1060	Morgan Co. Farm Bureau Coop. Ass'n, Inc., Martinsville	Indiana Farm Bureau Coop. Ass'n, Inc.	C	99.00	......	80.00	15.00	1–31	....	C	None
	Medium Red Clover, Lot RC154	Indianapolis, Ind.	F	98.20	0.63	92.50	4.00	4–31	3,627	F	Curled dock 27
140	Vigo Co. Farm Bureau Coop. Ass'n, Inc., Terre Haute	Indiana Farm Bureau Coop. Ass'n, Inc.	C	99.25	......	80.00	15.00	2–30	....	C	None
	Medium Red Clover, Lot RC146	Indianapolis, Ind.	F	98.95	0.42	77.50	12.50	9–30	1,215	F	Curled dock 108; yellow trefoil 387
1053	Clark Feed Store, Bloomington	Indiana Seed Co.	C	96.74	......	90.00	3.00	12–30	....	C	Common plantain 90; curled dock 90
	Medium Red Clover, Lot C	Indianapolis, Ind.	F	97.17	0.56	84.50	7.50	4–31	1,494	F	Bracted plantain 27; common plantain 216; curled dock 63; dodder 9; red sorrel 9; yellow trefoil 9
660	Everett Seed Store, Indianapolis	Indiana Seed Co.	C	99.25	......	83.00	7.00	12–30	....	C	None
	Mammoth Red Clover, Lot 4	Indianapolis, Ind.	F	99.61	0.21	93.00	2.00	3–31	333	F	Buckhorn 27; common plantain 27; red sorrel 9
1355	Greger, A. C., Brownstown[83]	Indiana Seed Co.	C	99.00	......	83.00	13.00	12–30	....	C	None
	Medium Red Clover, Lot 502	Indianapolis, Ind.	F	97.57	1.27	75.50	17.00	5–31	1,728	F	Common plantain 81; curled dock 27
713	Krick & Sons, A., Milan[84]	Indiana Seed Co.	C	99.25	......	82.00	10.00	8–30	....	C	Buckhorn 90; curled dock 90
	Mammoth Red Clover, Lot 1422	Indianapolis, Ind.	F	98.76	0.59	89.00	3.00	4–31	2,097	F	Bracted plantain 27; buckhorn 171; common plantain 1,530; curled dock 126; dodder 9; wild carrot 54
1386	Seymour Hardware Co., Seymour	Indiana Seed Co.	C	99.25	......	85.00	9.00	1–31	....	C	None
	Mammoth Red Clover, Lot 1521	Indianapolis, Ind,	F	98.73	0.10	87.50	10.00	3–31	54	F	Curled dock 54
1631	*Davenport, Alonzo, Richmond[84A]	Kansas Seed Co.	C	......	......	......	......	......	....	C	
	Little Red Clover	Salina, Kan.	F	70.10	5.68	45.50	3.00	7–31	49,710	F	Bracted plantain 288; buckhorn 5,310; chicory 9; common plantain 414; curled dock 3,330; dodder 4,500; mustard 27; quack grass 9; red sorrel 243; wild carrot 63; yellow trefoil243
1449	Kenworthy & Son, Monrovia	Kenworthy & Son	C	99.25	......	87.00	8.00	2–31	....	C	Curled dock 27
	Medium Red Clover, Lot 15	Monrovia, Ind.	F	99.66	0.26	86.50	12.50	4–31	171	F	Buckhorn 9; common plantain 36; curled dock 108; dodder 9; wild carrot 9
1491	King Elevator Co., Wabash	King Elevator Co.	C	99.10	......	87.00	9.00	2–31	....	C	Buckhorn 180; common plantain 720; curled dock 180
	Medium Red Clover, Lot 38076	Wabash, Ind.	F	99.68	0.22	92.00	5.50	4–31	540	F	Buckhorn 9; common plantain 54; curled dock 27

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*Not labeled.

†Certified by retailer.

C and F stands, respectively, for Claimed and Found.

[82] Sample secured from Carroll Co. Farm Bureau Coop. Ass'n, Inc., Camden, Ind.

[83] Removed from sale. Misbranded. All sold.

[84] Removed from sale. Misbranded. Retagged.

[84A] Contains 9.77% Alfalfa with 56.0% Germination and 4.5% Hard Seeds. Not tagged.

RED CLOVER—Continued

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, per cent	Inert Matter, per cent	Germination, per cent	Hard Seeds, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds		Number per Pound of each of the Noxious Weed Seeds Specified in the Law
892	Farmers Coop. Co., Centerville	Kraus & Apfelbaum, Inc.	C	99.70	......	87.00	5.00	12-30	......	C	None
	Medium Red Clover, Lot 21	Ft. Wayne, Ind.	F	99.14	0.18	93.50	5.00	3-31	774	F	Buckhorn 126; common plantain 135; curled dock 9; dodder 27; mustard 18; red sorrel 9
430	Farmers Grain Co., Liberty Center	Kraus & Apfelbaum, Inc.	C	99.72	......	89.00	3.00	2-29	......	C	None
	Mammoth Red Clover, Lot 18A	Ft. Wayne, Ind.	F	99.50	0.22	85.00	0.50	1-31	360	F	Buckhorn 45; curled dock 117; red sorrel 18
1593	Hunt, Arthur, Ridgeville & Adamson, E. B., Hagerstown	Kraus & Apfelbaum, Inc.	C	99.50	......	86.00	7.00			C	None
	Red Clover, Lot 28	Ft. Wayne, Ind.	F	99.04	0.41	91.00	5.50	4-31	2,673	F	Buckhorn 36; common plantain 990; curled dock 18; dodder 9
1244	Kraus & Apfelbaum, Inc., Auburn	Kraus & Apfelbaum, Inc.	C	99.75	......	86.00	7.00	2-31	......	C	None
	Medium Red Clover, Lot 26	Ft. Wayne, Ind.	F	99.68	0.20	94.00	3.00	3-31	315	F	Buckhorn 81; common plantain 27; curled dock 9; red sorrel 18
1279	Trembley & Co., The S. F., Columbia City	Kraus & Apfelbaum, Inc.	C	99.50	......	86.00	7.00	2-31	......	C	None
	Medium Clover, Lot 28	Ft. Wayne, Ind.	F	99.10	0.28	93.00	3.50	3-31	2,178	F	Buckhorn 9; red sorrel 9
133	*Beach & Simmers, Albany[85]	Kraus, Sam	C	......	......	......	......	......	......	C	
	Red Clover	Ft. Wayne, Ind.	F	97.24	0.24	78.50	14.50	9-30	765	F	Buckhorn 18; common plantain 18 curled dock 9
472	Beach & Simmers, Albany	Kraus, Sam	C	99.50	......	92.00	......	9-30	......	C	None
	Medium Red Clover, Lot 37	Ft. Wayne, Ind.	F	99.60	0.10	89.00	6.50	2-31	9	F	Dodder 9
427	Farmers Grain Co., Liberty Center	Kraus, Sam	C	99.50	......	92.00	......	9-30	......	C	None
	Medium Red Clover, Lot 37	Ft. Wayne, Ind.	F	99.80	0.16	92.50	3.00	1-31	18	F	Dodder 18
874	Richmond Feed Milling Co., Richmond	Kraus, Sam	C	99.50	......	83.05	12.00	1-31	......	C	Buckhorn 90; common plantain 90; red sorrel 90
	Medium Red Clover, Lot 60SK	Ft. Wayne, Ind.	F	98.76	0.16	89.00	5.00	4-31	3,681	F	Buckhorn 234; common plantain 153; dodder 9; red sorrel 45
581	*Craig, Edgar, R. R. 8, Greensburg	Lake & Reagan	C	......	......	......	......	......	......	C	
	Medium Red Clover	Colfax, Ind.	F	99.62	0.08	78.50	19.00	2-31	828	F	Common plantain 108; curled dock 90
583	*Craig, Edgar, R. R. 8, Greensburg	Lake & Reagan	C	......	......	......	......	......	......	C	
	Big English Clover	Colfax, Ind.	F	99.54	0.20	87.50	7.00	2-31	990	F	Curled dock 900
571	*Hamilton, Curtis, R. R. 2, Greensburg	Lake & Reagan	C	......	......	......	......	......	......	C	
	Big English Red Clover	Colfax, Ind.	F	98.80	0.14	94.50	2.00	2-31	2,097	F	Buckhorn 1,800; curled dock 207

585	*Harrison, Clifford, Greensburg	Lake & Reagan	C	......	......	......	......	......	......	C	
	Mammoth Red Clover	Colfax, Ind	F	98.30	0.39	84.00	10.00	2-31	1,404	F	Bracted plantain 9; buckhorn 1,350; common plantain 9; curled dock 36
568	*Maudlin, Jess R., Greensburg	Lake & Reagan	C	......	......	......	......	......	......	C	
	Medium Red Clover	Colfax, Ind	F	99.78	0.10	82.50	14.50	2-31	477	F	Buckhorn 18; common plantain 459
573	*Patterson, Chas., R. R. 1, St. Paul	Lake & Reagan	C	......	......	......	......	......	......	C	
	Big English Clover	Colfax, Ind	F	98.64	0.04	92.50	5.00	2-31	5,391	F	Common plantain 27; curled dock 5,310; red sorrel 54
567	*Reed, Francis W., R. R. 2, Greensburg	Lake & Reagan	C	......	......	......	......	......	......	C	
	Medium Red Clover	Colfax, Ind	F	99.72	0.08	84.00	11.00	2-31	666	F	Buckhorn 45; common plantain 522; curled dock 9
579	*Reed, George N., R. R. 2, Greensburg	Lake & Reagan	C	......	......	......	......	......	......	C	
	Mammoth Red Clover	Colfax, Ind	F	98.93	0.28	93.00	2.50	2-31	3,024	F	Common plantain 45; curled dock 2,610; red sorrel 9
580	*Reed, George N., R. R. 2, Greensburg	Lake & Reagan	C	......	......	......	......	......	......	C	
	Medium Red Clover	Colfax, Ind	F	99.74	0.12	77.00	15.00	2-31	369	F	Buckhorn 27; common plantain 27; dodder 72; wild carrot 63
575	*Robins, Earl, R. R. 5, Greensburg	Lake & Reagan	C	......	......	......	......	......	......	C	
	Big English Red Clover	Colfax, Ind	F	98.92	0.46	90.00	4.00	2-31	1,242	F	Buckhorn 261; common plantain 171; curled dock 720
572	*Sparks, Joe, R. R. 2, Greensburg	Lake & Reagan	C	......	......	......	......	......	......	C	
	Medium Red Clover	Colfax, Ind	F	99.39	0.12	83.00	16.00	2-31	1,656	F	Buckhorn 117; common plantain 90; curled dock 9
569	*Templeton, Gordon, R. R. 2, Greensburg	Lake & Reagan	C	......	......	......	......	......	......	C	
	Red Clover	Colfax, Ind	F	99.86	0.08	79.50	17.50	2-31	9	F	Curled dock 9
733	Lash Milling Co., Farmersburg	Lash Milling Co.	C	98.00	......	95.00	......	1-31	......	C	Buckhorn 450
	Red Clover, Lot 1	Farmersburg, Ind	F	99.11	0.10	86.50	9.50	4-31	2,601	F	Bracted plantain 36; buckhorn 2,430; common plantain 117; curled dock 9; dodder 9
536	McCarty Seed Co., J. A., Terre Haute	McCarty Seed Co., J. A.	C	99.76	......	90.00	......	1-31	......	C	Buckhorn 24; curled dock 16; red sorrel 64
	"Lucky Jim" Red Clover, Lot 2408	Evansville, Ind	F	99.66	0.30	92.50	4.00	2-31	792	F	Bracted plantain 63; buckhorn 180; common plantain 441; curled dock 18
537	McCarty Seed Co., J. A., Terre Haute	McCarty Seed Co., J. A.	C	98.88	......	84.00	11.00	11-30	......	C	None
	Mammoth Red Clover, Lot 2387	Evansville, Ind	F	99.17	0.00	93.00	7.00	2-31	36	F	Buckhorn 9; curled dock 18; red sorrel 9
254	Castner Hardware Co., Holton[86]	McCullough Seed Co., The J. Chas.	C	99.00	......	84.00	12.00	8-30	......	C	Buckhorn 9; common plantain 9
	Domestic Red Clover, Lot 4398	Cincinnati, Ohio	F	97.88	0.70	82.00	11.50	11-30	423	F	Buckhorn 36; common plantain 54; curled dock 234; field dodder 9

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*Not labeled.
†Certified by retailer.
C and F stands, respectively, for Claimed and Found.

[85] Returned to Distributor.
[86] Removed from sale. Misbranded. Returned to Distributor.

RED CLOVER—Continued

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor	Purity, per cent	Inert Matter, per cent	Germination, per cent	Hard Seeds, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds	Number per Pound of each of the Noxious Weed Seeds Specified in the Law
255	Castner Hardware Co., Holton[87]	McCullough Seed Co., The J. Chas. C	99.27	......	86.00	11.00	8-30	....	C Buckhorn 18; common plantain 90; curled dock 180
	Mammoth Red Clover, Lot 4240	Cincinnati, Ohio F	97.84	0.59	82.00	12.00	11-30	486	F Buckhorn 36; common plantain 99; curled dock 252; red sorrel 9
710	Gaudin, George, Vevay	McCullough Seed Co., The J. Chas. C	99.30	......	84.00	13.00	1-31	....	C Curled dock 180
	Sapling Red Clover, Lot 4467	Cincinnati, Ohio F	99.15	0.30	85.00	9.50	4-31	126	F Buckhorn 18; curled dock 90; mustard 9; red sorrel 9
700	Hunter & Son, William, Versailles	McCullough Seed Co., The J. Chas. C	99.20	......	82.00	8.00	12-30	....	C None
	Domestic Red Clover, Lot 4699	Cincinnati, Ohio F	99.19	0.65	77.50	17.00	4-31	198	F Common plantain 18
691	Pieper & Smith, Dillsboro	McCullough Seed Co., The J. Chas. C	99.20	......	82.00	8.00	12-30	....	C None
	Domestic Red Clover, Lot 4699	Cincinnati, Ohio F	99.22	0.68	85.50	6.00	3-31	117	F Buckhorn 18; common plantain 90; red sorrel 9
1529	Schmocker, John, Batesville	McCullough Seed Co., The J. Chas. C	99.50	......	82.00	11.00	2-31	....	C None
	Domestic Red Clover, Lot 7697	Cincinnati, Ohio F	99.58	0.28	82.00	14.50	4-31	117	F Buckhorn 18; curled dock 9
478	Sawden, R. A., Aurora	McCullough Seed Co., The J. Chas. C	99.00	......	84.00	12.00	8-30	....	C Buckhorn 9; common plantain 9
	Domestic Red Clover, Lot 4398	Cincinnati, Ohio F	98.68	0.47	86.00	8.50	2-31	592	F Common plantain 72; curled dock 342
1152	McMahan Seed Co., The, Valparaiso	McMahan Seed Co., The C	99.40	......	93.00	......	1-31	....	C None
	Medium Red Clover, Lot A	Valparaiso, Ind. F	99.38	0.40	86.00	5.50	3-31	549	F Bracted plantain 9; buckhorn 27; common plantain 45; curled dock 9; red sorrel 99
1155	McMahan Seed Co., The, Valparaiso	McMahan Seed Co., The C	99.50	......	94.00	2.00	1-31	....	C None
	Medium Red Clover, Lot B	Valparaiso, Ind. F	99.57	0.37	82.00	14.50	3-31	99	F Buckhorn 9; common plantain 90
1160	McMahan Seed Co., The, Valparaiso[88]	McMahan Seed Co., The C	99.60	......	95.00	2.00	1-31	....	C None
	Mammoth Red Clover, Lot MA	Valparaiso, Ind. F	99.32	0.44	92.50	2.00	3-31	927	F Curled dock 18; red sorrel 639
906	Boonshot Hardware Co., Petersburg[89]	Manglesdorf & Brothers, Ed. C	98.56	......	90.00	......	12-30	....	C Curled dock 1,405
	Red Clover, Lot 8000	St. Louis, Mo. F	96.51	0.71	84.00	6.50	4-31	1,431	F Buckhorn 9; curled dock 45; dodder 18; yellow trefoil 9
848	Muff Grain & Coal Co., Liberty[90]	Manthey's Seed Store C	99.00	......	94.00	2.00	12-30	....	C None
	Red Clover, Lot Mal	Cincinnati, Ohio F	96.92	0.74	81.00	13.50	3-31	1,926	F Bracted plantain 72; buckhorn 54; common plantain 1,170; curled dock 153; red sorrel 9; yellow trefoil 18
446	Marshall Cement & Grain Co., Greencastle	Marshall Cement & Grain Co. C	97.00	......	90.00	......	10-30	....	C Buckhorn 90; common plantain 240
	Mammoth Red Clover, Lot Huber	Greencastle, Ind. F	99.47	0.47	89.50	6.50	2-31	252	F Buckhorn 243; common plantain 9

1261	Mayer Grain Co., Churubusco	Mayer Grain Co.	C	99.50		88.00	6.00	1-31		C	None
	Medium Red Clover, Lot AA	South Whitley, Ind.	F	99.60	0.22	92.50	7.00	3-31	504	F	Buckhorn 27; curled dock 9; red sorrel 108
1332	Mayer Grain Co., South Whitley	Mayer Grain Co.	C	99.50		88.00	6.00	1-31		C	None
	Medium Red Clover, Lot 1AA	South Whitley, Ind.	F	99.78	0.04	88.50	8.00	3-31	270	F	Buckhorn 27; curled dock 9; red sorrel 54
1469	Mayer Grain Co., South Whitley	Mayer Grain Co.	C	99.50		86.00	6.00	1-31		C	None
	Mammoth Red Clover, Lot AA	South Whitley, Ind.	F	99.80	0.02	92.50	4.50	4-31	369	F	Curled dock 9; dodder 27; red sorrel 153
1487	Brooker, Walter, R. R. 7, Rochester[91]	Merkett Elevator, John	C							C	
	Little Red Clover	Leiters Ford, Ind.	F	94.06	0.14	82.50	16.00	4-31	35,748	F	Bracted plantain 252; buckhorn 36; curled dock 1,890; red sorrel 33,210
780	Moll, J. J., Mt. Vernon	Moll, J. J.	C	99.00		94.00		1-31		C	Buckhorn 420; curled dock 20
	Red clover, Lot 1	Mt. Vernon, Ind.	F	99.28	0.18	88.50	6.50	4-31	1,881	F	Buckhorn 1,350; dodder 81
709	Culbertson, Clyde, Vevay[92]	National Seed Co.	C	99.25		92.00				C	None
	Red Clover, Lot 1726	Louisville, Ky.	F	99.48	0.20	91.00	7.00	2-31	738	F	Buckhorn 36; curled dock 135; red sorrel 387
813	†Chance Brothers, Connersville	Northern Field Seed Co.	C	98.74		93.00		1-31		C	None
	Medium Red Clover, Lot Bob	Winona, Minn.	F	97.69	0.36	87.00	5.00	3-31	2,430	F	Buckhorn 99; common plantain 90; curled dock 81; red sorrel 90
1210	Turley, James E., English[93]	Northern Field Seed Co.	C	94.32		90.00		1-31		C	None
	Red Clover, Lot Mate	Winona, Minn.	F	89.26	0.63	84.50	11.50	4-31	8,856	F	Curled dock 162; prickly lettuce 18; yellow trefoil 126
955	Daviess Co. Farm Bureau, Inc., Washington	Ohio Valley Seed Co.	C	99.80		93.00		1-31		C	Buckhorn 135; curled dock 90
	Red Clover, Lot F65	Evansville, Ind.	F	99.84	0.06	86.50	9.50	3-31	414	F	Buckhorn 126; dodder 18
1220	Graves Implement Store, Tell City	Ohio Valley Seed Co.	C	97.00		88.00		2-31		C	Buckhorn 400; common plantain 450; curled dock 900
	Red Clover, Lot E431A	Evansville, Ind.	F	97.88	0.59	81.50	5.50	4-31	4,347	F	Buckhorn 2,700; common plantain 117; curled dock 369; dodder 72; red sorrel 9
902	Kelle, E. C., Somerville	Ohio Valley Seed Co.	C	99.65		90.00		1-31		C	Buckhorn 135
	Red Clover, Lot E638	Evansville, Ind.	F	99.50	0.04	86.50	11.50	4-31	1,899	F	Buckhorn 1,260; common plantain 441; curled dock 18
1595	*Stafford, J. R., Albany	Peirson, W. A.	C							C	
	Mammoth Red Clover	Albany, Ind.	F	98.30	0.99	91.50	4.00	4-31	1,620	F	Common plantain 243; curled dock 27
1597	*Stafford, J. R., Albany	Peirson, W. A.	C							C	
	Red Clover	Albany, Ind.	F	98.20	0.63	83.50	10 50	4-31	8,208	F	Common plantain 6,120; curled dock 9; wild carrot 9

*Not labeled.

†Certified by retailer.

C and F stands, respectively, for Claimed and Found.

[87] Removed from sale. Misbranded. Returned to Distributor.

[88] Removed from sale. Misbranded. Sold to Wholesaler.

[89] Removed from sale. Misbranded. Retagged.

[90] Removed from sale. Misbranded. All sold.

[91] Not tagged. Labels furnished.

[92] Removed from sale. Misbranded. Retagged.

[93] Removed from sale. Misbranded. All sold. Contains 6.16% Sweet Clover with a Germination of 46.0% and 26.0% Hard Seeds.

RED CLOVER—Continued

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor	Purity, per cent	Inert Matter, per cent	Germination, per cent	Hard Seeds, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds	Number per Pound of each of the Noxious Weed Seeds Specified in the Law
771	Gibson Co. Shipping Ass'n, Haubstadt	Purcell Seed Co. C	99.68	......	95.00	......	1-31	....	C Curled dock 90
	"Tru Val" Mammoth Red Clover, Lot 9575	Evansville, Ind. F	99.72	0.10	92.50	4.50	3-31	162	F Buckhorn 36; curled dock 36
762	Gibson Co. Shipping Ass'n, Princeton	Purcell Seed Co. C	99.50	......	90.00	.....	12-30	......	C None
	"Tru Val" Red Clover, Lot 9244	Evansville, Ind. F	98.74	0.14	86.00	10.00	3-31	2,502	F Yellow trefoil 72
834	Purcell Seed Co., Evansville	Purcell Seed Co. C	99.64	......	85.50	9.00	10-30	....	C Curled dock 90
	Mammoth Red Clover, Lot 9515	Evansville, Ind. F	99.64	0.14	93.50	1.50	3-31	189	F Buckhorn 9; curled dock 90
836	Purcell Seed Co., Evansville	Purcell Seed Co. C	99.54	......	84.00	8.00	1-31	....	C None
	Red Clover, Lot 9510	Evansville, Ind. F	99.72	0.04	90.00	7.00	3-31	738	F Curled dock 18
760	Schultheiss, A. M., Haubstadt[94]	Purcell Seed Co. C	93.00	......	90.00	......	1-31	....	C Buckhorn 3,780; common plantain 450; curled dock 360; dodder 720; red sorrel 450; wild carrot 90; yellow trefoil 90
	"Nobbie" Red Clover, Lot 9556	Evansville, Ind. F	91.85	1.63	63.50	3.00	4-31	18,279	F Bracted plantain 18; buckhorn 140; common plantain 639; curled dock 702; dodder 324; red sorrel 360; wild carrot 36
766	Schultheiss, A. M., Haubstadt	Purcell Seed Co. C	96.84	......	90.00	.....	1-31	....	C Buckhorn 1,530; common plantain 360; curled dock 630; dodder 180
	"Echo" Red Clover, Lot 9612	Evansville, Ind. F	95.89	0.80	79.50	10.00	4-31	9,027	F Bracted plantain 9; buckhorn 1,890; common plantain 234; curled dock 441; dodder 162; red sorrel 162; wild carrot 9
732	Quinlan Seed Store, Terre Haute	Quinlan Seed Store C	99.68	......	89.50	3.50	1-31	....	C Buckhorn 63; dodder 18; curled dock 27
	Medium Red Clover, Lot 1	Terre Haute, Ind. F	99.68	0.12	96.00	1.00	3-31	45	F Buckhorn 27; dodder 18
737	Quinlan Seed Store, Terre Haute	Quinlan Seed Store C	99.62	......	86.50	2.00	1-31	....	C Buckhorn 135; dodder 27; curled dock 36
	Medium Red Clover, Lot 2	Terre Haute, Ind. F	99.52	0.26	94.00	1.00	4-31	234	F Buckhorn 117; dodder 27
741	Quinlan Seed Store, Terre Haute[95]	Quinlan Seed Store C	99.62	......	89.50	2.00	1-31	....	C Buckhorn 279; curled dock 36; dodder 144
	Medium Red Clover, Lot Fine	Terre Haute, Ind. F	90.18	2.35	82.00	2.00	4-31	25,083	F Bracted plantain 18; buckhorn 20,970; common plantain 1,710; curled dock 126; dodder 585; red sorrel 45; wild carrot 9

744	Quinlan Seed Store, Terre Haute	Quinlan Seed Store	C	99.66	......	92.00	3.00	1-31	....	C	Buckhorn 36; curled dock 162; dodder 18
	Mammoth Red Clover, Lot 1	Terre Haute, Ind	F	99.62	0.12	94.50	0.00	4-31	126	F	Buckhorn 27; curled dock 90; dodder 9
47	Quinlan Seed Store, Terre Haute	Quinlan Seed Store	C	98.42	......	82.50	1.50	1-31	....	C	Buckhorn 1,350; curled dock 270; dodder 270
	Medium Red Clover, Lot 3	Terre Haute, Ind	F	98.77	0.40	90.50	1.50	4-31	1,530	F	Buckhorn 504; curled dock 225; dodder 234; red sorrel 27
43	Riggs & Son, W. G., Sullivan	Riggs & Son, W. G	C	99.44	......	76.00	20.00	12-30	....	C	Bracted plantain 90; buckhorn 540
	Medium Red Clover, Lot 22	Sullivan, Ind	F	99.46	0.18	87.50	10.50	4-31	1,026	F	Bracted plantain 144; buckhorn 792; common plantain 54; curled dock 18; wild carrot 18
1131	Roper & Brown, Hobart	Roper & Brown	C	97.02	......	80.00	14.00	2-31	....	C	Buckhorn 3,690; common plantain 450; dodder 9; red sorrel 90; white top 90; wild carrot 180
	Medium Red Clover, Lot 10	Hobart, Ind	F	98.75	0.95	83.50	8.50	4-31	36	F	Buckhorn 18; common plantain 18
435	Hallowell's Feed Store, North Vernon	Ross Seed Co	C	98.50	......	82.50	16.50	10-30	....	C	Curled dock 270
	Mammoth Red Clover, Lot 458	Louisville, Ky	F	98.97	0.18	89.00	5.50	1-31	711	F	Buckhorn 198; curled dock 423
436	Hallowell's Feed Store, North Vernon	Ross Seed Co	C	98.00	......	72.00	25.50	10-30	....	C	Buckhorn 180
	Red Clover, Lot 582	Louisville, Ky	F	98.67	1.19	82.00	13.50	2-31	423	F	Buckhorn 36; curled dock 18; dodder 9
715	Krick & Son, A., Milan	Ross Seed Co	C	99.50	......	94.00	6.00	10-30	....	C	None
	Red Clover, Lot 581	Louisville, Ky	F	99.19	0.71	88.00	9.50	3-31	396	F	Bracted plantain 9; buckhorn 18; common plantain 45; curled dock 9; dodder 45
807	†Werst & Co., Peter, Brookville	Ross Seed Co	C	99.00	......	81.00	15.00	10-30	....	C	None
	Red Clover, Lot 503	Louisville, Ky	F	99.25	0.36	91.00	3.00	4-31	1,593	F	Bracted plantain 9; buckhorn 9; curled dock 27; dodder 18
773	Schultheis, A. M., Haubstadt	Schultheis, A. M	C	98.86	......	92.50	....	1-31	....	C	Buckhorn 810; curled dock 900
	English Mammoth Red Clover, Lot 1	Haubstadt, Ind	F	98.29	0.69	91.00	8.00	4-31	4,095	F	Bracted plantain 9; buckhorn 1,890; common plantain 27; curled dock 1,980; red sorrel 9
951	Combs, Gilbert, Bloomfield	Schultz, J. M	C	99.75	......	94.00	....	12-30	....	C	None
	Reliable Red Clover, Lot 8	Dieterich, Ill	F	99.90	0.08	93.00	3.50	3-31	72	F	Bracted plantain 27; buckhorn 45
1343	Crescent Mills, Crothersville	Scott Seed Co	C	97.00	....	80.00	12.00	1-31	....	C	Curled dock 360
	Red Clover, Lot 233	New Albany, Ind	F	95.78	0.28	67.50	31.00	4-31	4,284	F	Curled dock 36; mustard 18; yellow trefoil 3,060
1305	Dunlevy & Son, D. R., Henryville	Scott Seed Co	C	96.00	.....	80.00	12.00	1-31	....	C	Buckhorn 90; curled dock 90
	Red Clover, Lot 205	New Albany, Ind	F	96.67	0.65	87.00	7.00	4-31	4,680	F	Buckhorn 81; curled dock 81; dodder 18; yellow trefoil 2,790
1306	Dunlevy & Son, D. R., Henryville[96]	Scott Seed Co	C	98.00	......	85.00	9.00	1-31	....	C	Curled dock 90; red sorrel 225
	Sapling Red Clover, Lot 466	New Albany, Ind	F	96.69	0.76	89.50	4.00	4-31	3,753	F	Bracted plantain 9; buckhorn 387; common plantain 18; curled dock 432; red sorrel 603; wild carrot 45; yellow trefoil 9

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*Not labeled.
†Certified by retailer.
C and F stands, respectively, for Claimed and Found.

[94] Removed from sale. Misbranded. Retagged.
[95] Removed from sale. Misbranded. Will be recleaned.
[96] Removed from sale. Misbranded. All sold.

RED CLOVER—Continued

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, per cent	Inert Matter, per cent	Germination, per cent	Hard Seeds, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds		Number per Pound of each of the Noxious Weed Seeds Specified in the Law
1293	Farmers & Merchants Exchange, New Albany Sapling Red Clover, Lot 451	Scott Seed Co.	C	90.00	......	80.00	14.00	11-30	......	C	Curled dock 270; red sorrel 90
		New Albany, Ind.	F	99.07	0.14	89 50	5.00	5-31	684	F	Curled dock 81; red sorrel 63
1387	Farmers Coop. Elevator Co., Seymour Sapling Red Clover, Lot 454	Scott Seed Co.	C	99.00	......	82.00	13.00	12-30	......	C	None
		New Albany, Ind.	F	99.13	0.14	92.00	6.50	3-31	270	F	None
453	Gaudin, George, Vevay Red Clover, Lot 154A	Scott Seed Co.	C	99 20	......	80 00	14 00	11-30	......	C	None
		New Albany, Ind.	F	99.10	0.25	92.50	3 50	2-31	630	F	None
1310	Gienger & Co., John, Jeffersonville[97] Sapling Red Clover, Lot 466	Scott Seed Co.	C	98.00	......	85 00	10.00	2-31	......	C	Buckhorn 450; curled dock 270; red sorrel 540
		New Albany, Ind.	F	96.63	0.77	90.50	3.50	4-31	4,068	F	Buckhorn 306; common plantain 18; curled dock 342; red sorrel 828; wild carrot 45; yellow trefoil 9
674	Jackson & Son, P. E., Lawrenceburg Red Clover, Lot 205	Scott Seed Co.	C	96.00	......	80 00	14.00	1-31	......	C	Buckhorn 90; curled dock 90
		New Albany, Ind.	F	96.91	0.71	83.50	8.00	2-31	4,122	F	Buckhorn 45; curled dock 27; yellow trefoil 2,790
1169	Johnson & Chenoweth, Shoals Sapling Red Clover, Lot 451	Scott Seed Co.	C	99.00	......	80 00	14 00	11-30	......	C	None
		New Albany, Ind.	F	98.71	0.20	89.50	5.00	3-31	1,080	F	Curled dock 9; red sorrel 81
433	Linkhart & Son, North Vernon Red Clover, Lot 155	Scott Seed Co.	C	99.00	......	80 00	15.00	12-30	......	C	None
		New Albany, Ind.	F	99.33	0.04	83.00	12.50	1-31	369	F	Curled dock 99
434	Linkhart & Son, North Vernon Mammoth Red Clover, Lot 451	Scott Seed Co.	C	99.00	......	80 00	14 00	11-30	......	C	None
		New Albany, Ind.	F	98.42	0.20	90.50	5.00	2-31	765	F	Curled dock 27; red sorrel 108
1095	Norman, G. M. & Roberts, Bedford Sapling Red Clover, Lot 451A	Scott Seed Co.	C	99.00	......	80 00	14.00	11-30	......	C	None
		New Albany, Ind.	F	99.23	0.04	96.50	1.50	4-31	378	F	Red sorrel 18
1115	Norman, G. M. & Roberts, Bedford Red Clover, Lot 154A	Scott Seed Co.	C	99.20	......	80.00	14.00	11-30	......	C	None
		New Albany, Ind.	F	98.60	0.18	92.00	4.50	4-31	900	F	None
1163	Paoli Hardware Co., Paoli Sapling Red Clover, Lot 451A	Scott Seed Co.	C	99.00	......	80.00	14.00	11-30	......	C	None
		New Albany, Ind.	F	99.38	0.12	91.00	5.00	3-31	648	F	Curled dock 9; red sorrel 9
1104	Ragsdale & Owens, Bedford Red Clover, Lot 154A	Scott Seed Co.	C	99.20	......	80 00	14.00	11-30	......	C	None
		New Albany, Ind.	F	99.06	0.08	92.00	6.00	3-31	918	F	Dodder 18
1111	Ragsdale & Owens, Bedford Sapling Red Clover, Lot 451A	Scott Seed Co.	C	99.00	......	80 00	14.00	11-30	......	C	None
		New Albany, Ind.	F	99.32	0.18	94.00	3.50	3-31	369	F	Red sorrel 9
475	Souden, R. A., Aurora Red Clover, Lot 154A	Scott Seed Co.	C	99.20	......	80 00	14.00	11-30	......	C	None
		New Albany, Ind.	F	98 60	0.16	88 50	4.50	2-31	909	F	Dodder 9
476	Souden, R. A., Aurora Sapling Red Clover, Lot 451	Scott Seed Co.	C	99 00	......	80.00	14.00	11-30	......	C	None
		New Albany, Ind.	F	98.91	0.10	91.00	3.00	2-31	1,089	F	Curled dock 9

454	Trow Co., W., Madison Red Clover, Lot 156	Scott Seed Co. New Albany, Ind.	C	97.00	......	80.00	14.00	11-30	....	C	Curled dock 90; red sorrel 45
			F	98.18	0.08	75.00	22.50	2-31	2,268	F	Curled dock 27; yellow trefoil 81
455	Trow Co., W., Madison Red Clover, Lot 155	Scott Seed Co. New Albany, Ind.	C	99.00	......	80.00	15.00	11-30	....	C	None
			F	99.13	0.00	78.00	18.50	2-31	414	F	Curled dock 135; dodder 9
459	Trow Co., W., Madison Sapling Red Clover, Lot 451	Scott Seed Co. New Albany, Ind.	C	99.00	......	80.00	14.00	11-30	....	C	Curled dock 270
			F	99.42	0.30	88.00	6.00	2-31	531	F	Common plantain 72; red sorrel 9
1215	Turley, James E., English Sapling Red Clover, Lot 451A	Scott Seed Co. New Albany, Ind.	C	99.00	......	80.00	14.00	11-30	....	C	None
			F	98.95	0.06	93.00	4.50	3-31	720	F	None
1230	Wiseman, Wm. H. P. & Son, Corydon Red Clover, Lot 203	Scott Seed Co. New Albany, Ind.	C	97.10	......	80.00	12.00	1-31	....	C	Curled dock 90
			F	95.91	0.28	89.50	8.50	4-31	405	F	Curled dock 45
1232	Wiseman, Wm. H. P. & Son, Corydon Sapling Red Clover, Lot 451A	Scott Seed Co. New Albany, Ind.	C	99.00	......	82.00	12.00	1-31	....	C	None
			F	99.58	0.04	97.00	2.50	3-31	360	F	None
1522	Snapp Grain Co., The, Ridgeville Medium Red Clover, Lot 1	Snapp Grain Co., The Ridgeville, Ind.	C	99.48	......	83.50	13.50	1-31	....	C	Buckhorn 90; common plantain 1,800; curled dock 90
			F	99.76	0.14	92.00	7.00	5-31	675	F	Buckhorn 9; common plantain 306
328	Spurgin, Archie B., Columbus Red Clover, Lot F. St.	Spurgin, Archie B. Columbus, Ind.	C	99.50	......	90.00	......	11-30	....	C	Buckhorn 90
			F	99.06	0.48	86.00	10.50	1-31	621	F	Buckhorn 504; common plantain 18; red sorrel 9
1253	Steuben Co. Farm Bureau Coop. Ass'n, Inc., Pleasant Lake Big Red Clover, Lot 20	Steuben Co. Farm Bureau Coop. Ass'n, Inc. Pleasant Lake, Ind.	C	90.00	......	81.50	7.00	2-31	....	C	None
			F	97.33	0.73	88.50	6.50	4-31	2,178	F	Buckhorn 108; common plantain 9; curled dock 243; red sorrel 99; wild carrot 9
1257	Steuben Co. Farm Bureau Coop. Ass'n, Inc., Pleasant Lake[98] Medium Red Clover, Lot 10	Steuben Co. Farm Bureau Coop. Ass'n, Inc. Pleasant Lake, Ind.	C	90.00	......	83.00	11.50	2-31	....	C	None
			F	98.80	0.08	88.00	8.00	3-31	2,376	F	Curled dock 36; red sorrel 1,080
1247	Stiefel Grain Co., Avilla Medium Red Clover, Lot 1	Stiefel Grain Co. Avilla, Ind.	C	99.00	......	90.00	......	1-31	....	C	Buckhorn 20; common plantain 30
			F	99.20	0.40	85.50	1.50	4-31	1,359	F	Buckhorn 1,170; common plantain 90; curled dock 9
672	Central States Elevator Corp., Scircleville Medium Red Clover, Lot 12232	Sunfield Seed Service Chicago, Ill.	C	99.00	......	94.00	......	1-31	....	C	None
			F	99.40	0.40	92.00	6.00	2-31	648	F	Buckhorn 18; common plantain 90
669	Clasmeyer, H., Mulberry Medium Red Clover, Lot 12238	Sunfield Seed Service Chicago, Ill.	C	99.00	......	92.00	......	1-31	....	C	None
			F	98.60	0.02	92.50	1.50	2-31	3,006	F	Buckhorn 9; curled dock 27
724	Clasmeyer, Henry, R. R. 1, Mulberry[98A] Medium Red Clover, Lot 12238	Sunfield Seed Service Chicago, Ill.	C	99.00	......	92.00	......	1-31	....	C	None
			F	99.09	0.02	93.50	1.00	3-31	1,737	F	Curled dock 27
1044	Logansport Elevator Co., South Side, Logansport Medium Red Clover, Lot 12232	Sunfield Seed Service Chicago, Ill.	C	99.50	......	94.00	......	1-31	....	C	None
			F	99.28	0.52	90.50	5.00	3-31	882	F	Buckhorn 27; common plantain 27; curled dock 18
1141	Syler & Syler, Nappanee Red Clover	Syler & Syler Nappanee, Ind.	C	99.66	......	88.00	8.00	1-31	....	C	Common plantain 180
			F	99.00	0.44	90.00	5.50	4-31	1,647	F	Buckhorn 27; common plantain 1,530

*Not labeled.
†Certified by retailer.
C and F stands, respectively, for Claimed and Found.

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[97] Removed from sale. Misbranded. Retagged.
[98] Removed from sale. Misbranded. Retagged.
[98A] Sample secured from Orval Rothenberger, R. R. 1, Mulberry, Ind.

RED CLOVER—Continued

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor	Purity, per cent	Inert Matter, per cent	Germination, per cent	Hard Seeds, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds	Number per Pound of each of the Noxious Weed Seeds Specified in the Law
1378	Syler, Clay, North Manchester[99]	Syler, Clay C	97.50	......	85.00	6.00	2-31	....	C Bracted plantain 378; buckhorn 480
	Medium Red Clover	North Manchester, Ind. F	96.21	0.56	85.50	11.50	5-31	17,280	F Buckhorn 3,240; common plantain 2,070; dodder 6,210; prickly lettuce 18; red sorrel 9; wild carrot 63
1287	Fretz, R. C., Waterloo	Teweles Seed Co., L. C	99.50	......	86.00	9.00	2-31	....	C None
	Red Clover, Lot Badger Brand	Milwaukee, Wis. F	99.23	0.30	87.50	8.50	5-31	675	F Common plantain 108; curled dock 9; wild carrot 18
1077	Syler & Syler, Plymouth	Teweles Seed Co., L. C	98.75	......	89.00	6.00	2-31	....	C None
	Red Clover, Lot Owl Brand	Milwaukee, Wis. F	98.37	0.38	89.50	3.00	4-31	2,322	F Common plantain 45; curled dock 27
524	Tipton Milling Co., Greentown[100]	Tipton Milling Co. C	99.00	......	90.00	3.00	1-31	....	C None
	Big English Red Clover, Lot H	Tipton, Ind. F	96.81	0.70	91.00	0.50	2-31	801	F Buckhorn 27; common plantain 36; curled dock 198
525	Tipton Milling Co., Greentown	Tipton Milling Co. C	99.50	......	92.00	2.00	1-31	....	C None
	Medium Red Clover, Lot H	Tipton, Ind. F	99.74	0.20	90.50	4.50	2-31	72	F Buckhorn 9; common plantain 36; curled dock 27
1180	Troyer Seed Co., Goshen	Troyer Seed Co. C	99.79	......	90.50	7.00	12-30	....	C None
	Mammoth Red Clover, Lot B	Goshen, Ind. F	99.80	0.06	95.00	3.00	4-31	252	F Buckhorn 9; red sorrel 63
1188	Troyer Seed Co., Goshen	Troyer Seed Co. C	99.60	......	76.50	20.00	12-30	....	C Buckhorn 180; red sorrel 90
	Medium Red Clover, Lot A	Goshen, Ind. F	99.86	0.04	77.50	15.00	4-31	171	F Buckhorn 117; common plantain 9; curled dock 9; red sorrel 36
1197	Victoria Mill & Elevator Co., Jasper	Victoria Mill & Elevator Co. C	99.25	......	89.00	9.00	2-31	....	C Buckhorn 1,980
	Red Clover, Lot 9807	Jasper, Ind. F	99.58	0.02	87.00	5.50	4-31	1,440	F Bracted plantain 9; buckhorn 1,260; common plantain 54; curled dock 9; red sorrel 18
196	Sommerfield & Swanson, LaPorte	Warren-Teed Seed Co. C	99.25	......	69.00	27.00	4-30	....	C None
	Medium Red Clover, Lot R361	Chicago, Ill. F	98.98	0.12	75.00	19.50	10-30	1,854	F Curled dock 18; field dodder 9; yellow trefoil 387
664	†Warren Seed Co., Indianapolis	Warren-Teed Seed Co. C	96.00	......	80.00	......	1-30	....	C None
	Red Clover	Chicago, Ill. F	97.32	0.26	84.50	4.50	2-31	612	F Curled dock 27; yellow trefoil 405
1451	Waynetown Grain Co., Waynetown	Waynetown Grain Co. C	99.48	......	90.00	4.00	12-30	....	C Curled dock 90
	Mammoth Red Clover, Lot C30	Waynetown, Ind. F	99.52	0.46	70.50	22.00	5-31	45	F Curled dock 45

539	Weer, F. W., Anderson	Weer, F. W.	C	99.46	......	92.00	5.00	1-31	....	C	Buckhorn 90; common plantain 450; curled dock 180
	Medium Red Clover, Lot 5	Anderson, Ind.	F	99.28	0.52	89.50	10.00	2-31	576	F	Buckhorn 81; common plantain 324; curled dock 72; dodder 9
540	Weer, F. W., Anderson	Weer, F. W.	C	97.77	......	90.50	8 50	1-31	....	C	Buckhorn 6,390; common plantain 1,440; dodder 36
	Little Red Clover, Lot 12	Anderson, Ind.	F	98.41	0.30	91.50	7.50	3-31	5,283	F	Buckhorn 4,410; common plantain 675; curled dock 99; dodder 9
541	Weer, F. W., Anderson	Weer, F. W.	C	98.05	......	94.00	2.50	1-31	....	C	Common plantain 540; curled dock 990
	Mammoth Red Clover, Lot 2	Anderson, Ind.	F	99.26	0.40	92.50	3.00	3-31	1,143	F	Buckhorn 18; common plantain 306; curled dock 630; wild carrot 9
908	Wyatt Seed & Feed Co., Petersburg[101]	Wyatt Seed & Feed Co.	C	96.95	......	88.00	......	1-31	....	C	None
	Mammoth Red Clover	Petersburg, Ind.	F	96.81	0.40	90.50	2.50	3-31	8,361	F	Buckhorn 7,650; curled dock 90; dodder 189; red sorrel 72

*Not labeled.

†Certified by retailer.

C and F stands, respectively, for Claimed and Found.

[99] Removed from sale. Misbranded. All sold.

[100] Removed from sale. Misbranded. Returned to seller.

[101] Removed from sale. Misbranded. Part used on farm. Part retagged and sold.

SWEET CLOVER

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, per cent	Inert Matter, per cent	Germination, per cent	Hard Seeds, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds		Number per Pound of each of the Noxious Weed Seeds Specified in the Law
1586	†Ayres Seed Co., Cambridge City	American Field Seed Co.	C	98.50	......	92.00	......	3-31	....	C	None
	Biennial W. B. Sweet Clover, Lot 14396	Chicago, Ill.	F	98.86	0.23	87.50	1.50	4-31	3,294	F	Mustard 54
1069	Syler & Syler, Plymouth[102]	American Field Seed Co.	C	......	......	......	......	......	....	C	
	White Blossom Sweet Clover, Lot Jig	Chicago, Ill.	F	91.55	0.18	67.50	2.50	3-31	29,700	F	None
1590	Ayres Seed Co., Cambridge City[103]	Ayres Seed Co.	C	......	......	......	......	......	....	C	
	Sweet Clover	Cambridge City, Ind.	F	99.11	0.32	88.50	4.00	4-31	2,349	F	Mustard 9
961	Bosworth, John C., R. R. 8, Frankfort	Berry Seed Co.	C	98.08	......	83.00	3.00	1-31	....	C	None
	Y. B. Sweet Clover, Lot 14654	Clarinda, Iowa	F	98.19	1.26	52.50	1.50	3-31	2,160	F	Curled dock 90
729	Craig, William, R. R. 5, Noblesville	Berry Seed Co.	C	97.50	......	90.00	......	12-30	....	C	None
	W. B. Sweet Clover, Lot 14413	Clarinda, Iowa	F	95.73	2.67	56.50	0.50	3-31	6,912	F	Mustard 162
1385	Cyn, Fred, Fowler	Berry Seed Co.	C	99.75	......	94.00	......	12-30	....	C	None
	Grundy Co. Sweet Clover, Lot Excel 14392	Clarinda, Iowa	F	99.81	0.10	87.00	0.50	3-31	198	F	Mustard 108
426	Byers Seed Co., Franklin[104]	Byers Seed Co.	C	99.40	......	85.00	7.00	1-31	....	C	None
	W. B. Sweet Clover, Lot A	Franklin, Ind.	F	98.24	0.00	34.00	64.00	1-31	288	F	Canada thistle 9; quack grass 9
642	Carney Hatchery, Greenwood[105]	Byers Seed Co.	C	99.40	......	85.00	8.00	1-31	....	C	None
	Y. B. Sweet Clover, Lot A	Franklin, Ind.	F	99.44	0.10	41.50	57.00	2-31	333	F	Canada thistle 27; common plantain 36
625	Carney Hatcheries, Shelbyville[106]	Byers Seed Co.	C	99.50	......	86.00	7.00	1-31	....	C	None
	W. B. Sweet Clover, Lot A	Franklin, Ind.	F	98.35	0.00	33.00	64.50	2-31	288	F	Canada thistle 9; quack grass 9
629	Carney Hatcheries, Shelbyville[107]	Byers Seed Co.	C	99.40	......	85.00	8.00	1-31	....	C	None
	Y. B. Sweet Clover, Lot A	Franklin, Ind.	F	99.84	0.00	52.50	46.00	2-31	180	F	None
972	Cloverdale Hardware & Lumber Co., Cloverdale[108]	Byers Seed Co.	C	99.50	......	86.00	6.00	1-31	....	C	None
	W. B. Sweet Clover, Lot A	Franklin, Ind.	F	96.85	0.02	30.00	68.00	3-31	288	F	Canada thistle 9; quack grass 9
1000	Cloverdale Hardware & Lumber Co., Cloverdale	Byers Seed Co.	C	99.50	......	36.00	60.00	1-31	....	C	None
	W. B. Sweet Clover, Lot A	Franklin, Ind.	F	98.79	0.00	37.00	63.00	3-31	297	F	Canada thistle 27
432	Linkhart & Sons, J. W., North Vernon	Chambers Seed Co.	C	98.00	......	90.00	......	8-30	....	C	None
	White Sweet Clover, Lot 1156	Louisville, Ky.	F	99.88	0.02	76.50	4.50	1-31	378	F	Mustard 18
701	Aurora Farmers Supply Co., Aurora	Crabbs Reynolds Taylor Co.	C	99.62	......	81.00	......	9-30	....	C	None
	Y. B. Sweet Clover, Lot SY	Crawfordsville, Ind.	F	99.66	0.16	67.50	21.00	2-31	414	F	Curled dock 144
702	Aurora Farmers Supply Co., Aurora	Crabbs Reynolds Taylor Co.	C	99.60	......	82.00	7.00	1-31	....	C	None
	W. B. Sweet Clover, Lot 3SB	Crawfordsville, Ind.	F	99.62	0.26	87.00	3.00	2-31	189	F	Mustard 9
559	Brewer Milling Co., Gosport	Crabbs Reynolds Taylor Co.	C	99.60	......	82.00	7.00	1-31	....	C	None
	W. B. Sweet Clover, Lot 3SB	Crawfordsville, Ind.	F	99.68	0.26	88.00	4.50	3-31	108	F	Mustard 18

817	Chance Brothers, Connersville[109]	Crabbs Reynolds Taylor Co.	C	99.76	......	80.00	10.00	11–30	....	C	None
	W. B. Sweet Clover, Lot 4SA	Crawfordsville, Ind.	F	99.88	0.08	53 00	41.50	4–31	....	F	None
1022	Farmers Coop. Co. of Ade, Post Office, Brook	Crabbs Reynolds Taylor Co.	C	99.60	......	82.00	7.00	1–31	....	C	None
	White Sweet Clover, Lot 3SB	Crawfordsville, Ind.	F	99.58	0.38	86.00	2.00	3–31	288	F	Mustard 18
1023	Farmers Coop. Co. of Ade, Post Office, Brook	Crabbs Reynolds Taylor Co.	C	99.76	......	80.00	10.00	11–	....	C	None
	W. B. Sweet Clover, Lot 4SA	Crawfordsville, Ind.	F	99.36	0.54	84.00	6.00	4–31	....	F	None
1191	Farmers Coop. Co., Francesville	Crabbs Reynolds Taylor Co.	C	99.60	......	82.00	7.00	1–31	....	C	None
	White Sweet Clover, Lot 3SB	Crawfordsville, Ind.	F	99.59	0.37	83.50	7.50	4–31	198	F	Mustard 18
244	Farmers Elevator Co., Monticello[110]	Crabbs Reynolds Taylor Co.	C	99.60	......	85.00	5.50	9–30	....	C	None
	W. B. Sweet Clover, Lot 2SA	Crawfordsville, Ind.	F	99.78	0.02	58.00	34.00	11–30	468	F	Mustard 18
1405	Farmers Elevator Co., Rochester	Crabbs Reynolds Taylor Co.	C	99.60	......	82.00	7.00	1–31	....	C	None
	W. B. Sweet Clover, Lot 3SB	Crawfordsville, Ind.	F	99.68	0.26	85 50	3.50	5–31	180	F	None
1119	Heise Brothers & Co., Mitchell	Crabbs Reynolds Taylor Co.	C	99.60	......	82.00	7.00	1–31	....	C	None
	White Sweet Clover, Lot 3SB	Crawfordsville, Ind.	F	99.56	0.34	89.00	3.00	4–31	558	F	Mustard 18
919	Newcastle Elevator Co., Newcastle	Crabbs Reynolds Taylor Co.	C	99.60	......	82.00	7.00	1–31	....	C	None
	White Sweet Clover, Lot 3SB	Crawfordsville, Ind.	F	99.67	0.25	86.50	4.00	4–31	468	F	Mustard 18
940	Newcastle Elevator Co., Newcastle	Crabbs Reynolds Taylor Co.	C	99.65	......	82.00	5.00	1–31	....	C	None
	Grundy Co. Sweet Clover, Lot 1SA	Crawfordsville, Ind.	F	99.90	0.00	92 00	6.00	4–31	108	F	Mustard 18
1422	Peoples Coop. Feed Store, Wolcott[111]	Crabbs Reynolds Taylor Co.	C	99.46	......	82 00	5.00	12–30	....	C	None
	Thrift W. B. Sweet Clover, Lot 9SA	Crawfordsville, Ind.	F	99.32	0.36	62 00	23.00	5–31	459	F	Mustard 9
1423	Peoples Coop. Feed Store, Wolcott	Crabbs Reynolds Taylor Co.	C	99.60	......	82.00	7.00	1–31	....	C	None
	Dwarf White Sweet Clover, Lot 3SB	Crawfordsville, Ind.	F	99.92	0.06	87.50	0.50	5–31	108	F	Mustard 18
1120	Ragsdale & Owens, Bedford	Crabbs Reynolds Taylor Co.	C	99.46	......	78.00	15.00	11–30	....	C	None
	W. B. Sweet Clover, Lot 8SA	Crawfordsville, Ind.	F	99.03	0.57	67.00	8.00	5–31	270	F	None
1127	Ragsdale & Owens, Bedford	Crabbs Reynolds Taylor Co.	C	99.42	......	84.00	7.00	1–31	....	C	None
	Yellow Sweet Clover, Lot 4SB	Crawfordsville, Ind.	F	99.16	0.52	87.50	0.00	4–31	198	F	Curled dock 18
1549	Shirley, O. C. Knightstown	Crabbs Reynolds Taylor Co.	C	98.40	......	80.00	5.00	12–30	....	C	None
	W. B. Sweet Clover, Lot 1SB	Crawfordsville, Ind.	F	98 72	0.75	71.00	3.00	5–31	558	F	Mustard 9; red sorrel 9
850	†Bell Elevator Co., Cottage Grove	Crawfordsville Seed Co.	C	99.25	......	90.00	......	12–30	....	C	None
	Y. B. Sweet Clover, Lot 503	Crawfordsville, Ind.	F	99.76	0.18	93.00	1.00	4–31	9	F	Curled dock 9
952	Combs, Gilbert, Bloomfield	Crawfordsville Seed Co.	C	99.75	......	85 00	......	1–31	....	C	None
	W. B. Sweet Clover, Lot 504	Crawfordsville, Ind.	F	99.72	0.14	86 50	0.50	4–31	369	F	Mustard 9
557	Decatur Co. Cooperative Co., Greensburg	Crawfordsville Seed Co.	C	99 75	......	90 00	......	1–31	....	C	None
	Y. B. Sweet Clover, Lot 503	Crawfordsville, Ind.	F	99.98	0.00	90 00	4.00	2–31	189	F	Curled dock 9
558	Decatur Co. Cooperative Co., Greensburg	Crawfordsville Seed Co.	C	99.75	......	90 00	......	1–31	....	C	None
	W. B. Sweet Clover, Lot 502	Crawfordsville, Ind.	F	99.82	0.10	80.50	2.00	2–31	450	F	None
407	Farmers Cooperative Co., Southport	Crawfordsville Seed Co.	C	99.75	......	90.00	......	10–30	....	C	None
	Grundy Co. Sweet Clover, Lot 501	Crawfordsville, Ind.	F	99.80	0.06	90 50	0.50	1–31	90	F	None

*Not labeled.

†Certified by retailer.

C and F stands, respectively, for Claimed and Found.

[102] Not tagged. Labels furnished.

[103] Not tagged. Labels furnished.

[104] Removed from sale. Misbranded. Retagged.

[105] Removed from sale. Misbranded. Returned to Distributor.

[106] Removed from sale. Misbranded. Retagged.

[107] Removed from sale. Misbranded. Returned to Distributor.

[108] Removed from sale. Misbranded. All sold. Sample secured from Gosport Hardware and Lumber Co., Gosport, Ind.

[109] Removed from sale. Misbranded. All sold.

[110] Removed from sale. Misbranded.

[111] Removed from sale. Misbranded.

SWEET CLOVER—Continued

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, per cent	Inert Matter, per cent	Germination, per cent	Hard Seeds, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds		Number per Pound of each of the Noxious Weed Seeds Specified in the Law
937	Farmers Grain Co., Pershing	Crawfordsville Seed Co.	C	99.75		90.00		12-30		C	None
	W. B. Sweet Clover, Lot 502	Crawfordsville, Ind.	F	99.94	0.04	84.50	3.50	3-31	108	F	Mustard 18
382	Grant Co. Farm Bureau, Marion	Crawfordsville Seed Co.	C	99.75		90.00		12-30		C	None
	W. B. Sweet Clover, Lot 502	Crawfordsville, Ind.	F	99.80	0.02	82.00	0.50	2-31	630	F	None
510	Logansport Elevator Co., North Side,										
	Logansport	Crawfordsville Seed Co.	C	99.75		90.00		10-30		C	None
	Grundy Co. W. B. Sweet Clover, Lot 501	Crawfordsville, Ind.	F	99.88	0.06	88.50	0.50	3-31	99	F	Mustard 9
521	Parke Co. Farm Bureau, Rockville	Crawfordsville Seed Co.	C	99.75		90.00		12-30		C	None
	W. B. Sweet Clover, Lot 502	Crawfordsville, Ind.	F	99.80	0.10	84.00	0.50	2-31	270	F	None
990	Pritchard & Rafert, Inc., Pendleton	Crawfordsville Seed Co.	C	99.75		90.00		12-30		C	None
	Grundy Co. W. B. Sweet Clover, Lot 501	Crawfordsville, Ind.	F	99.86	0.10	90.00	2.50	4-31	9	F	Mustard 9
412	Records & Son, L. N., Edinburg	Crawfordsville Seed Co.	C	99.75		90.00		12-30		C	None
	W. B. Sweet Clover, Lot 502	Crawfordsville, Ind.	F	99.86	0.08	86.50	1.00	1-31	180	F	None
613	Shelby Co. Farm Bureau Coop. Ass'n,										
	Shelbyville	Crawfordsville Seed Co.	C	99.75		90.00		12-30		C	None
	W. B. Sweet Clover, Lot 502	Crawfordsville, Ind.	F	99.54	0.34	77.50	3.50	3-31	216	F	Mustard 36
617	Shelby Co. Farm Bureau Coop. Ass'n, Inc.,										
	Shelbyville	Crawfordsville Seed Co.	C	99.75		90.00		12-30		C	None
	Y. B. Sweet Clover, Lot 503	Crawfordsville, Ind.	F	99.92	0.08	86.50	4.50	3-31	9	F	Curled dock 9
1196	Victoria Mill & Elevator Co., Jasper	Crawfordsville Seed Co.	C	99.75		85.00		1-31		C	None
	W. B. Sweet Clover, Lot 504	Crawfordsville, Ind.	F	99.78	0.10	80.50	1.00	4-31	360	F	None
896	Wayne Co. Farm Bureau Coop. Ass'n, Inc.,										
	Richmond	Crawfordsville Seed Co.	C	99.75		92.00		1-31		C	None
	W. B. Sweet Clover, Lot 506	Crawfordsville, Ind.	F	99.58	0.42	91.00	1.00	4-31		F	None
809	†Werst & Co., Peter, Brookville	Crawfordsville Seed Co	C	99.60		90.00		10-30		C	None
	W. B. Sweet Clover, Lot 501	Crawfordsville, Ind.	F	99.94	0.06	90.00	0.50	4-31		F	None
1128	Brown Supply Co., Valparaiso	Dickinson Co., The Albert	C	99.14		73.00	18.00	11-30		C	None
	W. B. Sweet Clover, Lot 25812	Chicago, Ill.	F	99.64	0.00	86.50	8.00	4-31	1,170	F	None
654	†Garten Feed Co., Indianapolis	Dickinson Co., The Albert	C	99.14		72.00	18.00	11-30		C	None
	W. B. Sweet Clover, Lot 25812	Chicago, Ill.	F	99.53	0.04	83.50	7.00	3-31	1,530	F	None
768	Gibson Co. Shipping Ass'n, Princeton	Dickinson Co., The Albert	C	99.38		70.00	2.00	2-31		C	None
	W. B. Sweet Clover, Lot 25863	Chicago, Ill.	F	99.82	0.02	89.00	3.00	4-31	180	F	None
1558	*McComas & Pritchard, Oaklandon	Dickinson Co., The Albert	C							C	
	W. B. Sweet Clover	Chicago, Ill.	F	99.96	0.00	86.50	1.50	4-31	216	F	Curled dock 9; quack grass 18; red sorrel 9

1098	Reynolds Brooks Hardware Co., Loogootee	Dickinson Co., The Albert	C	99.38	......	70.00	22.00	2-31	....	C	None
	W. B. Sweet Clover, Lot 25863	Chicago, Ill.	F	99.58	0.02	83.50	3.00	4-31	540	F	None
880	Richmond Feed Milling Co., Richmond	Dickinson Co., The Albert	C	99.18	......	77.00	15.00	2-29	....	C	Yellow trefoil 630
	Y. B. Sweet Clover, Lot 25343	Chicago, Ill.	F	99.60	0.30	77.50	1.00	4-31	180	F	None
730	Riggs & Son, W. G., Sullivan	Dickinson Co., The Albert	C	99.32	......	83.00	12.00	12-30	....	C	None
	W. B. Sweet Clover, Lot 25820	Chicago, Ill.	F	99.11	0.02	83.00	8.00	4-31	2,610	F	None
1240	Steckley Feed Mill, Kendallville	Dickinson Co., The Albert	C	99.62	......	86.00	2.00	11-30	....	C	None
	Y. B. Sweet Clover, Lot 25823	Chicago, Ill.	F	99.72	0.26	81.50	3.50	3-31	90	F	None
1284	Steckley Feed Mill, Kendallville	Dickinson Co., The Albert	C	99.28	......	73.00	18.00	2-31	....	C	None
	W. B. Sweet Clover, Lot 25872	Chicago, Ill.	F	98.57	0.06	82.50	2.00	5-31	369	F	Canada thistle 9
1374	Strauss & Son, J. W., North Manchester	Dickinson Co., The Albert	C	99.38	......	70.00	22.00	2-31	....	C	None
	W. B. Sweet Clover, Lot 25683	Chicago, Ill.	F	99.80	0.04	78.00	6.50	5-31	198	F	Mustard 9
753	Weed Hardware, W. H., Vincennes	Dickinson Co., The Albert	C	99.32	......	83.00	12.00	12-30	....	C	None
	W. B. Sweet Clover, Lot 25820	Chicago, Ill.	F	99.16	0.00	75.50	12.00	4-31	2,520	F	None
963	Woodbury-Elliott Grain Co., Muncie[111A]	Dickinson Co., The Albert	C	99.62	......	86.00	2.00	11-30	....	C	None
	Y. B. Sweet Clover, Lot 25823	Chicago, Ill.	F	99.86	0.08	68.50	6.00	4-31	99	F	Mustard 9
967	Woodbury-Elliott Grain Co., Muncie	Dickinson Co., The Albert	C	99.50	......	89.00	1.00	12-30	....	C	None
	Grundy Co. Sweet Clover, Lot 25857	Chicago, Ill.	F	99.76	0.18	89.50	0.00	4-31	459	F	Mustard 9
968	Woodbury-Elliott Grain Co., Muncie	Dickinson Co., The Albert	C	99.00	......	81.00	14.00	12-30	....	C	None
	W. B. Sweet Clover, Lot 25819	Chicago, Ill.	F	99.13	0.00	84.50	8.50	4-31	2,520	F	None
206	Woods & Pritsch, Sheridan	Dickinson Co., The Albert	C	99.00	......	71.00	20.00	9-30	....	C	None
	W. B. Sweet Clover, Lot 25770	Chicago, Ill.	F	99.52	0.20	80.00	3.50	11-30	630	F	None
538	Urmston Grain & Seed Co., Orestes	Dickinson Co., The Albert	C	99.00	......	76.00	12.00	2-30	....	C	None
	W. B. Sweet Clover, Lot 25665	Chicago, Ill.	F	99.36	0.12	84.50	3.00	3-31	1,620	F	None
1363	Bolles Hardware Co., Brownstown	Foster-Kendall Co.	C	99.68	......	80.00	10.00	12-30	....	C	None
	W. B. Sweet Clover	Carmel, Ind.	F	99.86	0.08	87.00	3.50	4-31	180	F	None
1559	McCordsville Grain Co., McCordsville	Foster-Kendall Co.	C	99.66	......	83.00	......	12-30	....	C	None
	W. B. Sweet Clover	Carmel, Ind.	F	99.76	0.18	86.00	8.00	4-31	180	F	None
808	Masters, Chas. S., Brookville	Foster-Kendall Co.	C	99.60	......	70.00	23.00	12-30	....	C	None
	W. B. Sweet Clover	Carmel, Ind.	F	99.80	0.20	81.50	5.50	3-31	....	F	None
1484	Mexico Elevator Co., Mexico	Foster-Kendall Co.	C	99.68	......	80.00	10.00	12-30	....	C	None
	W. B. Sweet Clover, Lot Royal	Carmel, Ind.	F	99.89	0.11	84.00	10.50	4-31	....	F	None
1551	Oneal, W. S., Rushville[112]	Foster-Kendall Co.	C	99.50	......	75.00	20.00	12-30	....	C	None
	Grundy Co. Sweet Clover, Lot A	Carmel, Ind.	F	98.45	0.04	39.00	59.00	4-31	6,120	F	Canada thistle 54; common plantain 9; curled dock 18; quack grass 9
1523	Goodrich Brothers Co., Farmland	Goodrich Brothers Co.	C	99.60	......	92.00	3.00	2-31	....	C	None
	W. B. Sweet Clover	Winchester, Ind.	F	99.92	0.00	89.00	0.50	4-31	225	F	Mustard 45
1526	Goodrich Brothers Co., Winchester[113]	Goodrich Brothers Co.	C	99.68	......	88.00	2.00	1-31	....	C	None
	Y. B. Sweet Clover, Lot Lark	Winchester, Ind.	F	99.44	0.30	64.50	3.00	4-31	162	F	Curled dock 54; mustard 9; red sorrel 9
1527	Goodrich Brothers Co., Winchester	Goodrich Brothers Co.	C	99.50	......	85.00	10.00	3-31	....	C	None
	W. B. Sweet Clover, Lot Lark	Winchester, Ind.	F	99.80	0.08	87.00	3.50	4-31	270	F	None

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*Not labeled.
†Certified by retailer.
C and F stands, respectively, for Claimed and Found.

[111A] Removed from sale. Misbranded.
[112] Removed from sale. Misbranded. Returned to Distributor.
[113] Removed from sale. Misbranded. Rescarified, cleaned and retagged.

SWEET CLOVER—Continued

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, per cent	Inert Matter, per cent	Germination, per cent	Hard Seeds, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds		Number per Pound of each of the Noxious Weed Seeds Specified in the Law
1514	Morrison-Teagarden, Saratoga	Goodrich Brothers Co.	C	99.60	......	90.00	4.00	1-31	....	C	None
	W. B. Sweet Clover, Lot Lark	Winchester, Ind.	F	99.88	0.04	90.50	1.00	4-31	99	F	Mustard 9
1519	Pierce Elevator Co., The, Union City	Goodrich Brothers Co.	C	99.50	......	91.00	3.00	1-31	....	C	None
	W. B. Sweet Clover, Lot Lark	Winchester, Ind.	F	99.88	0.10	91.00	0.00	4-31	90	F	None
1520	Snapp Grain Co., The, Ridgeville[114]	Goodrich Brothers Co.	C	99.60	......	96.00	......	1-31	....	C	None
	Y. B. Sweet Clover, Lot Lark	Winchester, Ind.	F	98.78	0.88	77.50	1.00	4-31	225	F	Curled dock 45
1067	Bloomington Milling Co., Bloomington[115]	Hardin, Hamilton & Lewman	C	98.50	......	90.00	......	11-30	....	C	None
	W. B. Sweet Clover, Lot Victory	Louisville, Ky.	F	96.41	0.14	57.50	22.50	3-31	10,620	F	None
1226	†Farmers Service Station, Corydon[116]	Hardin, Hamilton & Lewman	C	95.00	......	95.00	......	1-31	....	C	None
	Sweet Clover	Louisville, Ky.	F	99.52	0.24	71.00	4.50	4-31	846	F	Mustard 36
835	Heldt & Voelker Co., The, Evansville	Heldt Co., The	C	99.77	......	90.00	4.00	1-31	....	C	None
	W. B. Sweet Clover, Lot 1981	Evansville, Ind.	F	99.56	0.18	88.50	2.00	3-31	1,206	F	Mustard 36
1499	Wells Co. Farm Bureau Coop. Ass'n, Inc.,										
	Bluffton[117]	Hoosier Grain & Supply Co.	C	99.72	......	92.00	......	3-31	....	C	None
	W. B. Sweet Clover	Bluffton, Ind.	F	99.56	0.28	74.50	1.00	4-31	45	F	Canada thistle 9; yellow trefoil 36
1348	Brownstown Feed Exchange, Brownstown	Hooton-Davis Seed Co.	C	99.50	......	65.00	6.00	12-30	....	C	None
	W. B. Sweet Clover, Lot W278	Lebanon, Ind.	F	99.50	0.40	66.00	6.00	4-31	279	F	Curled dock 9
665	Bunker Hill Elevator Co., Bunker Hill	Hooton-Davis Seed Co.	C	99.50	......	87.00	5.00	12-30	....	C	None
	Y. B. Sweet Clover, Lot Y238	Lebanon, Ind.	F	99.56	0.20	88.50	3.50	3-31	342	F	Curled dock 45; mustard 27
1049	Farmers Coal & Feed Co., Bloomington	Hooton-Davis Seed Co.	C	99.50	......	81.00	9.00	1-31	....	C	None
	W. B. Sweet Clover, Lot W272	Lebanon, Ind.	F	99.90	0.02	78.50	4.50	4-31	90	F	None
924	Farmers Grain Co., Pershing	Hooton-Davis Seed Co.	C	99.50	......	80.00	12.00	12-30	....	C	None
	Y. B. Sweet Clover, Lot Y238	Lebanon, Ind.	F	99.54	0.24	88.00	2.00	3-31	126	F	Curled dock 18; mustard 18
917	Frazier & Sanders, Newcastle	Hooton-Davis Seed Co.	C	99.72	......	81.00	9.00	1-31	....	C	None
	W. B. Sweet Clover, Lot W272	Lebanon, Ind.	F	99.84	0.02	81.50	4.00	3-31	369	F	Canada thistle 9
1433	Goodland Grain Co., Goodland	Hooton-Davis Seed Co.	C	99.76	......	81.00	9.00	1-31	....	C	None
	W. B. Sweet Clover, Lot W280	Lebanon, Ind.	F	99.54	0.16	82.00	5.50	5-31	513	F	Mustard 63
684	Palmore Brothers, West Point, and Smith,										
	W. G., Fowler	Hooton-Davis Seed Co.	C	99.76	......	81.00	9.00	1-31	....	C	None
	W. B. Sweet Clover, Lot W272	Lebanon, Ind.	F	99.74	0.02	77.50	4.00	2-31	468	F	Canada thistle 9; curled dock 9
1029	Phillips, J. C., Star City	Hooton-Davis Seed Co.	C	99.50	......	89.00	1.00	12-30	....	C	None
	Grundy Co. Sweet Clover, Lot W273	Lebanon, Ind.	F	99.82	0.06	90.50	0.50	4-31	306	F	Quack grass 36
1108	Ragsdale & Owens, Bedford	Hooton-Davis Seed Co.	C	99.76	......	81.00	9.00	1-31	....	C	None
	W. B. Sweet Clover, Lot W272	Lebanon, Ind.	F	99.69	0.14	78.50	8.50	4-31	189	F	Mustard 9
1117	Ragsdale & Owens, Bedford	Hooton-Davis Seed Co.	C	99.50	......	80.00	12.00	12-30	....	C	None
	Y. B. Sweet Clover, Lot Y238	Lebanon, Ind.	F	99.50	0.14	91.00	1.50	4-31	126	F	Curled dock 9; mustard 27

1488	Westermeier Hardware Co., Columbus	Hooton-Davis Seed Co.	C	99.60	......	80.00	8.00	1-31	......	C	None
	W. B. Sweet Clover, Lot W780	Lebanon, Ind.	F	99.72	0.18	78.00	9.00	5-31	243	F	Mustard 63
822	Fayette Co. Farm Bureau, Connersville	Indiana Farm Bureau Coop. Ass'n, Inc.	C	99.80	......	83.00	8.00	11-30	....	C	None
	W. B. Sweet Clover, Lot SC350	Indianapolis, Ind.	F	99.76	0.20	88.50	4.50	3-31	180	F	None
884	Wayne Co. Farm Bureau Coop. Ass'n, Inc., Richmond	Indiana Farm Bureau Coop. Ass'n, Inc.	C	99.80	......	83.00	8.00	11-30	....	C	None
	W. B. Sweet Clover, Lot SC350	Indianapolis, Ind.	F	99.90	0.06	81.00	7.50	4-31	180	F	None
888	Wayne Co. Farm Bureau Coop. Ass'n, Inc., Richmond	Indiana Farm Bureau Coop. Ass'n, Inc.	C	99.50	......	80.00	9.00	1-31	....	C	None
	Y. B. Sweet Clover, Lot YC385	Indianapolis, Ind.	F	99.90	0.06	73.50	17.50	4-31	90	F	None
1352	Brownstown Feed Exchange, Brownstown	Indiana Seed Co.	C	99.00	......	85.00	7.00	12-30	....	C	Mustard 90
	W. B. Sweet Clover, Lot 21149	Indianapolis, Ind.	F	99.68	0.10	79.50	4.00	4-31	297	F	Mustard 27
1543	Chance Brothers, Connersville[118]	Indiana Seed Co.	C	99.50	......	90.00	2.00	12-30	....	C	None
	W. B. Sweet Clover, Lot 1532	Indianapolis, Ind.	F	99.56	0.22	77.50	0.50	5-31	198	F	Mustard 18
1054	Clark Feed Store, Bloomington	Indiana Seed Co.	C	98.80	......	85.00	3.00	12-30	....	C	Mustard 90
	W. B. Sweet Clover, Lot D	Indianapolis, Ind.	F	98.28	0.99	85.00	2.00	4-31	2,304	F	Mustard 54
941	Griffin & Bundy, Spiceland	Indiana Seed Co.	C	99.40	......	85.00	3.00	12-30	....	C	None
	W. B. Sweet Clover, Lot 1503	Indianapolis, Ind.	F	98.73	0.81	85.00	1.00	4-31	1,269	F	Canada thistle 9
1536	Orme, Arnold, Rushville	Indiana Seed Co.	C	99.50	......	90.00	2.00	12-30	....	C	None
	W. B. Sweet Clover, Lot 1532	Indianapolis, Ind.	F	99.52	0.20	80.50	5.00	5-31	342	F	Curled dock 9; mustard 54; red sorrel 9
1537	Orme, Arnold, Rushville	Indiana Seed Co.	C	99.50	......	80.00	4.00	12-30	....	C	None
	Y. B. Sweet Clover, Lot Y	Indianapolis, Ind.	F	99.20	0.60	73.50	3.50	5-31	819	F	Mustard 9
102	Ross Seed Co., Noblesville	Indiana Seed Co.	C	99.50	......	86.00	5.00	1-30	....	C	None
	W. B. Sweet Clover, Lot S396	Indianapolis, Ind.	F	99.82	0.16	77.50	7.50	9-30	108	F	Mustard 18
1388	Seymour Hardware Co., Seymour	Indiana Seed Co.	C	99.40	......	85.00	3.00	12-30	....	C	None
	W. B. Sweet Clover, Lot 1503	Indianapolis, Ind.	F	99.23	0.39	74.00	3.00	5-31	1,116	F	Mustard 18; quack grass 18
85	Spurgin, Archie B., Columbus	Indiana Seed Co.	C	99.50	......	86.00	5.00	6-30	....	C	None
	W. B. Sweet Clover, Lot 396	Indianapolis, Ind.	F	99.74	0.20	79.00	6.50	8-30	180	F	None
1471	Spurgin, Archie B., Columbus	Indiana Seed Co.	C	99.50	......	90.00	2.00	12-30	....	C	None
	W. B. Sweet Clover, Lot 1523	Indianapolis, Ind.	F	99.54	0.16	83.50	0.50	5-31	504	F	Canada thistle 9; mustard 45
418	Throckmorton Seed Co., Franklin	Indiana Seed Co.	C	99.50	......	84.00	7.00	8-30	....	C	Mustard 180
	White Sweet Clover, Lot 21149	Indianapolis, Ind.	F	99.78	0.10	85.50	4.50	2-31	486	F	Mustard 36
98	Worthington Grain Co., Worthington	Indiana Seed Co.	C	99.50	......	85.00	7.00	4-30	....	C	None
	W. B. Sweet Clover, Lot 1421	Indianapolis, Ind.	F	99.86	0.08	81.00	3.00	9-30	63	F	Mustard 63
1087	†Seberger Seed Co., Crown Point	Kellogg Seed Co.	C	99.62	......	65.00	29.00	4-30	....	C	Buckhorn 9; mustard 9
	W. B. Sweet Clover, Lot 215	Milwaukee, Wis.	F	99.56	0.34	55.00	28.00	4-31	135	F	Buckhorn 36; mustard 9
534	Crowell Grain Co., Columbia City	Kraus & Apfelbaum	C	99.50	......	90.00	......	9-30	....	C	None
	W. B. Sweet Clover, Lot 2501	Ft. Wayne, Ind.	F	99.00	0.24	79.00	7.50	3-31	126	F	Common plantain 27; curled dock 9

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*Not labeled.
†Certified by retailer.
C and F stands, respectively, for Claimed and Found.
[114] Removed from sale. Misbranded. Retagged.
[115] Removed from sale. Misbranded. All sold.
[116] Removed from sale. Misbranded. Returned to Distributor.
[117] Removed from sale. Misbranded. Retagged.
[118] Removed from sale. Misbranded.

SWEET CLOVER—Continued

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, per cent	Inert Matter, per cent	Germination, per cent	Hard Seeds, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds		Number per Pound of each of the Noxious Weed Seeds Specified in the Law
535	Crowell Grain Co., Columbia City[119]	Kraus & Apfelbaum	C	99.20	......	82.00	5.00	10-30	....	C	Common plantain 900; curled dock 560
	Y. B. Sweet Clover, Lot 8	Ft. Wayne, Ind.	F	98.19	1.47	81.50	2.00	3-31	1,053	F	Common plantain 378; curled dock 225
1143	Etna Lumber & Elevator Co., Etna Green	Kraus & Apfelbaum	C	99.50	......	90.00	2.00	1-31	....	C	None
	W. B. Sweet Clover, Lot 121	Ft. Wayne, Ind.	F	99.58	0.30	78.50	4.50	3-31	423	F	Mustard 63
894	Farmers Cooperative Co., The, Centerville[120]	Kraus & Apfelbaum	C	99.50	......	90.00	2.00	1-31	....	C	None
	W. B. Sweet Clover, Lot 7	Ft. Wayne, Ind.	F	99.17	0.59	68.50	2.00	4-31	387	F	Canada thistle 9; dodder 9 mustard 9
1373	Kraus & Apfelbaum, Argos	Kraus & Apfelbaum	C	99.60	......	87.00	6.00	6-30	....	C	None
	W. B. Sweet Clover, Lot T2	Ft. Wayne, Ind.	F	99.82	0.16	78.50	10.00	3-31	99	F	Mustard 9
1286	Kraus & Apfelbaum, Auburn	Kraus & Apfelbaum	C	99.50	......	90.00	2.00	2-31	....	C	None
	W. B. Sweet Clover, Lot 128	Ft. Wayne, Ind.	F	99.37	0.35	81.00	3.00	3-31	738	F	Mustard 18
109	Lima Elevator Co., Howe	Kraus & Apfelbaum	C	99.60	......	82.00	10.00	4-30	....	C	None
	W. B. Sweet Clover, Lot W	Ft. Wayne, Ind.	F	99.76	0.18	74.50	7.00	9-30	360	F	None
1142	Protsman & Son, G. L., Plymouth	Kraus & Apfelbaum	C	99.60	......	87.00	6.00	6-30	....	C	None
	W. B. Sweet Clover, Lot T2	Ft. Wayne, Ind.	F	99.59	0.25	71.50	15.00	4-31	99	F	Mustard 9
1255	Steuben Co. Farm Bureau Coop. Ass'n, Inc., Angola	Kraus & Apfelbaum	C	99.85	......	87.00	5.00	2-31	....	C	None
	Y. B. Sweet Clover, Lot 1	Ft. Wayne, Ind.	F	99.53	0.27	91.00	7.50	4-31	198	F	Buckhorn 9; curled dock 63; mustard 126
1259	Steuben Co. Farm Bureau Coop. Ass'n, Inc., Pleasant Lake	Kraus & Apfelbaum	C	99.50	......	90.00	2.00	2-31	....	C	None
	W. B. Sweet Clover, Lot 123	Ft. Wayne, Ind.	F	99.29	0.49	77.00	7.00	4-31	639	F	Mustard 9
1254	Strock, Frank, Hudson	Kraus & Apfelbaum	C	99.50	......	87.00	5.00	11-30	....	C	None
	Y. B. Sweet Clover, Lot 2	Ft. Wayne, Ind.	F	99.64	0.20	81.50	2.50	5-31	99	F	Curled dock 9
1258	Strock, Frank, Hudson	Kraus & Apfelbaum	C	99.75	......	90.00	2.00	11-30	....	C	None
	W. B. Sweet Clover, Lot 5	Ft. Wayne, Ind.	F	99.68	0.14	86.50	1.50	3-31	630	F	None
1379	Bashore Feed Store, North Manchester	Kraus, Sam	C	99.48	......	89.00	5.00	11-30	....	C	None
	W. B. Sweet Clover, Lot 25860	Ft. Wayne, Ind.	F	99.86	0.02	89.50	6.00	4-31	270	F	None
1370	Haldeman-Baum Co., Akron	Kraus, Sam	C	99.50	......	79.00	11.00	3-31	....	C	None
	W. B. Sweet Clover, Lot 25887	Ft. Wayne, Ind.	F	99.88	0.02	78.00	7.50	4-31	180	F	None
1372	Haldeman-Baum Co., Akron	Kraus, Sam	C	99.50	......	86.00	6.00	2-31	....	C	None
	Y. B. Sweet Clover, Lot W	Ft. Wayne, Ind.	F	99.60	0.18	78.50	16.50	4-31	522	F	Curled dock 162

1243	Stiefel Grain Co., Avilla	Kraus, Sam	C	99.50	......	86.00	9.00	11-30	....	C	None
	Y. B. Sweet Clover, Lot SK	Ft. Wayne, Ind	F	99.76	0.14	74 00	18 00	4-31	279	F	Curled dock 189
752	†Knox Co. Farm Bureau Coop. Ass'n, Vincennes	Lawrence Co. Farm Bureau	C	99.19	......	73.50	11 00	1-31	....	C	Mustard 170
	W. B. Sweet Clover, Lot 1	Lawrenceville, Ill	F	99.80	0.04	86.50	6.50	4-31	225	F	Mustard 45
1392	Cordes Hardware Co., Seymour	McCullough Seed Co., The J. Chas	C	99.75	......	92.00	2.00	1-31	....	C	None
	White Scarified Sweet Clover, Lot 4612	Cincinnati, Ohio	F	99.86	0.04	87 00	5.50	3-31	45	F	Mustard 36; yellow trefoil 9
712	Doerflein, Chas. E., Cedar Grove	McCullough Seed Co., The J. Chas	C	99.54	......	78.00	12.00	12-30	....	C	Curled dock 9; mustard 90
	White Scarified Sweet Clover, Lot 4708	Cincinnati, Ohio	F	99.50	0.34	75 50	6.00	4-31	351	F	Bracted plantain 27; Canada thistle 9; curled dock 9; mustard 36
719	Doerflein, Chas. E., Cedar Grove	McCullough Seed Co., The J. Chas	C	99.66	......	79.00	15.00	12-30	....	C	None
	Y. Scarified Sweet Clover, Lot 4728	Cincinnati, Ohio	F	99 74	0.12	76 00	7.00	3-31	189	F	Curled dock 9
697	Hunter & Son, Wm., Versailles	McCullough Seed Co., The J. Chas	C	99.85	......	94 00	3.00	10-30	....	C	None
	W. Scarified Sweet Clover, Lot 4612	Cincinnati, Ohio	F	99.60	0.36	88.50	0.50	4-31	....	F	None
693	Pieper & Smith, Dillsboro	McCullough Seed Co., The J. Chas	C	99.54	......	78 00	12 00	1-31	....	C	Curled dock 9; mustard 1
	W. Scarified Sweet Clover, Lot 4708	Cincinnati, Ohio	F	99 46	0.28	73 00	4 00	3-31	900	F	Bracted plantain 9; Canada thistle 9; mustard 72
1528	Schmocker, John, Batesville	McCullough Seed Co., The J. Chas	C	99 66	......	83 00	8 00	1-31	....	C	None
	Y. B. Scarified Sweet Clover, Lot 4728	Cincinnati, Ohio	F	99 22	0.50	72.50	8.50	4-31	459	F	Curled dock 9
119	Wayne Co. Farm Bureau Coop. Ass'n, Inc., Richmond	McCullough Seed Co., The J. Chas	C	99.03	......	83 00	8.00	7-30	....	C	None
	W. Scarified Sweet Clover, Lot 4043	Cincinnati, Ohio	F	99.17	0.75	76.00	6.00	9-30	360	F	None
294	Wayne Co. Farm Bureau Coop. Ass'n, Inc., Richmond	McCullough Seed Co., The J. Chas	C	99.03	......	83.00	8.00	7-30	....	C	None
	W. B. Sweet Clover, Lot 4043	Cincinnati, Ohio	F	99.31	0.67	75.50	4.50	12 30	270	F	None
1540	Muff Grain & Coal Co., Liberty[121]	Manthey's Seed Store	C	98.00	......	90.00	2 00	12-30	....	C	None
	W. B. Sweet Clover, Lot D	Cincinnati, Ohio	F	96.02	0.20	67.50	2 50	4-31	5,778	F	Buckhorn 18; curled dock 27; quack grass 18; red sorrel 45
1541	Muff Grain & Coal Co., Liberty	Manthey's Seed Store	C	98.00	......	85 00	4.00	2-31	....	C	None
	W. Sweet Clover, Lot Wal	Cincinnati, Ohio	F	97.26	0.08	71 50	9 00	4-31	5,067	F	Canada thistle 9; curled dock 9; mustard 9
479	Jackson & Son, P. E., Lawrenceburg[122]	Market Gardeners Seed Co., The	C	99 80	......	90 00	......	9-30	....	C	None
	W. Sweet Clover, Lot 5078	Cincinnati, Ohio	F	99.96	0.04	55.50	3.50	2-31	....	F	None
482	Jackson & Son, P. E., Lawrenceburg[123]	Market Gardeners Seed Co., The	C	99 20	......	85.00	......	8-30	....	C	None
	Y. Sweet Clover, Lot 5525	Cincinnati, Ohio	F	98.40	1.60	32 50	4.50	2 31	9	F	Curled dock 9
1264	Mayer Grain Co., Churubusco	Mayer Grain Co	C	99.00	......	85 00	6 00	11-30	....	C	None
	W. B. Sweet Clover	South Whitley, Ind	F	98.92	0.20	82 00	2 00	3-31	360	F	None
1407	Mayer Grain Co., Fulton	Mayer Grain Co	C	99.00	......	80 00	10 00	12-30	....	C	None
	W. B. Sweet Clover, Lot A	South Whitley, Ind	F	98 69	0.23	81 50	4 50	4 31	387	F	Mustard 27
1333	Mayer Grain Co., South Whitley[124]	Mayer Grain Co	C	99.00	......	80 00	12.00	1-31	....	C	None
	Y. B. Sweet Clover, Lot A	South Whitley, Ind	F	99 82	0 06	55 00	41 50	3-31	225	F	Common plantain 9; curled dock 36

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*Not labeled.
†Certified by retailer.
C and F stands, respectively, for Claimed and Found.
[119] Removed from sale. Misbranded. All sold.
[120] Removed from sale. Misbranded. Retagged.
[121] Removed from sale. Misbranded. All sold.
[122] Removed from sale. Misbranded. Returned to Distributor.
[123] Removed from sale. Misbranded. Returned to Distributor.
[124] Removed from sale. Misbranded. Shipped out of State.

SWEET CLOVER—Continued

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, per cent	Inert Matter, per cent	Germination, per cent	Hard Seeds, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds		Number per Pound of each of the Noxious Weed Seeds Specified in the Law
1432	Farmers Grain Co., Rensselaer	Morris Grain & Seed Co.	C	99.78	......	97 00	5 00	12-30	....	C	None
	Grundy Co. Sweet Clover, Lot 267	Morris, Ill.	F	99.90	0.10	93 50	2 00	4 31	....	F	None
1576	†*Holmes Supply Co., Kingsbury	Morris Grain & Seed Co.	C	......	......	......	......	......	....	C	
	W. B. Sweet Clover	Morris, Ill.	F	99.80	0.06	78.00	19.50	4-31	99	F	Mustard 9
87	Gibson Co. Shipping Ass'n, Princeton	Purcell Seed Co.	C	99.38	......	88.00	2.00	6-30	....	C	None
	"Tru Val" W. B. Sweet Clover, Lot 8756	Evansville, Ind.	F	99.52	0 34	80.00	1.50	8-30	657	F	Mustard 27
1214	Graves Implement Store, Tell City	Purcell Seed Co.	C	99.44	......	90.00	......	1-31	....	C	None
	Y. B. Sweet Clover, Lot 8757	Evansville, Ind.	F	99 54	0.06	81.00	1.50	4-31	1,548	F	Mustard 18
833	Purcell Seed Co., Evansville[125]	Purcell Seed Co.	C	99.58	......	90 00	......	11-30	....	C	Mustard 450
	W. B. Sweet Clover, Lot 9175	Evansville, Ind.	F	99.70	0.22	64.00	32 50	3-31	666	F	Mustard 486
774	Reising & Sons, N., Poseyville	Purcell Seed Co.	C	99.48	......	90 00	......	1-31	....	C	None
	W. B. Sweet Clover, Lot 9176	Evansville, Ind.	F	99.64	0.04	75.00	16.50	3 31	675	F	Mustard 45
1208	Turley, James E., English[126]	Purcell Seed Co.	C	99.50	......	90 00	......	1-31	....	C	Curled dock 90
	W. B. Sweet Clover, Lot 9562	Evansville, Ind.	F	99.90	0.08	55 00	41.00	4-31	9	F	Curled dock 9
734	Pentecost & Craft, Terre Haute	Quinlan Seed Store	C	98.72	......	75 00	5 00	11-30	....	C	Mustard 180
	W. B. Sweet Clover, Lot 1	Terre Haute, Ind.	F	99.39	0.47	67 50	27.50	4-31	576	F	Mustard 36
1166	Hoosier Hardware Co., Paoli[127]	Ross Seed Co.	C	98 00	......	62 00	3 00	12-30	....	C	Mustard 90
	W. B. Sweet Clover, Lot 1530	Louisville, Ky.	F	96.58	0.12	82.00	1.50	4-31	1,836	F	Buckhorn 162; Canada thistle 9; quack grass 45; mustard 81; red sorrel 9
158	Spurgin, Archie B., Columbus	Ross Seed Co.	C	99.62	......	86.00	4 00	4-30	....	C	None
	W. Sweet Clover, Lot 1524	Louisville, Ky.	F	99 64	0 20	87 50	2.00	10 30	855	F	Canada thistle 18; mustard 27
543	Holton & Son, S. E., Patricksburg[128]	Schultz Seed Co., J. M.	C	99 70	......	93 00	......	12-30	....	C	None
	Reliable Sweet Clover, Lot 101	Dieterich, Ill.	F	99.84	0.14	80 00	5.00	3-31	9	F	Mustard 9
546	Maegerlein, E. S., Patricksburg	Schultz Seed Co., J. M.	C	99.70	......	93 00	......	12-30	....	C	None
	Reliable Sweet Clover, Lot 101	Dieterich, Ill.	F	99.54	0.26	82.50	6.50	2-31	288	F	Mustard 18
1300	Bulleit & Son, V. H., Corydon[129]	Scott Seed Co.	C	99.00	......	85 00	9.00	1-31	....	C	None
	W. B. Sweet Clover, Lot 96	New Albany, Ind.	F	99.14	0.53	74.00	3.00	3 31	405	F	Mustard 45
1301	Bulleit & Son, V. H., Corydon	Scott Seed Co.	C	99.00	......	80 00	10.00	1-31	....	C	None
	Y. B. Sweet Clover, Lot 93	New Albany, Ind.	F	99.01	0.71	82 00	2.50	3-31	630	F	None
1357	Crescent Mills, Crothersville	Scott Seed Co.	C	99.50	......	80 00	12 00	11-30	....	C	None
	W. B. Sweet Clover, Lot 79	New Albany, Ind.	F	99.64	0.10	83 50	1.00	4-31	495	F	Mustard 45
1390	Farmers Coop. Elevator Co., Seymour[130]	Scott Seed Co.	C	99.00	......	85 00	9.00	1-31	....	C	None
	W. B. Sweet Clover, Lot 96	New Albany, Ind.	F	99.20	0.51	70 50	3.50	5-31	477	F	Canada thistle 9; mustard 18
1294	Farmers & Merchants Exchange, New Albany	Scott Seed Co.	C	99.50	......	80 00	12.00	11-30	....	C	None
	W. B. Sweet Clover, Lot 79	New Albany, Ind.	F	99.96	0.02	70.50	5.00	5-31	108	F	Mustard 18

1298	Farmers & Merchants Exchange, New Albany	Scott Seed Co.	C	99.00	......	80.00	12.00	1-31	....	C	None
	Y. B. Sweet Clover, Lot 93	New Albany, Ind.	F	99.33	0.45	81.00	1.00	5-31	198	F	Mustard 18
1354	Greger, A. C., Brownstown	Scott Seed Co.	C	99.50	......	80.00	12.00	11-30	....	C	None
	W. B. Sweet Clover, Lot 79	New Albany, Ind.	F	99.72	0.06	81.00	2.50	5-31	729	F	Mustard 9
1179	Johnson & Chenoweth, Shoals	Scott Seed Co.	C	99.00	......	85.00	9.00	1-31	....	C	None
	W. B. Sweet Clover, Lot 96	New Albany, Ind.	F	98.91	0.79	74.00	9.00	4-31	360	F	None
981	Owen Farmers Supply Co., Spencer	Scott Seed Co.	C	99.00	......	80.00	......	1-31	....	C	None
	W. B. Sweet Clover, Lot 96	New Albany, Ind.	F	99.28	0.52	72.50	5.50	3-31	288	F	Canada thistle 9; mustard 9
480	Sawdon, R. A., Aurora[131]	Scott Seed Co.	C	98.80	......	80.00	10.00	10-30	....	C	None
	W. B. Sweet Clover, Lot 79	New Albany, Ind.	F	98.86	0.41	61.50	2.00	2-31	4,545	F	Canada thistle 9; mustard 36
481	Sawdon, R. A., Aurora[132]	Scott Seed Co	C	98.80	......	80.00	10.00	10-30	....	C	Mustard 270
	Y. B. Sweet Clover, Lot 85	New Albany, Ind.	F	98.96	0.65	63.50	4.00	2-31	1,305	F	Curled dock 18; mustard 27
456	Trow Co., W., Madison	Scott Seed Co.	C	99.50	......	80.00	12.00	8-30	....	C	None
	W. Sweet Clover, Lot 79	New Albany, Ind.	F	99.84	0.06	74.50	3.50	2-31	369	F	Mustard 9
1221	Wiseman & Son, Wm. H., Corydon	Scott Seed Co.	C	98.80	......	80.00	10.00	10-30	....	C	Mustard 270
	Y. B. Sweet Clover, Lot 85	New Albany, Ind.	F	98.68	0.87	71.50	1.50	5-31	1,494	F	Curled dock 9; mustard 45
1228	Wiseman & Son, Wm. H., Corydon	Scott Seed Co.	C	99.00	......	80.00	10.00	1-31	....	C	None
	W. Sweet Clover, Lot 96	New Albany, Ind.	F	98.91	0.87	76.50	3.00	4-31	576	F	Canada thistle 9; common plantain 9; curled dock 9; mustard 9
1521	Snapp Grain Co., Ridgeville	Snapp Grain Co.	C	99.60	......	76.00	20.00	1-31	....	C	Curled dock 100
	Y. B. Sweet Clover, Lot 1	Ridgeville, Ind.	F	99.58	0.12	71.50	26.00	5-31	405	F	Buckhorn 9; curled dock 117; mustard 9
947	Bloomfield Mill & Elevator Co., Bloomfield	Standard Seed Co.	C	99.90	......	92.00	......	11-30	....	C	None
	Y. B. Sweet Clover, Lot 14147	Des Moines, Iowa	F	99.68	0.20	81.00	3.00	3-31	243	F	Curled dock 36; yellow trefoil 27
1024	Ainsworth-Boone Co., Kentland	Sunfield Seed Service	C	99.50	......	94.00	......	12-30	....	C	None
	Biennial W. B. Sweet Clover, Lot 34398	Chicago, Ill.	F	99.76	0.14	87.50	5.00	3-31	369	F	Mustard 189
1136	Ainsworth-Boone Co., Kentland	Sunfield Seed Service	C	99.50	......	94.00	......	12-30	....	C	None
	Grundy Co. Sweet Clover, Lot 14371	Chicago, Ill.	F	99.56	0.40	88.00	0.50	3-31	9	F	Curled dock 9
506	Burnettsville Elevator Co., Burnettsville	Sunfield Seed Service	C	99.50	......	94.00	......	12-30	....	C	None
	Biennial W. B. Sweet Clover, Lot 14398	Chicago, Ill.	F	99.64	0.18	88.00	3.00	2-31	486	F	Mustard 126
509	Burnettsville Elevator Co., Burnettsville	Sunfield Seed Service	C	99.50	......	94.00	......	12-30	....	C	None
	Grundy Co. Biennial Sweet Clover, Lot 14392	Chicago, Ill.	F	99.72	0.08	90.00	0.00	2-31	540	F	Mustard 90
673	Central States Elevator Corp., Scircleville	Sunfield Seed Service	C	99.75	......	94.00	......	1-31	....	C	None
	Grundy Co. Sweet Clover, Lot 14392	Chicago, Ill.	F	99.92	0.08	86.00	0.50	2-31	27	F	Mustard 27
670	Clasmeyer, H., Mulberry	Sunfield Seed Service	C	98.50	......	92.00	......	1-31	....	C	None
	Biennial W. Sweet Clover, Lot 14406	Chicago, Ill.	F	98.54	1.06	68.00	1.00	2-31	1,998	F	Mustard 18
1027	Farmers Cooperative Elevator, Brook	Sunfield Seed Service	C	99.50	......	94.00	......	12-30	....	C	None
	Grundy Co. Sweet Clover, Lot 14371	Chicago, Ill.	F	99.66	0.30	91.50	2.00	3-31	99	F	Curled dock 9

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*Not labeled.

†Certified by retailer.

C and F stands, respectively, for Claimed and Found.

[125] Removed from sale. Misbranded. Retagged.

[126] Removed from sale. Misbranded. All sold.

[127] Removed from sale. Misbranded. All sold.

[128] Removed from sale. Misbranded. Returned to Distributor.

[129] Removed from sale. Misbranded. Retagged.

[130] Removed from sale. Misbranded. All sold.

[131] Removed from sale. Misbranded. Retagged.

[132] Removed from sale. Misbranded. Retagged.

SWEET CLOVER—Continued

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, per cent	Inert Matter, per cent	Germination, per cent	Hard Seeds, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds		Number per Pound of each of the Noxious Weed Seeds Specified in the Law
1135	Farmers Cooperative Elevator, Brook	Sunfield Seed Service	C	99.50	......	94.00	......	12–30	....	C	None
	W. B. Sweet Clover, Lot 14398	Chicago, Ill.	F	99.70	0.16	92.50	3.00	3-31	405	F	Mustard 225
1489	Morrow Grain Co., Wabash	Sunfield Seed Service	C	99.50	......	94.00	......	12–30	....	C	None
	W. B. Sweet Clover, Lot 14398	Chicago, Ill.	F	99.66	0.20	89.00	1.00	4-31	279	F	Mustard 9
1490	Morrow Grain Co., The, Wabash	Sunfield Seed Service	C	99.50	......	94.00	......	12–30	....	C	None
	Grundy Co. W. B. Sweet Clover, Lot 14371	Chicago, Ill.	F	99.52	0.46	90.00	1.00	4–31	....	F	None
683	Indiana State Highway Com., Indianapolis	Teweles Seed Co., L.	C	99.74	......	90.00	1.00	2–31	....	C	None
	Y. B. Sweet Clover	Milwaukee, Wis.	F	99.61	0.31	83.50	0.50	2–31	....	F	None
1079	Syler & Syler, Plymouth	Teweles Seed Co., L.	C	99.65	......	91.00	4.00	2–31	....	C	None
	Scarified W. B. Sweet Clover, Lot Badger Brand	Milwaukee, Wis.	F	99.78	0.18	84.50	3.00	4–31	99	F	Curled dock 9
1080	Syler & Syler, Plymouth	Teweles Seed Co., L.	C	99.70	......	92.00	3.00	2–31	....	C	None
	Y. B. Sweet Clover, Lot Badger Brand	Milwaukee, Wis.	F	99.72	0.26	82.00	0.50	4–31	90	F	None
1404	Wynn, Arlie S., Rochester	Teweles Seed Co., L.	C	99.50	......	87.00	5.00	12–30	....	C	None
	W. B. Sweet Clover	Milwaukee, Wis.	F	99.88	0.06	82.00	4.00	5–31	270	F	None
1008	Indiana State Farm, Greencastle	Warren Seed Co.	C	99.50	......	86.00	......	1–31	....	C	None
	W. B. Sweet Clover	Indianapolis, Ind.	F	99.68	0.18	89.50	1.50	3–31	738	F	Canada thistle 9; mustard 9
1236	Campbell & Co., Kendallville	Warren-Teed Seed Co.	C	99.84	......	93.50	3.50	12–29	....	C	None
	W. B. Sweet C'over, Lot S132	Chicago, Ill.	F	99.80	0.20	91.00	3.00	5–31	....	F	None

*Not labeled.
†Certified by retailer.

C and F stands, respectively, for Claimed and Found.

WHITE CLOVER

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor	Purity, per cent	Inert Matter, per cent	Germination, per cent	Hard Seeds, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds	Number per Pound of each of the Noxious Weed Seeds Specified in the Law
555	Decatur Co. Cooperative Co., Greensburg	Crawfordsville Seed Co. C	97.50	......	85.00	......	8-30	....	C None
	Dutch W. Clover, Lot 713	Crawfordsville, Ind. F	97.11	0.15	94.50	1.00	3-31	765	F Common plantain 90; yellow trefoil 450
638	Kraus, Sam, Ft. Wayne[133]	Isbell Seed Co. C	96.70	......	82.00	......	8-30	....	C None
	Dutch W. Clover	Jackson, Mich. F	97.70	0.68	82.00	3.75	5-31	9,126	F Buckhorn 216; mustard 36; red sorrel 4,725; yellow trefoil 774
1459	Griener Co., C. E., Indianapolis	Scott & Sons Co., O. L. C	98.00	......	90.00	......	12-30	....	C None
	Dutch W. Clover, Lot G	Marysville, Ohio F	97.04	0.20	82.00	12.50	4-31	720	F Buckhorn 234; yellow trefoil 486

*Not labeled.

†Certified by retailer.

C and F stands, respectively, for Claimed and Found

[133] Removed from sale. Misbranded. Shipped out of State.

CORN

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, per cent	Inert Matter, per cent	Germination, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds		Number per Pound of each of the Noxious Weed Seeds Specified in the Law
1425	Ainsworth-Boone Co., Kentland	Ainsworth-Boone Co.	C	99.00	......	95.00	2-31	....	C	None
	Woodburn Y. D. Seed Corn, Lot 1	Kentland, Ind.	F	99.99	0 01	94.50	4-31	....	F	None
1426	Ainsworth-Boone Co., Kentland	Ainsworth-Boone Co.	C	99.00	......	90.00	2-31	....	C	None
	M. A. C. Y. D. Corn, Lot 2	Kentland, Ind.	F	99.99	0.01	94 00	4-31	....	F	None
1427	Ainsworth-Boone Co., Kentland	Ainsworth-Boone Co.	C	99.00	......	90 00	2-31	....	C	None
	Medium Reed Corn, Lot 3	Kentland, Ind.	F	99 99	0.01	84.50	4-31	....	F	None
1428	Ainsworth-Boone Co., Kentland	Ainsworth-Boone Co.	C	99.00	......	85.00	2-31	....	C	None
	Krug No. 2 Corn, Lot 4	Kentland, Ind.	F	99 99	0.01	84 00	4·31	....	F	None
1429	Ainsworth-Boone Co., Kentland	Ainsworth-Boone Co.	C	99.00	0.01	90.00	2-31	....	C	None
	Leaming Corn, Lot 5	Kentland, Ind.	F	99.99	0.01	89 50	4-31	....	F	None
1430	Ainsworth-Boone Co., Kentland	Ainsworth-Boone Co.	C	99.00	......	90.00	2-31	....	C	None
	Reid's Early Corn, Lot 6	Kentland, Ind.	F	99.96	0.04	92.00	4-31	....	F	None
73	Kattman & Tilley, Brazil[134]	Council Bluff Seed Co.	C	......	......	90.00	......	....	C	
	Reid's Yellow Dent Corn, Lot 43	Council Bluffs, Iowa	F	99.99	0.01	39.00	7-30	....	F	None
74	Kattman & Tilley, Brazil[134A]	Council Bluffs Seed Co.	C	......	......	90.00	......	....	C	None
	Reid's Yellow Dent Corn	Council Bluffs, Iowa	F	99.99	0.01	38.00	7-30	....	F	None
1612	Eberts Grain Co., Scottsburg	Eberts Grain Co.	C	98.00	......	90.00	5-31	....	C	None
	Leaming Yellow Corn, Lot 1	Scottsburg, Ind.	F	99.17	0.83	96.50	5-31	....	F	None
1453	Fowler, Chester, Waynetown	Fowler, Chester	C	99.00	......	97.00	2-31	....	C	None
	Reid's Y. D. Corn, Lot 1	Waynetown, Ind.	F	99.99	0.01	97.00	4-31	....	F	None
1454	Fowler, Chester, Waynetown	Fowler, Chester	C	99 00	......	97.00	2-31	....	C	None
	100 Day Sure Crop Corn, Lot 2	Waynetown, Ind.	F	99.99	0.01	98.00	4-31	....	F	None
156	Leak, Glen, Lizton	Hooton-Davis Seed Co.	C	99.00	......	94.00	3-30	....	C	None
	Yellow Dent Corn	Lebanon, Ind.	F	99.99	0.01	94.50	9-30	....	F	None
1181	Dembufsky Seed Co., Goshen	Kercher, Wheeler	C	99.00	......	95.00	1-31	....	C	None
	M. A. C. Corn, Lot 11000	Goshen, Ind.	F	99.75	0.25	90.00	4-31	....	F	None
72	York, Dennis, Newberry[135]	McGinnis, Willis	C	......	......	95.00	......	....	C	None
	Reid's Yellow Dent Corn	Sanborn, Ind.	F	99.52	0.48	72.00	7-30	....	F	None
77	York, Dennis, Newberry[136]	McGinnis, Willis	C	......	......	90.00	......	....	C	None
	Reid's Yellow Dent Corn	Sanborn, Ind.	F	99.47	0.53	66.50	7-30	....	F	None
1564	Ross Seed Co., Noblesville	Moore, B.	C	99.00	......	98 00	3-31	....	C	None
	Reid's Y. D. Corn	Atlanta, Ind.	F	99.84	0.15	94.00	4-31	....	F	None
839	Purcell Seed Co., Evansville	Purcell Seed Co.	C	99.00	......	97.00	2-31	....	C	None
	90 Day Y. Seed Corn, Lot 9631	Evansville, Ind.	F	99.86	0.14	98 50	3-31	....	F	None
1358	Eberts Grain Co., Scottsburg	Spurgin, Archie B.	C	99.90	......	90.00	1-31	....	C	None
	Reid's Yellow Corn, Lot Holder	Columbus, Ind.	F	99.96	0.02	86.00	3-31	....	F	None

1365	Eberts Grain Co., Scottsburg	Spurgin, Archie B.	C	99.95	......	90.00	1-31	....	C	None
	Johnson Co. White Corn, Lot Harris	Columbus, Ind.	F	99.39	0.61	89.50	3-31	....	F	None
1395	Farmers Cooperative Elevator Co. Seymour	Spurgin, Archie B.	C	99.50	......	90 00	12-30	....	C	None
	Reid's Yellow Corn, Lot Holder	Columbus, Ind.	F	99.97	0.03	92.00	3-31	....	F	None
1397	Farmers Cooperative Elevator Co., Seymour	Spurgin, Archie B.	C	99.50	......	90.00	12-30	....	C	None
	Baird White Corn, Lot King	Columbus, Ind.	F	100.00	0.00	92.50	3-31	....	F	None
332	Spurgin, Archie B., Columbus	Spurgin, Archie B.	C	99.50	......	90.00	11-30	....	C	None
	Bartholomew Co. White Corn, Lot King	Columbus, Ind.	F	99.99	0.01	89.00	1-31	....	F	None
173	Munsell, R. V., R. R. 5, Bremen	Syler & Syler	C	99.00	......	95.00	3-30	....	C	None
	Golden Surprise Yellow Dent Corn	Nappanee, Ind.	F	99.99	0.01	85.00	10-30	....	F	None
910	Wyatt Seed & Feed Co., Petersburg	Wyatt Seed & Feed Co.	C	98.00	......	98.00	2-31	....	C	None
	Boone Co. W. Seed Corn, Lot 11	Petersburg, Ind.	F	97.59	2.41	96.00	3-31	....	F	None
913	Wyatt Seed & Feed Co., Petérsburg	Wyatt Seed & Feed Co.	C	98 00	......	97.00	2-31	....	C	None
	Reid's Y. D. Corn, Lot 10	Petersburg, Ind.	F	98.92	0.97	95.50	3-31	....	F	None

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*Not labeled.

†Certified by retailer.

C and F stands, respectively, for Claimed and Found.

[134] Misbranded. Refund. Sample secured from Howard Kessel, R. R. 5, Brazil, Ind.

[134A] Misbranded.

[135] Misbranded.

[136] Misbranded. Tag incomplete. Sample secured from Elza Barker, Bloomfield, Ind.

COWPEAS

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, per cent	Inert Matter, per cent	Germination, per cent	Hard Seeds, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds		Number per Pound of each of the Noxious Weed Seeds Specified in the Law
1091	†Seberger Seed Co., Crown Point	Dickinson Co., The Albert	C	99.00	......	90.00	......	9–30	....	C	None
	Field Peas, Lot 85220	Chicago, Ill.	F	99.70	0.30	92.00	0.00	4–31	....	F	None
1618	McCarty Seed Co., J. A., Terre Haute	McCarty Seed Co., J. A.	C	97.00	......	86.00	......	4 31	....	C	None
	Whip Cowpeas, Lot 2672	Evansville, Ind.	F	99.03	0.91	76.50	0 00	6–31	....	F	None
1623	*†Quinlan Seed Store, Terre Haute	Schultz, J. M.	C	......	......	......	......	......	....	C	
	Whip Cowpeas	Dieterich, Ill.	F	98.97	1.03	93.50	0.00	6–31	....	F	None

*Not labeled.
†Certified by retailer.

C and F stands, respectively, for Claimed and Found.

MILLET

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, per cent	Inert Matter, per cent	Germination, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds	Number per Pound of each of the Noxious Weed Seeds Specified in the Law
1545	Chance Brothers, Connersville	Crabbs Reynolds Taylor Co.	C	97.93	......	85.00	1–31	....	C None
	Millet, Lot LM	Crawfordsville, Ind.	F	99.07	0 93	84.50	5–31	....	F None
1624	Quinlan Seed Store, Terre Haute	Quinlan Seed Store	C	95.42	......	95.00	5–31	....	C None
	German Millet	Terre Haute, Ind.	F	99.11	0.77	95.50	5–31	1,080	F None
1629	Quinlan Seed Store, Terre Haute	Quinlan Seed Store	C	99.00	......	95.00	5–31	....	C None
	German Millet	Terre Haute, Ind.	F	99.34	0.54	93.00	6–31	1,350	F None
1102	Heise Brothers & Co., Mitchell	Ross Seed Co.	C	99.20	......	95.00	2–31	....	C Curled dock 90
	Millet, Lot 255	Louisville, Ky.	F	99.04	0.68	94.50	4–31	1,440	F None
1626	Laughlin Feed & Seed Store, Solsberry	Schultz Seed Co., J. M.	C	98.00	......	90 00	4–31	....	C None
	Millet	Dieterich, Ill.	F	99.53	0.02	90 50	6–31	1,170	F None
195	Sommerfield & Swanson, LaPorte	Warren-Teed Seed Co.	C	99.60	......	95.00	2–30	....	C None
	German Millet, Lot K285	Chicago, Ill.	F	99.60	0 14	93.50	10–30	1,260	F None

*Not labeled.
†Certified by retailer.

C and F stands, respectively, for Claimed and Found.

OATS

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, per cent	Inert Matter, per cent	Germination, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds		Number per Pound of each of the Noxious Weed Seeds Specified in the Law
812	Boonville Milling Co., Boonville	Boonville Milling Co.	C	98.00	......	94.00	1-30	....	C	None
	Early Burt Red Oats, Lot Car	Boonville, Ind.	F	98.88	1.08	96.50	3-31	63	F	Curled dock 63
841	Heldt & Voelker Co., The, Evansville	Heldt Co., The	C	93.50	......	92.00	1-31	....	C	None
	Early Burt Seed Oats, Lot 1974	Evansville, Ind.	F	97.38	1.91	93.00	4-31	9	F	None
1601	*Laughlin, R. B., Solsberry	Laughlin, R. B.	C	......	......	......	......	....	C	
	No. 2 Northern White Oats	Solsberry, Ind.	F	97.50	1.30	97.50	4-31	99	F	Curled dock 36; mustard 45
1303	Bulleit & Son, V. H., Corydon	Louisville Seed Co.	C	90.00	......	90.00	1-31	....	C	None
	Burt Oats	Louisville, Ky.	F	96.87	2.94	96.50	3-31	36	F	Curled dock 18
775	Posey Seed & Feed Co., Mount Vernon	McCarty Seed Co., J. A.	C	93.53	......	92.00	1-31	....	C	None
	Early Burt Seed Oats, Lot 2451	Evansville, Ind.	F	97.19	2.39	98.00	4-31	45	F	Mustard 18
1234	Wiseman & Son, Wm. H. P., Corydon	Scott Seed Co.	C	98.00	......	90.00	1-31	....	C	None
	Burt Oats	New Albany, Ind.	F	97.57	1.26	95.50	4-31	36	F	Curled dock 9; mustard 9
1304	†Thorn & Sons, L., New Albany	McDonald & Co.	C	95.00	......	90.00	1-31	....	C	None
	Northern White Oats, Lot M	New Albany, Ind.	F	97.06	2.03	97.00	3-31	18	F	Curled dock 9; mustard 9
647	*Gurley, George, R. R. 5, Greensburg	Ward, Charles	C	......	......	......	......	....	C	
	White Oats	Burney, Ind.	F	95.41	3.22	75.00	3-31	711	F	Common plantain 189; curled dock 198

C and F stands, respectively, for Claimed and Found.

*Not labeled.
†Certified by retailer.

ORCHARD GRASS

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor	Purity, per cent	Inert Matter, per cent	Germination, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds	Number per Pound of each of the Noxious Weed Seeds Specified in the Law
1341	Eberts Grain Co., Scottsburg[137]	Chambers Seed Co. C	80.00	......	80.00	1-31	....	C None
	Orchard Grass, Lot 617	Louisville, Ky. F	68.10	29.98	76.00	4-31	2,322	F Buckhorn 64; red sorrel 18
982	Owen Farmers Supply Co., Spencer	Indiana Seed Co. C	86.00	......	90.00	12-30	....	C Buckhorn 675; curled dock 675; red sorrel 675
	Orchard Grass, Lot 1520	Indianapolis, Ind. F	88.89	10.25	86.50	4-31	7,650	F Buckhorn 225; curled dock 900; oxeye daisy 675; red sorrel 1,125; white top 225; wild garlic or wild onion 225
652	†Garten Feed Co., Indianapolis[138]	Mangelsdorf & Brothers, Ed. F. C	83.00	......	85.00	8-30	....	C Red sorrel 20
	Orchard Grass, Lot 9321	St. Louis, Mo. F	82.92	15.35	80.00	3-31	2,700	F Oxeye daisy 1,125; red sorrel 225
676	Jackson & Son, P. E., Lawrenceburg[139]	Scott Seed Co. C	85.00	......	80.00	1-31	....	C Buckhorn 540; curled dock 360
	Orchard Grass, Lot 542	New Albany, Ind. F	78.99	19.23	73.00	3-31	13,437	F Buckhorn 11,925; curled dock 18; oxeye daisy 54; red sorrel 54; white top 36
1124	Ragsdale & Owens, Bedford	Scott Seed Co. C	85.00	......	85.00	1-31	....	C Yellow trefoil 225
	Orchard Grass, Lot 547	New Albany, Ind. F	86.83	12.82	89.00	5-31	675	F None
460	Trow Co., W., Madison[140]	Scott Seed Co. C	80.00	......	80.00	9-30	....	C Buckhorn 90; curled dock 600
	Orchard Grass, Lot 539	New Albany, Ind. F	81.10	16.84	91.00	2-31	24,525	F Bracted plantain 225; buckhorn 1,800; curled dock 450; red sorrel 450; white top 1,350
1233	Wiseman, Wm. H. P., Corydon	Scott Seed Co. C	85.00	......	85.00	1-31	....	C None
	Orchard Grass, Lot 547	New Albany, Ind. F	85.68	14.12	85.00	5-31	450	F Oxeye daisy 225; yellow trefoil 22
1070	Syler & Syler, Plymouth	Teweles Seed Co., L. C	85.00	......	72.00	2-31	....	C Red sorrel 50
	Orchard Grass, Lot Badger Brand	Milwaukee, Wis. F	87.65	11.58	89.50	4-31	1,647	F Buckhorn 18; oxeye daisy 18; red sorrel 18; white top 18

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*Not labeled.

†Certified by retailer.

C and F stands, respectively, for Claimed and Found.

[137] Removed from sale. Misbranded. Returned to Distributor.

[138] Removed from sale. Misbranded. Retagged.

[139] Removed from sale. Misbranded. Returned to Distributor.

[140] Removed from sale. Misbranded. Retagged.

RAPE

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, per cent	Inert Matter, per cent	Germination, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds		Number per Pound of each of the Noxious Weed Seeds Specified in the Law
1381	Cyn, Fred, Fowler[139A]	Berry Seed Co.	C	......	......	95.00	1–31	....	C	None
	Dwarf Essex Rape, Lot 6617	Chicago, Ill.	F	99.94	0.04	96.50	4–31	135	F	None
1542	Chance Brothers, Connersville[141]	Crabbs Reynolds Taylor Co.	C	99.53	......	80.00	2–31	....	C	None
	Dwarf Essex Rape, Lot PU	Crawfordsville, Ind.	F	99.72	0.18	54.00	6–31	90	F	None
1186	Dembufsky Seed Co., Goshen	Teweles Seed Co., L.	C	99.80	......	93.00	2–31	....	C	None
	Dwarf Essex Rape, Lot Badger Brand	Milwaukee, Wis.	F	99.95	0.05	92.50	4–31	....	F	None
1569	Kiest Milling Co., Knox	Teweles Seed Co., L.	C	99.80	......	93.00	2–31	....	C	None
	Dwarf Essex Rape, Lot Badger Brand	Milwaukee, Wis.	F	99.97	0.03	94.00	5–31	....	F	None

*Not labeled.
†Certified by retailer.

C and F stands, respectively, for Claimed and Found.

[139A] Tag incomplete.

[141] Removed from sale. Misbranded.

RED TOP

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor	Purity, per cent	Inert Matter, per cent	Germination, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds	Number per Pound of each of the Noxious Weed Seeds Specified in the Law
1316	Eberts Grain Co., Memphis[142]	Chambers Seed Co. C	95.00	......	90.00	10–30	....	C None
	Red Top, Lot 802	Louisville, Ky. F	94.36	5.06	92.50	4–31	27,000	F Red sorrel 1,800; white top 1,350
161	Eberts Grain Co., Scottsburg[143]	Chambers Seed Co. C	90.00	......	90.00	8–30	....	C None
	Red Top, Lot 843	Louisville, Ky. F	88.28	11.14	90.75	10–30	10,350	F Common plantain 4,500
1344	Eberts Grain Co., Scottsburg[144]	Chambers Seed Co. C	95.00	......	90.00	1–31	....	C None
	Red Top, Lot 802	Louisville, Ky. F	91.75	7.46	90.50	4–31	49,050	F Bracted plantain 450; red sorrel 450; white top 2,700
927	Newcastle Elevator Co., Newcastle[145]	Crabbs Reynolds Taylor Co. C	92.55	......	90.00	1–31	....	C None
	Red Top, Lot DY	Crawfordsville, Ind. F	94.39	4.93	91.75	4–31	27,000	F Common plantain 450; red sorrel 900
466	Hunger, C. G., Madison	Dickinson Co., The Albert C	90.40	......	90.00	9–30	....	C Common plantain 48
	Red Top, Lot 30523	Chicago, Ill. F	91.96	7.16	92.25	2–31	48,095	F Common plantain 45
1085	Seberger Seed Co., Crown Point	Dickinson Co., The Albert C	90.90	......	90.00	11–30	....	C Common plantain 388
	Fancy Red Top, Lot 30574	Chicago, Ill. F	91.32	8.00	91.75	4–31	31,050	F Common plantain 450; oxeye daisy 450
1057	Bloomington Milling Co., Bloomington	Hardin, Hamilton & Lewman C	93.00	......	95.00	1–31	....	C None
	Red Top, Lot Yesop	Louisville, Ky. F	92.41	6.91	96.50	3–31	44,550	F Common plantain 450
1547	Pekin Flour Mills, Pekin[146]	Hardin, Hamilton & Lewman C	90.00	......	90.00	1–31	....	C None
	Red Top, Lot Ton	Louisville, Ky. F	87.12	10.80	98.25	4–31	142,200	F Common plantain 900; white top 900
1213	†Dauby & Sons, Joe, Tell City[147]	Heldt Co., The C	88.00	......	90.00	1–31	....	C None
	Red Top, Lot 2170	Evansville, Ind. F	89.04	10.47	72.75	5–31	31,500	F Common plantain 900; white top 450
868	Heldt Co., The, Evansville	Heldt Co., The C	92.61	......	90.00	9–30	....	C Common plantain 900; oxeye daisy 1,350
	Red Top, Lot 2088	Evansville, Ind. F	91.31	7.27	96.00	3–31	19,350	F Oxeye daisy 900; white top 900
689	Eckert Hardware, Osgood[148]	Hooton-Davis Seed Co. C	90.00	......	90.00	12–30	....	C None
	Red Top, Lot R236	Lebanon, Ind. F	80.21	12.11	94.50	3–31	164,250	F Common plantain 19,350; white top 5,850

*Not labeled.

†Certified by retailer.

C and F stands, respectively, for Claimed and Found.

[142] Removed from sale. Misbranded. All sold.

[143] Removed from sale. Misbranded. Retagged.

[144] Removed from sale. Misbranded. Returned to Distributor.

[145] Removed from sale. Misbranded. Returned to Distributor.

[146] Removed from sale. Misbranded. All sold.

[147] Removed from sale. Misbranded. Retagged.

[148] Removed from sale. Misbranded. Retagged.

RED TOP—Continued

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor	Purity, per cent	Inert Matter, per cent	Germination, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds	Number per Pound of each of the Noxious Weed Seeds Specified in the Law
1105	Lawrence Co. Farm Bureau Coop. Ass'n, Inc., Bedford[149]	Indiana Farm Bureau Coop. Ass'n, Inc. C	92.00	......	91.00	12-30	....	C None
	Red Top, Lot RT	Indianapolis, Ind. F	90.39	8.83	93.75	5-31	60,300	F Common plantain 900; white top 450
1342	Brownstown Feed Exchange, Brownstown	Indiana Seed Co. C	91.00	......	90.00	12-30	....	C Common plantain 450
	Red Top, Lot 1522	Indianapolis, Ind. F	88.50	10.44	96.00	5-31	79,875	F Common plantain 225; white top 900
705	Culbertson, Clyde, Vevay[150]	Lewis Implement & Seed Co. C	90.00	......	90.00	1-31	....	C Bracted plantain 40; common plantain 10; oxeye daisy 15
	Red Top	Louisville, Ky. F	76.96	11.72	87.00	5-31	51,791	F Common plantain 1,800; oxeye daisy 41; white top 450
82	Bulleit & Sons, V. H., Corydon[151]	Louisville Seed Co. C	91.00	......	90.00	2-30	....	C None
	Red Top	Louisville, Ky. F	90.71	8.53	87.25	8-30	24,750	F Common plantain 450; oxeye daisy 450
680	Indiana State Highway Com., Indianapolis	Louisville Seed Co. C	90.00	......	90.00	10-30	....	C None
	Gold Medal Red Top, Lot G406	Louisville, Ky. F	92.50	6.74	96.50	2-31	43,650	F Common plantain 450
262	Morgan, Dan, Seymour	Louisville Seed Co. C	92.00	......	90.00	8-30	....	C None
	Red Top	Louisville, Ky. F	91.64	8.16	95.75	11-30	17,550	F Red sorrel 450
777	Posey Seed & Feed Co., Mount Vernon[152]	McCarty Seed Co., J. A. C	86.13	......	......	9-30	....	C Red sorrel 900
	Red Top, Lot 2245	Evansville, Ind. F	91.88	6.32	96.75	3-31	18,000	F Buckhorn 5,850; common plantain 450; red sorrel 4,500; white top 2,700
200	Spencer Co. Farm Bureau, Grand View	McCarty Seed Co., J. A. C	90.75	......	91.00	9-30	....	C Buckhorn 4,500; red sorrel 450
	Red Top, Lot 2244	Evansville, Ind. F	94.04	5.57	95.25	11-30	15,300	F Buckhorn 450; common plantain 1,800; red sorrel 1,800; white top 4,950
1123	Reynolds Brooks Hardware Co., Loogootee[153]	McCullough Seed Co., The J. Chas. C	86.80	......	92.00	1-31	....	C None
	Fancy Red Top, Lot 4658	Cincinnati, Ohio F	85.97	12.63	95.50	5-31	75,600	F Buckhorn 450; common plantain 1,800; white top 1,800
1461	Losche, Albert, Purchasing Agent, City Hall, Indianapolis	Mazur Seed Co. C	90.00	......	90.00	1-31	....	C None
	Red Top	Indianapolis, Ind. F	91.04	7.84	96.50	4-31	60,300	F Buckhorn 450; common plantain 900; white top 1,350

1198	†Victoria Mill & Elevator Co., Jasper[154]	Poorman & Co.	C	92.45	......	90.00	8-30	......	C	None
	Red Top	Fairfield, Ill.	F	91.18	8.23	86.75	5-31	31,950	F	Common plantain 900
95	Dilley & Sons, Phillip, Huntingburg[155]	Purcell Seed Co.	C	92.00	......	90.00	6-30	......	C	None
	"Tru Val" Fancy Red Top, Lot 7986	Evansville, Ind.	F	93.24	6.49	89.25	9-30	15,300	F	Common plantain 1,800
1205	Dilley & Sons, Phillip, Huntingburg	Purcell Seed Co.	C	93.00	......	92.00	1-31	......	C	White top 450
	"Tru Val" Fancy Red Top, Lot 9468	Evansville, Ind.	F	93.79	5.73	96.25	5-31	31,150	F	White top 900
791	Kinderman's Sons, Wm., Boonville[156]	Purcell Seed Co.	C	90.99	......	90.00	1-31	......	C	Common plantain 1,800; oxeye daisy 900; white top 900
	"Judge" Fancy Red Top, Lot 9999	Evansville, Ind.	F	89.12	10.30	63.25	4-31	38,750	F	Common plantain 1,350; oxeye daisy 50; white top 900
828	Purcell Seed Co., Evansville	Purcell Seed Co.	C	94.13	......	94.00	10-30	......	C	Common plantain 900; white top 900
	Red Top, Lot 9187	Evansville, Ind.	F	94.00	4.86	96.25	4-31	40,500	F	Common plantain 2,700; oxeye daisy 450; white top 1,350
831	Purcell Seed Co., Evansville	Purcell Seed Co.	C	90.06	......	90.00	1-31	......	C	White top 900
	Red Top, Lot B9999	Evansville, Ind.	F	90.03	9.37	88.25	3-31	44,100	F	Common plantain 450
1207	Purcell Seed Co., Evansville	Purcell Seed Co.	C	92.13	......	90.00	1-31	......	C	Common plantain 450; white top 450
	Red Top, Lot A9998	Evansville, Ind.	F	91.37	7.87	84.25	5-31	51,750	F	Common plantain 450; white top 450
1118	†Ragsdale & Owens, Bedford[157]	Ross Seed Co.	C	98.00	......	90.00	2-31	......	C	None
	Red Top, Lot 651	Louisville, Ky.	F	97.72	2.10	97.50	4-31	19,800	F	Bracted plantain 900; oxeye daisy 900; white top 1,350
79	Easton, Elza D., Bedford	Ross Seed Co.	C	90.00	......	85.00	3-30	......	C	Common plantain 450
	M. B. Red Top, Lot 697	Louisville, Ky.	F	93.53	6.19	86.50	8-30	18,000	F	Common plantain 450
1391	Farmers Coop. Elevator Co., Seymour	Ross Seed Co.	C	91.00	......	91.25	9-30	......	C	White top 1,800
	M. B. Red Top, Lot 619	Louisville, Ky.	F	90.85	8.38	93.25	4-31	53,100	F	Common plantain 450; oxeye daisy 900; white top 800
1219	Turley, James E., English[158]	Ross Seed Co.	C	81.23	......	90.00	11-30	......	C	Common plantain 675; oxeye daisy 1,350
	Red Top, Lot 643	Louisville, Ky.	F	71.31	26.42	89.50	5-31	116,550	F	Buckhorn 900; common plantain 3,150; oxeye daisy 900
1389	Cordes Hardware Co., Seymour	Shultz Seed Co.	C	94.00	......	89.00	......	......	C	None
	Red Top, Lot 6662	Olney, Ill.	F	95.40	4.22	96.75	4-31	21,600	F	None
1175	†Walker, W. A., Loogootee[159]	Shultz Seed Co.	C	90.00	......	90.00	2-31	......	C	None
	Red Top, Lot 7828	Olney, Ill.	F	85.56	13.09	82.25	4-31	75,150	F	Common plantain 1,350; oxeye daisy 450
904	Wyatt Seed & Feed Co., Petersburg	Shultz Seed Co.	C	92.00	......	90.00	1-31	......	C	None
	Fancy Red Top, Lot 7797	Olney, Ill.	F	89.80	9.24	89.00	3-31	58,950	F	None

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*Not labeled.

†Certified by retailer.

C and F stands, respectively, for Claimed and Found.

[149] Removed from sale. Misbranded. All sold.

[150] Removed from sale. Misbranded. Sample contains 10.42% Timothy with 82.0% Germination. Used on own farm.

[151] Removed from sale. Misbranded. Retagged.

[152] Removed from sale. Misbranded. Retagged.

[153] Removed from sale. Misbranded. All sold.

[154] Removed from sale. Misbranded.

[155] Removed from sale. Misbranded. Retagged.

[156] Removed from sale. Misbranded. All sold.

[157] Removed from sale. Misbranded. All sold.

[158] Removed from sale. Misbranded. All sold.

[159] Removed from sale. Misbranded. Retagged.

RED TOP—Continued

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, per cent	Inert Matter, per cent	Germination, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds		Number per Pound of each of the Noxious Weed Seeds Specified in the Law
544	Holton & Son, S. E., Patricksburg[160]	Schultz, J. M.	C	92.00	......	92.00	12-30	....	C	None
	Reliable Red Top	Dieterich, Ill.	F	91.00	7.12	95.75	2-31	18,900	F	Common plantain 900; white top 900
548	Maegerlein, E. S., Patricksburg	Schultz, J. M.	C	92.00	......	92.00	12-30	....	C	None
	Reliable Red Top, Lot 92	Dieterich, Ill.	F	92.24	6.62	94.50	2-31	18,450	F	White top 1,350
1307	Dunlevy & Son, D. R., Henryville[161]	Scott Seed Co.	C	90.00	......	90.00	2-31	....	C	None
	Red Top, Lot AB	New Albany, Ind.	F	89.49	9.64	74.25	4-31	46,350	F	Common plantain 450
1101	Norman, G. M. & Roberts, Bedford	Scott Seed Co.	C	90.00	......	90.00	1-31	....	C	Common plantain 450
	Red Top, Lot AB	New Albany, Ind.	F	89.06	10.08	77.50	4-31	49,950	F	Common plantain 1,350; white top 450
164	Trow Co., W., Madison	Scott Seed Co.	C	90.00	......	90.00	8-30	....	C	Common plantain 1,800; white top 900
	Red Top, Lot 451	New Albany, Ind.	F	87.21	12.14	88.25	10-30	36,450	F	Common plantain 900; oxeye daisy 1,350; white top 450
1073	Syler & Syler, Plymouth	Teweles Seed Co., L.	C	93.22	......	94.00	2-31	....	C	White top 900
	Red Top, Lot B Brand	Milwaukee, Wis.	F	92.58	6.69	95.75	4-31	45,900	F	White top 3,150
1465	Vonnegut Hardware Co., Indianapolis[162]	Whitney Eckstein Seed Co.	C	95.00	....	95.00	9-30	....	C	None
	Fancy Red Top	Buffalo, N. Y.	F	96.01	3.53	93.75	5-31	35,550	F	Common plantain 450; white top 450

*Not labeled.

†Certified by retailer.

C and F stands, respectively, for Claimed and Found.

[160] Removed from sale. Misbranded. Retagged.

[161] Removed from sale. Misbranded. All sold.

[162] Sample secured from A. H. Losche, Purchasing Agent, City of Indianapolis.

SOY BEANS

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, per cent	Inert Matter, per cent	Germination, per cent	Hard Seeds, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds		Number per Pound of each of the Noxious Weed Seeds Specified in the Law
1607	Nutgrass, Alfred, R. R. 1, Anderson	Atwood Grain & Supply Co.	C	......	......	......	......	......	....	C	
	Manchu Soy Beans	Atwood, Ind.	F	91.86	8.07	65.50	0.00	5 31	8	F	None
1450	Clayton Milling Co., Clayton	Clayton Milling Co.	C	90.00	......	85.00	......	2–31	....	C	None
	Dunfield Soy Beans	Clayton, Ind.	F	97.07	2.77	84 00	0.00	4 31	4	F	None
1336	Whitley Co. Farm Bureau Coop. Ass'n,Inc., Columbia City	Compton, Willis E.	C	99.80	......	89.00	......	12–30	....	C	None
	Dunfield Soy Beans, Lot 1	Peru, Ind.	F	98.35	1.65	87.50	0.50	4–31	....	F	None
1308	Dunlevy & Son, D. R., Henryville[163]	Crescent Mills	C	......	......	90 00	......	......	....	C	None
	Manchu Soy Beans, Lot 8	Crothersville, Ind.	F	99.44	0 56	77.00	0 50	3–31	....	F	None
1361	Greger, A. C., Brownstown	Crescent Mills	C	98 00	......	90 00	......	1–31	....	C	None
	Manchu & Illini Soy Beans, Lot 2	Crothersville, Ind.	F	98.91	1.09	85 00	0.00	5 31	....	F	None
1362	Greger, A. C., Brownstown[164]	Crescent Mills	C	98 00	......	98 00	......	11–30	....	C	None
	Illini Soy Beans, Lot 1	Crothersville, Ind.	F	99.39	0.61	83.00	0.00	4 31	....	F	None
1582	Way, C. B., LaPorte	Dickinson Co., The Albert	C	99.50	......	91 00	......	1–31	....	C	None
	Manchu Soy Beans, Lot 08456	Chicago, Ill.	F	99 91	0.09	94 50	0.00	5 31	....	F	None
1610	Eberts Grain Co., Scottsburg	Eberts Grain Co.	C	96.00	......	85 00	......	4–31	....	C	None
	Virginia Soy Beans, Lot 1	Scottsburg, Ind.	F	98.25	1.74	94 00	0.00	5–31	24	F	None
805	Masters, Chas. S., Brookville	Foster-Kendall Co.	C	99.00	......	90.00	......	10 30	....	C	None
	Dunfield Soy Beans	Carmel, Ind.	F	98.80	1.16	85.00	0.00	3–31	4	F	None
1605	Grant Co. Farm Bureau Coop. Ass'n, Inc., Marion	Grant Co. Farm Bureau Coop. Ass'n, Inc.	C	95.00	......	90.00	......	3–31	....	C	None
	Manchu Soy Beans, Lot 1	Marion, Ind.	F	99.28	0.72	98.00	0.00	5–31	....	F	None
1606	Grant Co. Farm Bureau Coop. Ass'n, Inc., Marion	Grant Co. Farm Bureau Coop. Ass'n, Inc.	C	95.00	......	85.00	......	3–31	....	C	None
	Manchu Soy Beans, Lot 3	Marion, Ind.	F	98.08	1.62	97.50	0.00	5–31	24	F	None
1608	Grant Co. Farm Bureau Coop. Ass'n, Inc., Marion	Grant Co. Farm Bureau Coop. Ass'n, Inc.	C	95.00	......	90 00	......	3–31	....	C	None
	Manchu Soy Beans, Lot 2	Marion, Ind.	F	95.83	4.16	90.50	0.00	5–31	4	F	None
1609	Grant Co. Farm Bureau Coop. Ass'n, Inc., Marion	Grant Co. Farm Bureau Coop. Ass'n, Inc.	C	85.00	......	85.00	......	3–31	....	C	None
	Dunfield Soy Beans	Marion, Ind.	F	98.37	1.63	96.50	0.00	5–31	....	F	None

*Not labeled.
†Certified by retailer.
C and F stands, respectively, for Claimed and Found.

[163] Removed from sale. Misbranded. Returned to Distributor.

[164] Removed from sale. Misbranded. Retagged.

SOY BEANS—Continued

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, per cent	Inert Matter, per cent	Germination, per cent	Hard Seeds, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds		Number per Pound of each of the Noxious Weed Seeds Specified in the Law
912	Kell Feed Store, Oakland City	Kell Feed Store	C	95 00	......	95.00	......	2-31	....	C	None
	Black Wilson Soy Beans, Lot St	Oakland City, Ind	F	99.75	0.19	91.00	6.00	3-31	24	F	None
854	Demoret Grain Co., Bass	Kiefer Feed & Supply Co	C	97.50	......	87 00	......	1-31	....	C	None
	Dunfield Soy Beans, Lot 200	Elwood, Ind	F	97.03	2.82	91.00	0.00	3-31	....	F	None
474	Beach & Simmers, Albany	Kraus & Apfelbaum, Inc	C	99.00	......	90.00	......	10-30	....	C	None
	Manchu Soy Beans, Lot 11	Ft. Wayne, Ind	F	98.05	1.91	87.50	0.00	2-31	....	F	None
1266	Huntertown Grain Co., Huntertown	Kraus & Apfelbaum, Inc	C	99.00	......	90.00	......	1-31	....	C	None
	Manchu Soy Beans, Lot Wayne	Ft. Wayne, Ind	F	98.54	1.46	88.50	0.00	3-31	....	F	None
592	Steuben Co. Farm Bureau Coop. Ass'n, Inc., Angola	Kraus & Apfelbaum, Inc	C	99.00	......	90.00	......	10-30	....	C	None
	Manchu Soy Beans, Lot 9	Ft. Wayne, Ind	F	99.02	0.98	94.00	0.00	3-31	....	F	None
1182	Wakarusa Milling Co., Wakarusa	Kraus, Sam	C	99.75	......	95 00	......	2-31	....	C	None
	Manchu Soy Beans, Lot S	Ft. Wayne, Ind	F	99.74	0.26	95.50	0.00	3-31	....	F	None
782	Spencer Co. Farm Bureau, Inc., Chrisney	McCarty Seed Co., J. A	C	98.00	......	92.00	......	1-31	....	C	None
	Dunfield Soy Beans, Lot 2379	Evansville, Ind	F	99.68	0.25	97.50	0.00	3-31	4	F	None
811	Spencer Co. Farm Bureau, Inc., Chrisney	McCarty Seed Co., J. A	C	98 00	......	90.00	......	2–	....	C	None
	Manchu Soy Beans, Lot 2417	Evansville, Ind	F	99.36	0.60	93.00	0.00	3-31	4	F	None
1616	McCarty Seed Co., J. A., Terre Haute	McCarty Seed Co., J. A	C	98.00	......	90.00	......	2-31	....	C	None
	Manchu Soy Beans, Lot T	Terre Haute, Ind	F	99.73	0.27	86.50	0.00	5-31	....	F	None
1617	McCarty Seed Co., J. A., Terre Haute	McCarty Seed Co., J. A	C	98.00	......	90.00	......	2-31	....	C	None
	Illini Soy Beans, Lot H	Terre Haute, Ind	F	98.91	1.05	90.50	1.00	5-31	....	F	None
1150	Porter Co. Farm Bureau Supply Dept., Valparaiso	Morris Grain & Seed Co	C	99.00	......	90.00	5.00	11-30	....	C	None
	Manchu Soy Beans, Lot Manchu	Morris, Ill	F	99.83	0.17	88.50	0.00	4-31	....	F	None
979	Owen Co. Farm Bureau Coop. Ass'n, Inc., Spencer	Owen Co. Farm Bureau Coop. Ass'n, Inc	C	98.90	......	86.00	......	2-31	....	C	None
	Manchu Soy Beans	Spencer, Ind	F	97.24	2.76	79.00	0.50	5-31	....	F	None
1206	Dilley & Son, Phil, Huntingburg	Purcell Seed Co	C	99 00	......	95.00	......	12-30	....	C	None
	Black Wilson Soy Beans, Lot 9388	Evansville, Ind	F	98.78	0.19	97 00	0.00	4-31	96	F	None
840	Purcell Seed Co., Evansville	Purcell Seed Co	C	99.00	......	94.00	5.00	11-30	....	C	None
	Black Sooty Soy Beans, Lot 9394	Evansville, Ind	F	99.25	0.70	90 50	0.00	3-31	8	F	None
843	Purcell Seed Co., Evansville	Purcell Seed Co	C	99 00	......	96.00	2.00	11-30	....	C	None
	Wilson Soy Beans, Lot 9388	Evansville, Ind	F	98.61	0.64	94.00	0.00	3-31	72	F	None
1619	*Quinlan Seed Store, Terre Haute	Quinlan Seed Store	C	......	......	......	......	......	....	C	
	Virginia Brown Soy Beans, Lot 4750	Terre Haute, Ind	F	99.89	0.11	98.50	0.00	5-31	....	F	None

1621	Quinlan Seed Store, Terre Haute	Quinlan Seed Store	C	98 00		87.00		5-31		C	None
	Dunfield Soy Beans, Lot 38978	Terre Haute, Ind	F	99 43	0.57	87 50	0.00	5-31		F	None
1622	Quinlan Seed Store, Terre Haute	Quinlan Seed Store	C	95 00		30 00		5-31		C	None
	Manchu Soy Beans, Lot 38976	Terre Haute, Ind	F	97.92	2.05	34.50	0.00	5-31		F	None
1628	Quinlan Seed Store, Terre Haute	Quinlan Seed Store	C	97.00		85.00		6-31		C	None
	Illini Soy Beans	Terre Haute, Ind	F	90.58	9.41	92.50	0.00	6-31	24	F	None
695	Hunter & Son, Wm., Versailles	Ross Seed Co	C	98.00		90.00		12-30		C	None
	Manchu Soy Beans, Lot 3504	Louisville, Ky	F	97.88	2.12	79.50	0.00	5-31		F	None
1600	Laughlin Feed & Grain Co., Solsberry	Schultz Seed Co., J. M	C	99.00		94.00		12-30		C	None
	Illini Soy Beans	Dieterich, Ill	F	94.36	5.59	87.00	0.50	5-31	12	F	None
1627	Laughlin Feed & Seed Store, Solsberry	Schultz Seed Co., J. M	C	97.00		90.00		4-31		C	None
	Illini Soy Beans	Dieterich, Ill	F	92.74	6.85	95.00	0.50	6-31	88	F	None
1088	†Seberger Seed Co., Crown Point	Schultz Seed Co., J. M	C	99.00		95 00		12-30		C	None
	Illini Soy Beans, Lot 1	Dieterich, Ill	F	93.90	6.01	94.00	0 00	4-31	8	F	None
1089	†Seberger Seed Co., Crown Point	Schultz Seed Co., J. M	C	99.00		94.00		12-30		C	None
	Virginia Soy Beans, Lot 10	Dieterich, Ill	F	99.12	0 88	94.00	0 00	4-31		F	None
1093	†Seberger Seed Co., Crown Point	Schultz Seed Co., J. M	C	98.00		93 00		12-30		C	None
	Manchu Soy Beans, Lot 1	Dieterich, Ill	F	96.91	3.00	84.50	0.50	3-31		F	None
819	Chance Brothers, Connersville	Scott Seed Co	C	90 00		92 00		10-30		C	None
	Manchu Soy Beans, Lot 710	New Albany, Ind	F	98 22	1.78	86 00	0.00	3-31		F	None
1625	Hallowels Feed Store, North Vernon	Scott Seed Co	C	98.00		90 00		1-31		C	None
	Virginia Soy Beans, Lot 713	New Albany, Ind	F	98.70	1 28	84.50	0.00	6-31		F	None
1229	Wiseman & Son, Wm. H. P., Corydon	Spittler & Son	C	98.00		85 00	1.50	2-31		C	None
	Manchu Soy Beans, Lot 53050	Flora, Ind	F	99.21	0.79	92 50	0.00	5-31		F	None
1116	Lawrence Co. Farm Coop. Ass'n, Inc., Bedford[166]	Sproat, U. B	C							C	
	Manchu Soy Beans	West Lafayette, Ind	F	92.43	6 29	81.00	2.50	3 31	328	F	None
1470	Spurgin, Archie B., Columbus	Spurgin, Archie B	C	99 00		92 00		12-30		C	None
	Manchu Soy Beans, Lot Howard	Columbus, Ind	F	99.82	0.18	89 50	1.50	4-31		F	None
1571	Bare, W. A., R. R. 3, South Whitley[167]	Syler, Clay	C	98.86		89.50				C	None
	Manchu Soy Beans	North Manchester, Ind	F	99 30	0.68	91.00	0.00	4-31		F	None
1573	Yant, Ward H., R. R. 3, South Whitley[168]	Syler, Clay	C	98.86		89.50				C	None
	Manchu Soy Beans	North Manchester, Ind	F	98.86	1.14	89.50	0 00	4-31		F	None
650	*Gurley, George D., R. R. 5, Greensburg	Ward, Charles	C							C	
	Manchu Soy Beans	Burney, Ind	F	97.73	2.22	84.50	0.50	2-31	4	F	None
649	*Lawson, W. H., R. R. 5, Greensburg	Ward, Charles	C							C	
	Manchu Soy Beans	Burney, Ind	F	97.60	2.04	82 00	0 00	2-31		F	None
1493	*White, Frank, Crothersville	White, Frank	C							C	
	Manchu Soy Beans	Crothersville, Ind	F	95.70	4.17	91.00	0.50	4-31	68	F	None
1334	Whitley Co. Farm Bureau Coop. Ass'n, Inc., Columbia City	Whitley Co. Farm Bureau Coop. Ass'n, Inc.	C	95 00		80 00		1-31		C	None
	Manchu Soy Beans, Lot 2	Columbia City, Ind	F	95.18	4 32	76 00	3 00	4-31		F	None

*Not labeled.
†Certified by retailer.
C and F stands, respectively, for Claimed and Found.

[166] Not tagged. Labels furnished.
[167] Not tagged. Labels furnished.
[168] Not tagged. Labels furnished.

SUDAN GRASS

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor	Purity, per cent	Inert Matter, per cent	Germination, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds	Number per Pound of each of the Noxious Weed Seeds Specified in the Law
1092	†Seberger Seed Co., Crown Point	Dickinson Co., The Albert C	98.70	......	92.00	1 31	....	C None
	Sudan Grass, Lot 98172	Chicago, Ill. F	99.38	0.60	88.00	4–31	....	F None
1552	Hancock Co. Farm Bureau Coop. Ass'n, Inc., Greenfield	Indiana Farm Bureau Coop. Ass'n, Inc. C	99.70	......	92.00	2–31	....	C None
	Sudan Grass, Lot SG	Indianapolis, Ind. F	98.51	1.47	86.00	5–31	54	F None
445	Marshall Cement & Grain Co., Greencastle.	Indiana Seed Co. C	97 00	......	90 00	4 30	....	C None
	Sudan Grass, Lot 998	Indianapolis, Ind. F	97.33	2.58	83.50	2–31	450	F None
1620	†Quinlan Seed Store, Terre Haute	Mangelsdorf & Brother, Ed. F. C	97 00	......	85 00	4 31	....	C None
	Sudan Grass, Lot M Brand	St. Louis, Mo. F	98.21	1.39	79.00	5–31	18	F None

*Not labeled.
†Certified by retailer.

C and F stands, respectively, for Claimed and Found.

TIMOTHY

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, per cent	Inert Matter, per cent	Germination, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds		Number per Pound of each of the Noxious Weed Seeds Specified in the Law
1587	Ayres Seed Co., Cambridge City[169]	American Field Seed Co., The	C	99.75	......	95.00	2-31	....	C	None
	Timothy, Lot 15201	Chicago, Ill.	F	99.50	0.10	94.25	4-31	2,232	F	Buckhorn 198; common plantain 684
1154	†McMahan Seed Co., The, Valparaiso	American Field Seed Co., The	C	99.50	......	96.00	1-31	....	C	None
	Timothy	Chicago, Ill.	F	99.50	0.35	94.25	4-31	315	F	Common plantain 36; curled dock 54
1384	Sentz, Mrs. Alta N., Fowler	American Field Seed Co., The	C	98.25	......	91.00	2-31	....	C	None
	Timothy, Lot 15215	Chicago, Ill.	F	98.28	1.03	95.75	3-31	5,139	F	Buckhorn 216; common plantain 162; curled dock 18; red sorrel 18
1382	Cyn, Fred, Fowler	Berry Seed Co.	C	99.25	......	93.00	2-31	....	C	None
	Timothy, Lot 15207	Chicago, Ill.	F	99.22	0.29	96.00	4-31	5,103	F	Bracted plantain 36; buckhorn 162 common plantain 180
1007	Indiana State Farm, Greencastle	Berry Seed Co.	C	99.70	......	94.00	11-30	....	C	None
	Timothy, Lot 15274	Clarinda, Iowa	F	99.71	0.10	94.75	3-31	990	F	Buckhorn 18; common plantain 54; curled dock 18
620	Carney Hatcheries, Shelbyville	Byers Seed Co.	C	99.65	......	95.00	1-31	....	C	None
	Timothy, Lot PT	Franklin, Ind.	F	99.70	0.05	95.75	2-31	486	F	Mustard 18; red sorrel 18
1312	Eberts Grain Co., Memphis[170]	Chambers Seed Co.	C	99.50	......	90.00	1-31	....	C	None
	Timothy, Lot 222	Louisville, Ky.	F	99.14	0.24	91.25	4-31	3,006	F	Buckhorn 1,584; common plantain 918; red sorrel 54
160	Eberts Grain Co., Scottsburg[171]	Chambers Seed Co.	C	98.00	......	90.00	8-30	....	C	None
	Timothy, Lot 1215	Louisville, Ky.	F	96.79	1.36	73.75	10-30	10,935	F	Bracted plantain 54; buckhorn 144; common plantain 1,386; red sorrel 126
152	Cloverdale Hardware Co., Cloverdale	Cloverdale Hardware Co.	C	99.25	......	90.00	8-30	....	C	None
	Timothy, Lot EJ	Cloverdale, Ind.	F	99.47	0.38	90.25	9-30	1,719	F	Buckhorn 54; common plantain 90
560	Brewer Milling Co., Gosport	Crabbs Reynolds Taylor Co.	C	99.65	......	90.00	9-30	....	C	None
	Timothy, Lot 3TH	Crawfordsville, Ind.	F	99.66	0.19	91.50	3-31	90	F	Buckhorn 18; common plantain 54; red sorrel 18
1544	Chance Brothers, Connersville	Crabbs Reynolds Taylor Co.	C	99.65	......	92.00	3-31	....	C	None
	Timothy, Lot 1TL	Crawfordsville, Ind.	F	99.65	0.20	96.75	5-31	36	F	Buckhorn 18; common plantain 18

*Not labeled.
†Certified by retailer.
C and F stands, respectively, for Claimed and Found.

[169] Removed from sale. Misbranded. Seed returned to Distributor.
[170] Removed from sale. Misbranded. Returned to Distributor.
[171] Removed from sale. Misbranded. Retagged.

TIMOTHY—Continued

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor	Purity, per cent	Inert Matter, per cent	Germination, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds	Number per Pound of each of the Noxious Weed Seeds Specified in the Law
1017	Cockerell & Walters, Pittsboro	Crabbs Reynolds Taylor Co. C	98.71	......	94.00	1-31	....	C Buckhorn 126; common plantain 90
	Timothy, Lot 2TH	Crawfordsville, Ind. F	98.83	0.34	96.25	4-31	1,620	F Buckhorn 252; common plantain 900; red sorrel 18
337	Crabbs Reynolds Taylor Co., Lafayette	Crabbs Reynolds Taylor Co. C	99.50	......	90.00	9-30	....	C None
	Timothy, Lot 6TH	Crawfordsville, Ind. F	99.48	0.28	96.25	1-31	54	F Buckhorn 18; curled dock 36
489	Decatur Co. Cooperative Co., New Point	Crabbs Reynolds Taylor Co. C	99.65	......	90.00	9-30	....	C None
	Timothy, Lot 5TH	Crawfordsville, Ind. F	99.85	0.05	93.75	2-31	279	F Common plantain 54
400	Galveston Farmers Elevator Co., Galveston	Crabbs Reynolds Taylor Co. C	99.70	......	90.00	9-30	....	C None
	Timothy, Lot 8TH	Crawfordsville, Ind. F	99.75	0.15	97.50	1-31	90	F Common plantain 18; red sorrel 72
106	Hutchinson & Son, Arlington	Crabbs Reynolds Taylor Co. C	99.75	......	90.00	4-30	....	C None
	Timothy, Lot 5TF	Crawfordsville, Ind. F	99.80	0.10	87.50	9-30	963	F Buckhorn 54; common plantain 108; curled dock 18; red sorrel 72; wild carrot 36
1165	Johnson & Chenoweth, Shoals	Crabbs Reynolds Taylor Co. C	99.65	......	90.00	9-30	....	C None
	Timothy, Lot 3TH	Crawfordsville, Ind. F	99.85	0.10	93.75	4-31	144	F Common plantain 144
141	Mooresville Milling Co., Mooresville	Crabbs Reynolds Taylor Co. C	99.65	......	90.00	8-30	....	C None
	Timothy, Lot 8TF	Crawfordsville, Ind. F	99.76	0.14	96.75	9-30	36	F Bracted plantain 18; red sorrel 18
1018	Mowry, R. E., Brownsburg[172]	Crabbs Reynolds Taylor Co. C	98.71	......	94.00	1-31	....	C None
	Timothy, Lot 2TH	Crawfordsville, Ind. F	98.74	0.39	94.50	4-31	918	F Buckhorn 324; common plantain 576; red sorrel 18
570	†Nading Grain Co., Adams	Crabbs Reynolds Taylor Co. C	99.65	......	90.00	9-30	....	C Common plantain 54
	Timothy, Lot 3TH	Crawfordsville, Ind. F	99.56	0.24	93.00	3-31	513	F Common plantain 198; red sorrel 90
939	Newcastle Elevator Co., Newcastle	Crabbs Reynolds Taylor Co. C	99.65	......	92.00	1-31	....	C Common plantain 54
	Timothy, Lot 3TH	Crawfordsville, Ind. F	99.67	0.14	95.25	4-31	252	F Common plantain 216; red sorrel 36
341	Owen Farmers Supply Co., Spencer	Crabbs Reynolds Taylor Co. C	99.60	......	90.00	9-30	....	C None
	"Thrift" Timothy, Lot 6TH	Crawfordsville, Ind. F	99.57	0.29	97.50	1-31	216	F Bracted plantain 18; buckhorn 54 common plantain 144
645	Reiman-McCammon Co., Burney	Crabbs Reynolds Taylor Co. C	99.70	......	90.00	9-30	....	C None
	Timothy, Lot 8TH	Crawfordsville, Ind. F	99.85	0.05	95.50	3-31	72	F Common plantain 36; curled dock 18; red sorrel 18
166	Sample, John L., Madison	Crabbs Reynolds Taylor Co. C	99.65	......	90.00	8-30	....	C None
	Timothy, Lot 8TF	Crawfordsville, Ind. F	99.80	0.10	89.25	10-30	54	F Bracted plantain 18; buckhorn 18; red sorrel 18

1012	Tippecanoe Co. Farm Bureau Coop. Ass'n, Inc., Lafayette[173]	Crabbs Reynolds Taylor Co.	C	99.60		90.00	9-30		C	None
	Timothy, Lot 6TH	Crawfordsville, Ind.	F	99.50	0.30	95.50	3-31	162	F	Buckhorn 36; common plantain 126
857	Demoret Grain Co., Bath	Crawfordsville Seed Co.	C	99.65		95.00	8-30		C	None
	Timothy, Lot 68383	Crawfordsville, Ind.	F	99.70	0.15	96.50	4-31	540	F	Buckhorn 18; common plantain 72
1035	Farmers Grain & Supply Co., Oak	Crawfordsville Seed Co.	C	99.65		94.00	1-31		C	None
	Timothy, Lot 485	Crawfordsville, Ind.	F	99.71	0.14	92.50	4-31	18	F	Buckhorn 18
814	Fayette Grain Co., Connersville	Crawfordsville Seed Co.	C	99.65		94.00	1-31		C	None
	Timothy, Lot 66858	Crawfordsville, Ind.	F	99.75	0.15	94.75	4-31	54	F	Common plantain 54
139	Lake & Reagan, Colfax	Crawfordsville Seed Co.	C	99.65		95.00	8-30		C	None
	Timothy, Lot 66283	Crawfordsville, Ind.	F	99.85	0.10	94.50	9-30	90	F	Buckhorn 18; common plantain 72
522	Parke Co. Farm Bureau, Rockville	Crawfordsville Seed Co.	C	99.65		94.00	12-30		C	None
	Timothy, Lot 66623	Crawfordsville, Ind.	F	99.65	0.25	96.50	3-31	108	F	Buckhorn 36; common plantain 36; red sorrel 36
411	Records & Son, L. N., Edinburg	Crawfordsville Seed Co.	C	99.65		94.00	9-30		C	None
	Timothy, Lot 66513	Crawfordsville, Ind.	F	99.65	0.10	93.75	2-31	369	F	Buckhorn 108; red sorrel 36
1068	Bloomington Milling Co., Bloomington	Dickinson Co., The Albert	C	99.65		96.00	12-30		C	None
	Timothy, Lot 66812	Chicago, Ill.	F	99.80	0.05	95.00	4-31	72	F	Buckhorn 18; common plantain 18; red sorrel 36
414	Byers Seed Co., Franklin	Dickinson Co., The Albert	C	99.65		95.00	12-30		C	None
	Timothy, Lot 66820	Chicago, Ill.	F	99.85	0.05	97.25	2-31	126	F	Common plantain 72; red sorrel 54
179	Culver City Grain & Coal Co., Culver	Dickinson Co., The Albert	C	99.65		94.00	8-30		C	Common plantain 96; curled dock 96
	Timothy, Lot 66399	Chicago, Ill.	F	99.71	0.10	85.50	10-30	405	F	Buckhorn 54; common plantain 108; red sorrel 18
124	Fretz Feed Store, Waterloo	Dickinson Co., The Albert	C	99.65		95.00	8-30		C	None
	Timothy, Lot 66285	Chicago, Ill.	F	99.85	0.10	95.00	9-30	108	F	Buckhorn 18; common plantain 90
653	†Garten Feed Co., Indianapolis	Dickinson Co., The Albert	C	99.65		94.00	11-30		C	None
	Timothy, Lot 66717	Chicago, Ill.	F	99.80	0.10	95.50	3-31	558	F	Common plantain 72; curled dock 18; red sorrel 18
769	Gibson Co. Shipping Ass'n, Princeton	Dickinson Co., The Albert	C	99.65		91.00	1-31		C	None
	Timothy, Lot 66838	Chicago, Ill.	F	99.71	0.19	91.75	4-31	36	F	Common plantain 18; red sorrel 18
464	Hunger, C. G., Madison	Dickinson Co., The Albert	C	99.60		94.00	10-30		C	None
	Timothy, Lot 66697	Chicago, Ill.	F	99.55	0.15	90.25	2-31		F	None
378	Jay Grain Co., The, Elwood	Dickinson Co., The Albert	C	99.65		94.00	8-30		C	None
	Timothy, Lot 66345	Chicago, Ill.	F	99.85	0.05	98.25	1-31	72	F	Common plantain 18; curled dock 36; red sorrel 18
505	Loughry Brothers Milling & Grain Co., Monticello	Dickinson Co., The Albert	C	99.65		94.00	9-30		C	None
	Timothy, Lot 66513	Chicago, Ill.	F	99.70	0.15	94.00	3-31	666	F	Buckhorn 18; common plantain 180; curled dock 18
1148	McMahan Seed Co., The, Valparaiso	Dickinson Co., The Albert	C	99.00		93.00	10-30		C	Common plantain 800; red sorrel 48

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*Not labeled.

†Certified by retailer.

C and F stands, respectively, for Claimed and Found.

[172] Removed from sale. Misbranded.

[173] Sample secured from J. L. Van Dame, R. R. 7, Lafayette, Ind.

TIMOTHY—Continued

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor	Purity, per cent	Inert Matter, per cent	Germination, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds	Number per Pound of each of the Noxious Weed Seeds Specified in the Law
	Timothy, Lot 66591	Chicago, Ill. F	98.93	0.39	93.00	4-31	1,593	F Common plantain 468
1096	Reynolds Brooks Hardware Co., Loogootee	Dickinson Co., The Albert C	98.30	......	92.00	1-31	....	C Buckhorn 212; common plantain 1,024; red sorrel 128
	Timothy, Lot 66860	Chicago, Ill. F	97.95	1.42	94.50	4-31	2,394	F Buckhorn 162; common plantain 828; red sorrel 54
1400	Farmers Elevator Co., Rochester	Dickinson Co., The Albert C	99.65	......	95.00	10-30	....	C None
	Timothy, Lot 66665	Chicago, Ill. F	99.67	0.19	94.50	4-31	108	F Common plantain 90; curled dock 18
178	Shaffer, Walter, Bourbon	Dickinson Co., The Albert C	99.65	......	94.00	9-30	....	C None
	Timothy, Lot 66446	Chicago, Ill. F	99.90	0.05	91.25	10-30	18	F Common plantain 18
1074	Weinkauf Grain Co., Hamlet	Dickinson Co., The Albert C	99.65	......	95.00	10-30	....	C None
	Pinetree Timothy, Lot 66665	Chicago, Ill. F	99.56	0.24	93.25	4-31	72	F Common plantain 36; curled dock 36
207	Woods & Pritsch, Sheridan	Dickinson Co., The Albert C	97.65	......	95.00	10-30	....	C None
	Timothy, Lot 66635	Chicago, Ill. F	99.75	0.15	96.00	11-30	315	F Common plantain 54; red sorrel 36
1189	Farmers Coop. Co. of Indiana, Francesville	Farmers Coop. Co. of Indiana C	99.40	......	92.75	2-31	....	C None
	Timothy	Francesville, Ind. F	99.55	0.35	98.00	3-31	468	F Curled dock 18
1561	Fortville Grain Co., Fortville	Foster-Kendall Co. C	99.60	......	94.00	12-30	....	C None
	Timothy	Carmel, Ind. F	99.85	0.05	92.75	4-31	765	F Buckhorn 36; common plantain 54
1516	Morrison-Teagarden Co., Saratoga	Goodrich Brothers Co. C	99.60	......	93.00	2-31	....	C None
	Timothy, Lot Lark	Winchester, Ind. F	99.90	0.05	92.75	4-31	549	F Common plantain 18; red sorrel 306
1563	Rosston Grain & Lumber Co., Rosston	Goodrich Brothers Co. C	99.60	......	90.00	12-29	....	C None
	Timothy, Lot Lark	Winchester, Ind. F	99.46	0.24	93.00	4-31	765	F Common plantain 18; curled dock 18; red sorrel 54
469	Haynes Milling Co., The, Portland	Haynes Milling Co., The C	99.70	......	96.00	1-31	....	C None
	Timothy, Lot T	Portland, Ind. F	98.82	0.49	93.25	2-31	531	F Common plantain 306
866	Heldt Co., The, Evansville	Heldt Co., The C	99.64	......	92.00	10-30	....	C Buckhorn 225; common plantain 1,575
	Timothy, Lot 2115	Evansville, Ind. F	99.45	0.30	92.25	4-31	927	F Buckhorn 36; common plantain 198; red sorrel 18

767	Murphy & Co., Princeton Timothy, Lot 2116	Heldt Co., The Evansville, Ind.	C	95.58	....	89.00	10-30	......	C	Buckhorn 2,250; common plantain 225; oxeye daisy 675; red sorrel 7,425; white top 225
			F	96.35	1.83	95.00	4-31	19,539	F	Bracted plantain 18; buckhorn 1,692; common plantain 288; oxeye daisy 216; red sorrel 11,475
96	Victoria Mill & Elevator Co., Jasper Thelco Timothy, Lot 1855	Heldt Co., The Evansville, Ind.	C	99.54	......	90.00	10-29	......	C	Common plantain 225; red sorrel 225
			F	99.22	0.20	85.50	9-30	2,979	F	Common plantain 54
1199	Victoria Mill & Elevator Co., Jasper Thelco Timothy, Lot 2115	Heldt Co., The Evansville, Ind.	C	99.64	......	93.00	10-30	......	C	Buckhorn 225; common plantain 1,575
			F	99.50	0.30	88.00	5-31	747	F	Buckhorn 18; common plantain 36; red sorrel 18
751	Walker Hardware Co., Vincennes Thelco Timothy, Lot 2108	Heldt Co., The Evansville, Ind.	C	99.74	....	92.00	10-30	......	C	Common plantain 1,350
			F	99.36	0.49	93.75	4-31	441	F	Buckhorn 144; common plantain 72
190	Wilson & Wilson, Mount Vernon Comet Timothy, Lot 2092	Heldt Co., The Evansville, Ind.	C	99.39	....	93.00	9-30	......	C	Buckhorn 1,125; common plantain 450; red sorrel 3,600
			F	99.35	0.40	93.00	10-30	3,015	F	Buckhorn 270; common plantain 180; oxeye daisy 18; red sorrel 1,422
1042	Cooperative Elevator Co., Winamac Timothy, Lot F226	Hooton-Davis Seed Co. Lebanon, Ind.	C	99.75	....	92.00	10-30	......	C	None
			F	99.80	0.10	93.50	4-31	990	F	Common plantain 36; curled dock 54
267	Criss Brothers, Lewis Timothy, Lot T210	Hooton-Davis Seed Co. Lebanon, Ind.	C	99.50	......	90.00	8-30	......	C	None
			F	99.75	0.15	94.75	12-30	225	F	None
1020	Doty Hardware Co., Brownsburg Timothy, Lot T225	Hooton-Davis Seed Co. Lebanon, Ind.	C	99.75	....	92.00	10-30	......	C	None
			F	99.41	0.44	97.50	4-31	54	F	Bracted plantain 18; common plantain 36
688	Eckert Hardware Co., Osgood Timothy, Lot T225	Hooton-Davis Seed Co. Lebanon, Ind.	C	99.75	....	92.00	10-30	......	C	None
			F	99.85	0.10	97.75	4-31	....	F	None
890	Farmers Cooperative Co., Centerville Timothy, Lot T225	Hooton-Davis Seed Co. Lebanon, Ind.	C	99.75	....	92.00	10-30	......	C	None
			F	99.67	0.19	95.75	4-31	225	F	None
931	Farmers Grain Co., Pershing Timothy, Lot T225	Hooton-Davis Seed Co. Lebanon, Ind.	C	99.75	....	92.00	10-30	......	C	None
			F	99.80	0.10	97.00	4-31	315	F	Common plantain 90
216	Hooton-Davis Seed Co., Lebanon Timothy, Lot T222	Hooton-Davis Seed Co. Lebanon, Ind.	C	99.50	....	90.00	9-30	......	C	None
			F	99.75	0.05	94.25	10-30	243	F	Common plantain 18
1015	Lizton Grain & Lumber Co., Lizton Timothy, Lot 225	Hooton-Davis Seed Co. Lebanon, Ind.	C	99.75	....	91.00	10-30	......	C	None
			F	99.65	0.20	97.25	4-31	297	F	Buckhorn 18; common plantain 54
738	Pentecost & Craft Co., Terre Haute Timothy, Lot J224	Hooton-Davis Seed Co. Lebanon, Ind.	C	99.75	......	91.00	10-30	......	C	None
			F	99.80	0.15	93.25	4-31	18	F	Curled dock 18
162	Peru Grain & Coal Co., Peru Timothy, Lot T210	Hooton-Davis Seed Co. Lebanon, Ind.	C	99.50	......	90.00	8-30	......	C	None
			F	99.51	0.24	94.25	10-30	108	F	Buckhorn 36; common plantain 54 red sorrel 18

C and F stands, respectively, for Claimed and Found.

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*Not labeled.
†Certified by retailer.

TIMOTHY—Continued

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, per cent	Inert Matter, per cent	Germination, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds		Number per Pound of each of the Noxious Weed Seeds Specified in the Law
1349	Scottsburg Elevator Co., Scottsburg	Hooton-Davis Seed Co.	C	97.00	......	83.00	12–30	....	C	Buckhorn 180; common plantain 360; curled dock 80
	Timothy, Lot T276	Lebanon, Ind.	F	92.02	2.10	85.25	5–31	7,569	F	Buckhorn 36; common plantain 4,950; curled dock 18; wild carrot 90
644	Decatur Co. Coop. Co., Greensburg	Indiana Farm Bureau Coop. Ass'n, Inc.	C	99.60	......	91.00	1–31	....	C	None
	Timothy, Lot T550	Indianapolis, Ind.	F	99.50	0.30	92.25	3–31	54	F	Common plantain 36; curled dock 18
825	Fayette Co. Farm Bureau, Connersville	Indiana Farm Bureau Coop. Ass'n, Inc.	C	99.60	......	91.00	1–31	....	C	None
	Timothy, Lot T550	Indianapolis, Ind.	F	99.45	0.20	91.25	4–31	36	F	Common plantain 36
964	Indiana Dairy Marketing Ass'n, Muncie	Indiana Farm Bureau Coop. Ass'n, Inc.	C	99.60	......	91.00	1–31	....	C	None
	Timothy, Lot T550	Indianapolis, Ind.	F	99.51	0.24	94.50	4–31	279	F	Common plantain 54
420	Johnson Co. Farm Bureau Coop. Ass'n, Inc., Franklin	Indiana Farm Bureau Coop. Ass'n, Inc.	C	99.65	......	92.00	12–30	....	C	None
	Timothy, Lot T545	Indianapolis, Ind.	F	99.52	0.34	97.25	1–31	954	F	Common plantain 468; red sorrel 36
1064	Morgan Co. Farm Bureau Coop. Ass'n, Inc., Martinsville	Indiana Farm Bureau Coop. Ass'n, Inc.	C	99.65	......	93.00	1–31	....	C	None
	Timothy, Lot T552	Indianapolis, Ind.	F	99.65	0.10	88.50	4–31	522	F	Common plantain 72
622	Shelby Co. Farm Bureau Coop. Ass'n, Inc., Shelbyville	Indiana Farm Bureau Coop. Ass'n, Inc.	C	99.60	......	91.00	1–31	....	C	None
	Timothy, Lot T550	Indianapolis, Ind.	F	99.41	0.34	95.25	2–31	18	F	Common plantain 18
1013	Tippecanoe Co. Farm Bureau Coop. Ass'n, Inc., Lafayette[174]	Indiana Farm Bureau Coop. Ass'n, Inc.	C	99.65	......	93.00	1–31	....	C	None
	Timothy, Lot T552	Indianapolis, Ind.	F	99.60	0.20	95.50	3–31	180	F	Buckhorn 18; common plantain 162
901	Wayne Co. Farm Bureau Coop. Ass'n, Inc., Richmond	Indiana Farm Bureau Coop. Ass'n, Inc.	C	99.60	......	91.00	1–31	....	C	None
	Timothy, Lot T550	Indianapolis, Ind.	F	99.32	0.49	94.25	4–31	108	F	Common plantain 108
143	Brewer Milling Co., Gosport	Indiana Seed Co.	C	99.50	......	90.00	8–30	....	C	None
	Timothy, Lot 1437	Indianapolis, Ind.	F	99.70	0.20	90.75	9–30	315	F	Buckhorn 36; common plantain 36; red sorrel 18
88	Central States Elevator Corp., Morristown	Indiana Seed Co.	C	99.65	......	91.00	12–29	....	C	None
	Timothy, Lot T145	Indianapolis, Ind.	F	99.71	0.14	88.25	8–30	1,629	F	Common plantain 36; curled dock 18

821	Chance Brothers, Connersville	Indiana Seed Co.	C	99.65	......	90.00	8-30	....	C	None
	Timothy, Lot 70	Indianapolis, Ind.	F	99.90	0.05	95.00	4-31	36	F	Common plantain 36
1052	Clark Feed Store, Bloomington[175]	Indiana Seed Co.	C	99.25	......	90.00	8-30	....	C	Red sorrel 226
	Timothy, Lot B	Indianapolis, Ind.	F	98.02	0.35	83.75	4-31	21,636	F	Red sorrel 936
116	Fayette Grain Co., Connersville[176]	Indiana Seed Co.	C	99.50	......	90.00	7-30	....	C	None
	Timothy, Lot 1428	Indianapolis, Ind.	F	99.75	0.15	70.25	9-30	108	F	Buckhorn 36; common plantain 54; red sorrel 18
1556	Furry, V. H., Greenfield	Indiana Seed Co.	C	99.50	......	92.00	1-31	....	C	None
	Timothy, Lot 33	Indianapolis, Ind.	F	99.81	0.09	88.75	5-31	297	F	Mustard 72
928	Griffin & Bundy, Spiceland	Indiana Seed Co.	C	99.50	......	92.00	12-30	....	C	None
	Timothy, Lot 1478	Indianapolis, Ind.	F	99.37	0.29	94.25	4-31	144	F	Common plantain 54; curled dock 18; prickly lettuce 18; red sorrel 54
810	Masters, Chas. S., Brookville	Indiana Seed Co.	C	99.60	......	90.00	8-30	....	C	None
	Timothy, Lot 1476	Indianapolis, Ind.	F	99.65	0.25	95.00	4-31	252	F	Common plantain 216; red sorrel 36
76	Naber & Co., Chas. F., Alexandria	Indiana Seed Co.	C	99.07	......	90.00	1-30	....	C	Common plantain 90; red sorrel 225
	Timothy, Lot T221	Indianapolis, Ind.	F	99.16	0.49	80.00	7-30	2,484	F	Buckhorn 108; common plantain 360; curled dock 36; red sorrel 180
97	Pioneer Elevator Co., Worthington	Indiana Seed Co.	C	99.50	......	90.00	2-30	....	C	None
	Timothy, Lot 539	Indianapolis, Ind.	F	99.05	0.30	84.75	9-30	8,136	F	Common plantain 36
239	Quinlan Seed Store, Terre Haute	Indiana Seed Co.	C	99.00	......	90.00	8-30	....	C	Common plantain 450; red sorrel 90
	Timothy, Lot 1479	Indianapolis, Ind.	F	98.76	0.45	94.00	11-30	1,458	F	Buckhorn 180; common plantain 324; oxeye daisy 18; red sorrel 36
417	Throckmorton Seed Store, Franklin	Indiana Seed Co.	C	99.65	......	90.00	8-30	....	C	None
	Timothy, Lot 9T6	Indianapolis, Ind.	F	99.80	0.20	96.75	2-31	108	F	Common plantain 90; red sorrel 18
661	†Warren Seed Co., Indianapolis	Indiana Seed Co.	C	99.65	......	90.00	8-30	....	C	None
	Timothy, Lot 9T6	Indianapolis, Ind.	F	99.70	0.15	95.00	3-31	....	F	None
471	Beach & Simmers, Albany	Kraus & Apfelbaum	C	99.60	......	90.00	8-30	....	C	None
	Timothy, Lot D2	Ft. Wayne, Ind.	F	99.70	0.20	93.00	2-31	54	F	Common plantain 36; red sorrel 18
184	Burket Elevator Co., Burket	Kraus & Apfelbaum	C	99.60	......	90.00	8-30	....	C	None
	Timothy, Lot 1H	Ft. Wayne, Ind.	F	99.36	0.44	85.25	10-30	369	F	Common plantain 144
1031	Farmers Coop. Co., Inc., Royal Center	Kraus & Apfelbaum	C	99.60	......	90.00	8-30	....	C	None
	Timothy, Lot 45	Ft. Wayne, Ind.	F	99.42	0.39	93.00	4-31	369	F	Common plantain 144
515	Gelzleichter & Son, J., Huntington	Kraus & Apfelbaum	C	99.60	......	90.00	8-30	....	C	None
	Timothy, Lot S1	Ft. Wayne, Ind.	F	99.35	0.25	92.75	3-31	1,656	F	Bracted plantain 18; buckhorn 36; common plantain 216; curled dock 18; red sorrel 18

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*Not labeled.

†Certified by retailer.

C and F stands, respectively, for Claimed and Found.

[174] Sample secured from J. L. Van Dame, R. R. 7, Lafayette, Ind.

[175] Removed from sale. Misbranded. Retagged.

[176] Removed from sale. Misbranded. All sold.

TIMOTHY—Continued

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, per cent	Inert Matter, per cent	Germination, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds		Number per Pound of each of the Noxious Weed Seeds Specified in the Law
175	Home Grain Co., South Milford	Kraus & Apfelbaum	C	99.60	....	90.00		....	C	None
	AA Timothy, Lot D4	Ft. Wayne, Ind.	F	99.85	0.05	87.00	10-30	54	F	Common plantain 18; curled dock 36
174	Kraus & Apfelbaum, Auburn	Kraus & Apfelbaum	C	99.60	.	90.00	8-30	....	C	None
	Timothy, Lot H3	Ft. Wayne, Ind.	F	99.61	0.24	90.50	10-30	369	F	Common plantain 144
121	Muff Grain & Coal Co., Fountain City[177]	Kraus & Apfelbaum	C						C	
	AA Timothy	Ft. Wayne, Ind.	F	99.61	0.15	82.75	9-30	54	F	Common plantain 54
607	Nathan Grain Co., St. Joe	Kraus & Apfelbaum	C	99.60		90.00	8-30	....	C	None
	Timothy, Lot S1	Ft. Wayne, Ind.	F	99.13	0.48	90.75	3-31	1,134	F	Bracted plantain 18; buckhorn 72; common plantain 90; curled dock 54
1034	Phillips, J. C., Star City	Kraus & Apfelbaum	C	99.60	.....	90.00	1-31	....	C	None
	Timothy, Lot 7	Ft. Wayne, Ind.	F	99.46	0.15	94.25	4-31	846	F	Common plantain 378; oxeye daisy 18
1139	Syler & Syler, Nappanee	Kraus & Apfelbaum	C	99.60	....	90.00	8-30	......	C	None
	Timothy, Lot H3	Ft. Wayne, Ind.	F	99.76	0.19	95.75	4-31	108	F	Common plantain 108
181	Syler & Syler, Plymouth	Kraus & Apfelbaum	C	99.60	.....	90.00	8-30	.....	C	None
	Timothy, Lot H3	Ft. Wayne, Ind.	F	99.61	0.20	90.50	10-30	531	F	Common plantain 252; red sorrel 54
1380	Syler, Clay, North Manchester	Kraus & Apfelbaum	C	99.60	...	90.00	8-30	.....	C	None
	Timothy, Lot 3	Ft. Wayne, Ind.	F	99.53	0.38	94.75	5-31	369	F	Common plantain 108; red sorrel 18; wild carrot 18
1326	Farmers Elevator Co., South Whitley	Kraus, Sam	C	99.65	.....	96.00	12-30	....	C	None
	Timothy, Lot 66812	Ft. Wayne, Ind.	F	99.85	0.05	94.75	5-31	540	F	Buckhorn 18; common plantain 72
127	Huntertown Grain Co., Huntertown[178]	Kraus, Sam	C	99.50	.....	92.00	8-30	.....	C	None
	Timothy, Lot 35	Ft. Wayne, Ind.	F	97.54	0.25	90.00	9-30	279	F	Buckhorn 54
877	Richmond Feed Milling Co., Richmond[179]	Kraus, Sam	C	99.75	.....	93.00	12-30	....	C	None
	Timothy, Lot 55	Ft. Wayne, Ind.	F	99.72	0.14	90.00	4-31	1,656	F	Buckhorn 18; common plantain 1,134; curled dock 18; red sorrel 36
878	Richmond Feed Milling Co., Richmond[180]	Kraus, Sam	C	93.00	..	92.00	11-30	......	C	None
	Timothy, Lot 56	Ft. Wayne, Ind.	F	80.34	1.93	88.50	4-31	7,182	F	Canada thistle 18; common plantain 4,725; curled dock 36; red sorrel 378

1251	Strock, Frank, Hudson Timothy, Lot 55	Kraus, Sam Ft. Wayne, Ind.	C F	99.75 99.61	... 0 19	93 00 89 00	10-30 5 31	... 486	C F	None Common plantain 378; red sorrel 108
565	Wolcottville Elevator Co., Wolcottville Timothy, Lot 36	Kraus, Sam Ft. Wayne, Ind.	C F	99 50 99 85	... 0 10	95 00 93 75	8-30 3 31	... 18	C F	None Curled dock 18
706	Culbertson, Clyde, Vevay Timothy	Lewis Implement & Seed Co. Louisville, Ky.	C F	99 50 99 38	... 0 48	95 00 95 00	1-31 3-31	... 1,053	C F	None Buckhorn 72; common plantain 216; red sorrel 90
1122	†Ragsdale & Owen, Bedford Timothy, Lot XX	Lewis Implement & Seed Co. Louisville, Ky.	C F	99 50 99.28	... 0.48	95 00 89 75	12-30 4 31	... 909	C F	None Buckhorn 18; common plantain 108; curled dock 90; red sorrel 18
83	Bulleit & Son, V. H., Corydon[181] Timothy	Louisville Seed Co. Louisville, Ky.	C F	99.50 99 48	... 0 24	95 00 72.50	2-30 8-30	... 1,080	C F	None Bracted plantain 18; buckhorn 90; common plantain 342; curled dock 36; red sorrel 144
201	Bulleit & Son, V. H., Corydon[182] Timothy	Louisville Seed Co. Louisville, Ky.	C F	99 50 99 13	... 0 19	95 00 89 75	8-30 11-30	... 2,385	C F	None Bracted plantain 36; buckhorn 486; common plantain 162; curled dock 36; red sorrel 90
81	Turley, James E., English[183] Gold Medal Timothy, Lot GM	Louisville Seed Co. Louisville, Ky.	C F	99 50 99 24	... 0 38	95 00 76.00	5 30 8-30	... 1,395	C F	None Bracted plantain 18; buckhorn 90; common plantain 504; curled dock 36; red sorrel 72
240	†Lowell Hay & Grain Co., Shelby[184] Timothy	Lowell Grain & Hay Co. Lowell, Ind.	C F	85 00 92 37	... 0 58	75 00 48 50	1-30 11-30	... 20,340	C F	None Common plantain 90; red sorrel 2,250
150	McCarty Seed Co., J. A., Terre Haute Timothy, Lot 2199	McCarty Seed Co., J. A. Evansville, Ind.	C F	99.80 99 65	... 0 15	90.00 89 25	8-30 9-30	... 765	C F	Buckhorn 225 Bracted plantain 36; buckhorn 198; common plantain 288; wild carrot 18
779	Posey Seed & Feed Co., Mount Vernon "Lucky Jim" Timothy, Lot 2399	McCarty Seed Co., J. A. Evansville, Ind.	C F	99 81 99 65	... 0 25	94 00 97 50	12 30 3-31	... 450	C F	None Bracted plantain 18; buckhorn 360; common plantain 36; red sorrel 36
256	Castner Hardware Co., Holton Timothy, Lot 4487	McCullough Seed Co., The J. Chas. Cincinnati, Ohio	C F	99 60 99.80	... 0.10	95 00 95.75	9-30 11 30	... 711	C F	None Common plantain 18; quack grass 18
717	Crum, H. H., Milan Timothy, Lot 4767	McCullough Seed Co., The J. Chas. Cincinnati, Ohio	C F	99 60 99 60	... 0 15	95 00 93.00	1 31 4-31	... 423	C F	Buckhorn 36 Common plantain 180; red sorrel 18

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*Not labeled.

†Certified by retailer.

C and F stands, respectively, for Claimed and Found.

[177] Not tagged. Labels furnished.

[178] Removed from sale. Misbranded. All sold.

[179] Removed from sale. Misbranded. All sold.

[180] Removed from sale. Misbranded. All sold. Contains 16.20% Alsike Clover with a Germination of 46.75% and 9.25% Hard Seeds.

[181] Removed from sale. Misbranded. All sold.

[182] Removed from sale. Misbranded. Retagged.

[183] Removed from sale. Misbranded. All sold.

[184] Contains 5.94% Alsike Clover with a Germination of 33.00% and 10.00% Hard Seeds.

TIMOTHY—Continued

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor	Purity, per cent	Inert Matter, per cent	Germination, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds	Number per Pound of each of the Noxious Weed Seeds Specified in the Law
718	Doerflein, Chas. E., Cedar Grove	McCullough Seed Co., The J. Chas. C	98.10	......	95.00	1–31	....	C Buckhorn 225; common plantain 450; red sorrel 225
	Timothy, Lot 4692	Cincinnati, Ohio F	98.29	0.38	94.00	4–31	1,087	F Buckhorn 54; common plantain 216; red sorrel 144
698	Hunter & Son, Wm., Versailles	McCullough Seed Co., The J. Chas. C	99.60	......	95.00	1–31	....	C Buckhorn 36
	Timothy, Lot 4767	Cincinnati, Ohio F	99.70	0.15	92.75	4–31	216	F Common plantain 198; red sorrel 18
699	Hunter & Son, Wm., Versailles	McCullough Seed Co., The J. Chas. C	99.66	.....	94.00	12–30	....	C Common plantain 18
	Timothy, Lot 4522	Cincinnati, Ohio F	99.85	0.05	96.00	4–31	513	F Common plantain 234; curled dock 18; red sorrel 36
714	Krick & Son, A., Milan	McCullough Seed Co., The J. Chas. C	99.60	.....	95.00	9–30	....	C None
	Timothy, Lot 4487	Cincinnati, Ohio F	99.65	0.20	93.25	4–31	243	F Common plantain 18
686	Osgood Grain Co., Osgood	McCullough Seed Co., The J. Chas. C	99.60	....	94.00	12–30	......	C Common plantain 18
	Timothy, Lot 4522	Cincinnati, Ohio F	99.61	0.15	93.25	4–31	333	F Common plantain 108
692	Pieper & Smith, Dillsboro	McCullough Seed Co., The J. Chas. C	99.66	....	94.00	2–31	....	C Common plantain 18
	Timothy, Lot 4522	Cincinnati, Ohio F	99.61	0.19	95.75	4–31	774	F Buckhorn 144; common plantain 108; red sorrel 72
428	Sample, John L., Madison	McCullough Seed Co., The J. Chas. C	99.60	.....	95.00	9–30	....	C None
	Timothy, Lot 4487	Cincinnati, Ohio F	99.62	0.19	95.50	2–31	36	F Buckhorn 18; red sorrel 18
484	Schoettelkotte Bros., Sunman	McCullough Seed Co., The J. Chas. C	99.60	......	95.00	9–30	....	C None
	Timothy, Lot 4487	Cincinnati, Ohio F	99.70	0.15	93.50	2–31	459	F Bracted plantain 18; buckhorn 18; common plantain 198
1177	Walker, W. A., Loogootee	McCullough Seed Co., The J. Chas. C	99.60	......	95.00	1–31	....	C Buckhorn 36
	Timothy, Lot 4767	Cincinnati, Ohio F	99.80	0.05	94.25	4–31	315	F Common plantain 90
847	Muff Grain & Coal Co., Liberty[185]	Mantheys Seed Store C	99.03	.....	93.00	11–30	....	C None
	Timothy, Lot H	Cincinnati, Ohio F	98.06	1.09	95.50	3–31	9,441	F Buckhorn 180; common plantain 2,475; red sorrel 36
1539	Muff Grain & Coal Co., Liberty[186]	Mantheys Seed Store C	99.30	......	92.00	11–30	....	C None
	Timothy, Lot H	Cincinnati, Ohio F	98.86	0.64	92.50	4–31	3,465	F Buckhorn 54; common plantain 486
677	Jackson & Son, P. E., Lawrenceburg	Market Gardeners Seed Co., The C	99.50	......	92.00	8–30	......	C None
	Timothy, Lot 5530	Cincinnati, Ohio F	99.55	0.20	96.00	2–31	306	F Bracted plantain 18; buckhorn 126; common plantain 144; curled dock 18
806	†Werst & Co., Peter, Brookville	Market Gardeners Seed Co., The C	99.50	......	92.00	12–30	....	C None
	Timothy, Lot 5572	Cincinnati, Ohio F	99.45	0.25	97.50	3–31	297	F Red sorrel 72

1262	Mayer Grain Co., Churubusco	Mayer Grain Co.	C	99.50	.....	93.00	2-31	.....	C	None
	Timothy, Lot A	South Whitley, Ind.	F	99.70	0.10	95.00	3-31	612	F	Common plantain 162
1464	Losche, Albert, Pur. Agent, Indianapolis	Mazur Seed Co.	C	99.65	.....	93.00	9-30	.....	C	None
	Timothy, Lot 1475	Indianapolis, Ind.	F	99.61	0.25	95.50	3-31	693	F	Common plantain 18
1577	*Holmes Supply Co., Kingsbury	Morris Grain & Seed Co., The	C	.....	.....	.....	.....	.....	C	
	Timothy	Morris, Ill.	F	98.38	0.34	93.75	4 31	1,080	F	Buckhorn 18; common plantain 162
368	Naber & Co., Charles F., Alexandria	Naber & Co., Charles F.	C	99.56	.....	98.00	9-30	.....	C	None
	Timothy, Lot 50	Alexandria, Ind.	F	99.72	0.19	92.00	1-31	675	F	None
953	Daviess Co. Farm Bureau, Inc., Washington	Ohio Valley Seed Co.	C	99.65	.....	90.00	1-31	.....	C	Buckhorn 135; common plantain 180
	Timothy, Lot E569	Evansville, Ind.	F	99.27	0.24	94.50	4-31	999	F	Buckhorn 144; common plantain 180
1217	Graves Implement Store[187]	Ohio Valley Seed Co.	C	99.60	.....	90.00	2 31	.....	C	Common plantain 90
	Timothy, Lot F132	Evansville, Ind.	F	98.41	0.99	90.75	5-31	9,045	F	Buckhorn 36; common plantain 1,584
871	Ohio Valley Seed Co., Evansville	Ohio Valley Seed Co.	C	95.00	.....	85.00	1-31	.....	C	Buckhorn 90; common plantain 2,600
	Timothy, Lot F12	Evansville, Ind.	F	93.70	4.10	84.00	5-31	33,579	F	Buckhorn 18; common plantain 4,950; oxeye daisy 18; red sorrel 18
94	Dilly & Sons, Phillip, Huntingburg[188]	Ohio Valley Seed Co.	C	99.50	.....	90.00	5-30	.....	C	Common plantain 90
	Timothy, Lot D573	Evansville, Ind.	F	99.31	0.10	96.50	9-30	2,583	F	Buckhorn 18; common plantain 90; red sorrel 2,475
778	Posey Seed & Feed Co., Mount Vernon	Ohio Valley Seed Co.	C	97.00	.....	89.00	2-31	.....	C	Common plantain 1,125
	Timothy, Lot F28	Evansville, Ind.	F	97.27	1.49	92.75	4 31	16,893	F	Common plantain 2,250; red sorrel 18
191	Gibson Co. Shipping Ass'n, Princeton	Purcell Seed Co.	C	99.50	.....	90.00	9-30	.....	C	Common plantain 675; curled dock 9; red sorrel 18
	"Tru Val" Timothy, Lot 9190	Evansville, Ind.	F	99.61	0.24	92.00	10-30	1,584	F	Common plantain 216; red sorrel 18
783	Kindermann & Sons, Wm., Boonville	Purcell Seed Co.	C	99.05	.....	95.00	1-31	.....	C	Common plantain 1,125; red sorrel 225
	"Judge" Timothy, Lot 9260	Evansville, Ind.	F	98.82	0.15	95.00	4-31	1,260	F	Common plantain 810
192	Perigo Elevator Co., Boonville	Purcell Seed Co.	C	99.50	.....	90.00	8-30	.....	C	Common plantain 675; curled dock 9; red sorrel 18
	"Tru Val" Timothy, Lot 9190	Evansville, Ind.	F	99.76	0.14	94.00	10-30	1,539	F	Buckhorn 18; common plantain 316; red sorrel 36
984	Perry, Charles S., Linton	Quinlan Seed Store	C	99.08	.....	90.00	11-30	.....	C	None
	Timothy, Lot 1	Terre Haute, Ind.	F	99.30	0.45	91.50	4-31	261	F	Common plantain 36
1051	†Farmers Coal & Feed Co., Bloomington	Schultz Seed Co., J. M.	C	99.70	.....	94.00	12-30	.....	C	Common plantain 225
	Reliable Timothy	Dieterich, Ill.	F	99.75	0.15	94.50	3-31	1,152	F	Buckhorn 108; common plantain 594

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*Not labeled.
†Certified by retailer.
C and F stands, respectively, for Claimed and Found.
[185] Removed from sale. Misbranded. All sold.

[186] Removed from sale. Misbranded. All sold.
[187] Removed from sale. Misbranded. All sold.
[188] Removed from sale. Misbranded. Retagged.

TIMOTHY—Continued

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor	Purity, per cent	Inert Matter, per cent	Germination, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds	Number per Pound of each of the Noxious Weed Seeds Specified in the Law
542	Holton & Son, S. E., Patricksburg	Schultz Seed Co., J. M. C	99.70	.....	94.00	12–30	....	C Common plantain 225
	Reliable Timothy, Lot 112	Dieterich, Ill. F	99.56	0.34	94.25	3–31	837	F Buckhorn 540; common plantain 36; red sorrel 36
976	Linton Hardware Co., Linton[189]	Schultz Seed Co., J. M. C	99.00	.....	89.00	12–30	....	C None
	Timothy	Dieterich, Ill. F	99.55	0.15	98.25	3–31	3,177	F Buckhorn 1,548; common plantain 72; red sorrel 1,332
547	Maegerlein, E. S., Patricksburg	Schultz Seed Co., J. M. C	99.70	.....	94.00	12–30	....	C Common plantain 225
	Reliable Timothy, Lot 112	Dieterich, Ill. F	99.36	0.44	94.75	3–31	882	F Buckhorn 810; common plantain 18; red sorrel 54
144	Pentecost & Craft, Terre Haute	Schultz Seed Co., J. M. C	99.80	.....	90.00	8–30	....	C Buckhorn 225
	Reliable Timothy, Lot 108	Dieterich, Ill. F	99.75	0.10	91.25	9–30	1,107	F Buckhorn 144; common plantain 648; red sorrel 90
145	Pentecost & Craft, Terre Haute	Schultz Seed Co., J. M. C	99.25	.....	90.00	8–30	....	C Buckhorn 1,115; common plantain 225; red sorrel 225
	Gold Standard Timothy	Dieterich, Ill. F	99.62	0.10	88.00	9–30	1,674	F Buckhorn 918; common plantain 306
203	Becker & Sons, J. H., Corydon[190]	Scott Seed Co. C	99.50	.....	90.00	9–30	....	C None
	Timothy, Lot 832	New Albany, Ind. F	99.61	0.15	94.25	11–30	1,926	F Buckhorn 180; common plantain 342; curled dock 18; red sorrel 36
1393	Cordes Hardware Co., Seymour	Scott Seed Co. C	99.50	.....	90.00	1–31	....	C None
	Timothy, Lot 846	New Albany, Ind. F	99.26	0.30	89.25	5–31	837	F Common plantain 72; red sorrel 90
1351	Crescent Mills, Crothersville	Scott Seed Co. C	99.60	.....	90.00	10–30	....	C None
	Timothy, Lot 835	New Albany, Ind. F	99.52	0.24	92.50	5–31	54	F Common plantain 54
171	Dunlevy & Son, D. R., Henryville	Scott Seed Co. C	99.50	.....	90.00	8–30	....	C None
	Timothy, Lot 815	New Albany, Ind. F	99.45	0.20	90.50	10–30	351	F Buckhorn 90; common plantain 36
1291	Farmers & Merchants Exchange, New Albany	Scott Seed Co. C	99.50	.....	90.00	1–31	....	C Common plantain 90
	Timothy, Lot 851	New Albany, Ind. F	99.85	0.05	88.50	5–31	1,143	F Buckhorn 36; common plantain 396; curled dock 36
1313	Gienger & Co., John, Jeffersonville	Scott Seed Co. C	99.50	.....	92.00	1–31	....	C None
	Timothy, Lot 854	New Albany, Ind. F	99.17	0.44	89.50	4–31	297	F Common plantain 54; curled dock 18
1164	Johnson & Chenoweth, Shoals	Scott Seed Co. C	99.50	.....	90.00	10–30	....	C None
	Timothy, Lot 835	New Albany, Ind. F	99.52	0.29	89.25	5–31	351	F Common plantain 126

1099	Norman, G. M. & Roberts, Bedford	Scott Seed Co.	C	99.60	......	90.00	10-30	....	C None
	Timothy, Lot 835	New Albany, Ind.	F	99.22	0.34	94.75	4 31	378	F Common plantain 378
687	Osgood Grain Co., Osgood	Scott Seed Co.	C	99.60	......	90.00	10-30	....	C None
	Timothy, Lot 835	New Albany, Ind.	F	99 56	0.24	89.50	4-31	72	F Common plantain 72
165	Trow Co., W., Madison	Scott Seed Co.	C	99.00	......	90.00	8-30	....	C None
	Timothy, Lot 814	New Albany, Ind.	F	99 75	0.15	88.75	10-30	144	F Buckhorn 36; common plantain 90; red sorrel 18
167	Trow Co., W., Madison	Scott Seed Co.	C	99.60	......	94.00	9-30	....	C None
	Timothy, Lot PF	New Albany, Ind.	F	99.85	0 10	91 50	10-30	18	F Common plantain 18
1026	Ainsworth-Boone Co., Kentland	Sunfield Seed Service	C	99 75	......	95.00	12-30	....	C None
	Timothy, Lot 15208	Chicago, Ill.	F	99.50	0.35	98 00	3 31	315	F Buckhorn 36; common plantain 18; curled dock 36
494	Stevenson Grain Co., Cyclone	Sunfield Seed Service	C	99.75	......	95.00	12-30	....	C None
	Timothy, Lot 15208	Chicago, Ill.	F	99.36	0.34	91.50	2-31	954	F Curled dock 54
1241	Fretz, R. C., Waterloo	Teweles Seed Co., L.	C	99.50	......	92.00	2-31	....	C None
	Timothy, B. Brand	Milwaukee, Wis.	F	99 55	0 25	95 00	5-31	54	F Common plantain 36; red sorrel 18
1574	Holmes Supply Co., Kingsbury	Teweles Seed Co., L.	C	98 80	.....	94 00	3-31	....	C None
	Timothy	Milwaukee, Wis.	F	99 30	0.10	91.75	5 31	234	F Common plantain 198; curled dock 18; red sorrel 18
682	Indiana State Highway Com., Indianapolis	Teweles Seed Co., L.	C	99.67	.....	98.00	2 31	....	C None
	Timothy	Milwaukee, Wis.	F	99 75	0.20	96.75	2-31	18	F Common plantain 18
992	Pritchard & Raiert, Inc., Pendleton	Teweles Seed Co., L.	C	98 80	....	94 00	1 31	.....	C Common plantain 900
	Timothy, Bag No. 2050	Milwaukee, Wis.	F	99.08	0.48	94.50	4-31	144	F Buckhorn 18; common plantain 126
757	Weed Hardware, W. H., Vincennes	Teweles Seed Co., L.	C	99.70	......	96.00	1-31	....	C None
	Timothy, Lot Badger Brand	Milwaukee, Wis.	F	99 80	0 15	94 50	4-31	18	F Common plantain 18
197	Sommerfield & Swanson, LaPorte	Warren Teed Seed Co.	C	99 81	....	91.50	5-30	....	C None
	Timothy, Lot T391	Chicago, Ill.	F	99 80	0.10	95 00	10 30	225	F None
183	Wolcottville Elevator Co., Wolcottville	Wertheimer & Sons	C	99 65	....	94 10	9-30	....	C None
	Timothy, Lot 30503	Ligonier, Ind.	F	99 51	0.24	90.75	10 30	441	F Common plantain 36; red sorrel 180
1502	Burk Elevator Co., Decatur	Wolf Seed Co.	C	99.50	......	94.00	8-30	....	C None
	Hy-Test Timothy, Lot 4140	Ft. Wayne, Ind.	F	99.61	0 24	90 75	4-31	342	F Buckhorn 18; common plantain 270; red sorrel 54

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*Not labeled.

†Certified by retailer.

C and F stands, respectively, for Claimed and Found.

[189] Removed from sale. Misbranded. All sold.

[190] Removed from sale. Misbranded. All sold.

MIXTURES

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, per cent	Inert Matter, per cent	Germination, per cent	Hard Seeds, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds	Number per Pound of each of the Noxious Weed Seeds Specified in the Law
1438	McFarland, Parvin, Acton	American Field Seed Co.	Sweet Clover...C	23.00		93.00				
	America's Best Mixture, Lot 4053	Chicago, Ill.	Timothy...C	48.00		93.00				
			Alfalfa...C	8.00		93.00				
			Red Clover...C	10.00		93.00				
			Alsike...C	10.00		93.00				C None
			Alfalfa...F	7.61	1.12	60.00	2.00	3-31		
			Timothy...F	51.51		93.00		3-31		
			Sweet Clover...F	18.00		51.00	3.50	3-31		
			Alsike Clover...F	11.46		61.50	14.50	3-31		
			Red Clover...F	8.64		71.00	7.00	3-31	3,024	F Buckhorn 72; Canada thistle 27; common plantain 27; curled dock 54; red sorrel 144
792	Smith, George, R. R. 2, Rushville	American Field Seed Co.	Sweet Clover...C	23.00		93.00				
	America's Best Mixture, Lot 4053	Chicago, Ill.	Timothy...C	48.00		93.00				
			Alfalfa...C	8.00		93.00				
			Red Clover...C	10.00		93.00				
			Alsike Clover...C	10.00		93.00				C None
			Timothy...F	73.36		97.00		4-31		
			Sweet Clover...F	9.40		41.00	4.50	4-31		
			Alfalfa...F	6.66		67.00	5.50	4-31		
			Alsike Clover...F	5.26	0.82	63.50	9.00	4-31	3,690	F Common plantain 324; curled dock 18; red sorrel 144; yellow trefoil 54
793	Smith, George, R. R. 2, Rushville	American Field Seed Co.	Alfalfa...C	7.00		93.00				
	America's Best Mixture, Lot 4086	Chicago, Ill.	Red Clover...C	6.00		93.00				
			Alsike Clover...C	6.00		93.00				
			Timothy...C	79.50		93.00				C None
			Timothy...F	77.72		91.75		5-31		
			Alsike Clover...F	7.56	1.34	71.50	16.00	5-31		
			Alfalfa...F	6.46		50.00	0.00	5-31		
			Red Clover...F	6.12		64.00	2.00	5-31	7,074	F Common plantain 3,375; curled dock 162; red sorrel 162

962	Bosworth, John C., R. R. 8, Frankfort..... Alsike, Red Clover & Timothy, Lot 3048	Berry Seed Co............. Clarinda, Iowa..........	Alsike Clover...C	6 00	......	84.00	......	11-30	....		
			Red Clover.....C	8 75	......	87 00	......	11 30	....		
			Timothy.......C	85.25	......	91 00	......	11 30	....	C	None
			Red Clover.....F	5 09	1.08	58.00	10.00	3-31	....		
			Timothy.......F	87.57	......	94.75	......	3-31	8,127	F	Buckhorn 216; common plantain 450; curled dock 144; dodder 18; oxeye daisy 54; red sorrel 270
1439	*Jacobs, Mrs. Amanda A., R. R. 6, Greenfield Alsike and Timothy, Lot 11608..........	Berry Seed Co............. Clarinda, Iowa..........	Alsike Clover...C	51.00	......	81.00	......	11-30	....		
			Timothy.......C	46.81	......	90.00	......	11-30	....	C	None
			Alsike Clover ..F	48 73	2.14	79.00	......	3-31	....		
			Timothy.......F	44.50	......	91.50	......	3-31	23,382	F	Buckhorn 18; common plantain 5,058; curled dock 270; oxeye daisy 36; red sorrel 2,925
726	Perry, O. C., R. R. 1, Noblesville......... Alsike and White Clover, Lot 11610......	Berry Seed Co............. Clarinda, Iowa..........	Alsike Clover...C	67.88	......	81.00	......	12-30	....		
			White Clover...C	25.23	......	85.00	......	12-30	....	C	None
			Alsike Clover...F	67.06	0.68	81.25	5.25	3-31	....		
			White Clover...F	27.53	......	76.25	21.00	3-31	9,963	F	Canada thistle 36; common plantain 990; curled dock 108; red sorrel 3,375; yellow trefoil 954
727	Perry, O. C., R. R. 1, Noblesville[191]....... Mixture, Lot 56..........................	Berry Seed Co............. Clarinda, Iowa..........	Alsike Clover...C	6 00	......	84 00	......	11-30	....		
			Red Clover.....C	8 75	......	87.00	......	11 30	....		
			Timothy.......C	85.25	......	91 00	......	11-30	....	C	None
			Timothy.......F	86 29	1.27	95 75	......	3-31	....		
			Red Clover.....F	5.71	......	84 00	8.00	3-31	....		
			Alsike Clover...F	5.17	......	57.50	11.50	3-31	6,075	F	Buckhorn 468; common plantain 1,080; curled dock 162; quack grass 18; red sorrel 504; wild carrot 18
1437	*Smith, Ben, London...................... Alsike & Timothy, Lot 1180............	Berry Seed Co............. Clarinda, Iowa..........	Alsike Clover...C	21.20	......	86 00	......	-30	....		
			Timothy.......C	75 05	......	90 00	......	-30	....	C	None
			Alsike Clover...F	20 54	1.08	64 25	8.75	4-31	....		
			Timothy.......F	75.02	......	92.50	......	4-31	6,939	F	Buckhorn 54; Canada thistle 18; common plantain 216; curled dock 18; oxeye daisy 72; red sorrel 936
895	Wayne Co. Farm Bureau, Inc., Richmond.. Fancy Mixed Lawn Seed, Lot F..........	Brown Seed Co., Alfred J... Grand Rapids, Mich.....	Blue Grass......C	32.44	......	78.00	......	12-30	....		
			Red Top........C	33.37	......	85.00	......	12-30	....		
			Rye Grass......C	9.94	......	95.00	......	12-30	....		
			W. Dutch Clover C	9.71	......	91.00	......	12-30	....	C	None
			Red Top........F	32.69	10.81	82.25	......	5-31	....		
			Rye Grass......F	13.09	......	84.00	......	5-31	....		
			W. Dutch Clover F	11.63	......	83.00	13.50	5-31	....		
			Ky. Blue Grass.F	30 59	......	70 00	......	5-31	18,900	F	Red sorrel 450

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*Not labeled.
†Certified by retailer.

C and F stands, respectively, for Claimed and Found.

[191] Removed from sale. Misbranded. Returned to Distributor.

MIXTURES—Continued

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, per cent	Inert Matter, per cent	Germination, per cent	Hard Seeds, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds	Number per Pound of each of the Noxious Weed Seeds Specified in the Law
1090	†Seberger Seed Co., Crown Point[192]	Condon Bros., Seedsman	Blue Grass......C	13.75	....	80 00	..	1-31	....	
	Velvet Green Lawn Grass Mixture, Lot V	Rockford, Ill.	Red Top C	35 70	.	95.00		1-31		
			Rye Grass......C	24.50	. .	93 00	.	1-31	....	
			White Clover...C	9 75	..	92 00	...	1-31	...	C None
			Red Top ....F	20.98	34 05	80 00		5 31	.	
			White Clover .F	8 94	.....	60 00	30 00	5-31	......	
			Ky. Blue Grass.F	10.00	......	66 50	....	5-31	.....	
			Ital. Rye Grass.F	19.76	......	92 00	....	5-31	18,900	F Common plantain 3,600; oxeye daisy 2,700; red sorrel 900
238	Quinlan Seed Store, Terre Haute	Crabbs Reynolds Taylor	Timothy.......C	76.43	......	80 00	....	10-30	....	
	Timothy & Alsike, Lot 6TI	Co.	Alsike Clover. C	22 40	.....	80 00	.....	10 30	....	C None
		Crawfordsville, Ind.	Timothy......F	62 55	0 47	84 00	....	11-30	.....	
			Alsike Clover. .F	36.70	. .	76 50	11 50	11-30	1,016	F Canada thistle 36; common plantain 162; yellow trefoil 18
1475	Van Camp Hardware & Iron Co. Indianapolis[193]	Crabbs Reynolds Taylor	Red Top........C	21.75	......	80 00	....	1-30	.....	
	Vanco Mixture, Lot 15P	Co.	Rye Grass......C	24.25	....	85 00	......	1 30	......	
		Crawfordsville, Ind.	Ky. Blue Grass.C	14.15	......	82 00	....	1-30	....	
			Timothy.......C	22 50	......	93 00	....	1-30	.....	
			White Clover...C	1.50	......	......	......	1-30	....	C None
			Red Top........F	17.15	17 34	88 75	......	6-31	....	
			Ital. Rye Grass.F	24.18	.....	89 00	......	6-31	.....	
			Ky. Blue Grass.F	13.48	......	70 50	......	6-31	.....	
			Timothy ....F	23.34	......	79 25	......	6-31	38,700	F Buckhorn 450; common plantain 10,350; oxeye daisy 450; white top 450
1583	Heitschmidt, A. C., Michigan City	Dickinson Co., The Albert	Red Top........C	28 30	......	90 00	......	3-31	....	
	Club Green Lawn Grass, Lot 36759	Chicago, Ill.	Rye Grass......C	11.40	......	92 00	......	3-31	......	
			Red Fescue.....C	13.40	......	70 00	.....	3-31	....	
			Ky. Blue Grass.C	21.20	.....	70 00	......	3-31	....	C Buckhorn 360; common plantain 225; red sorrel 180
			Red Top.......F	22.32	28 51	89 50	....	6-31	......	
			Ital. Rye Grass.F	10.92	......	86 00	....	6 31	......	
			Ky. Blue Grass.F	21.66	......	71 00	..	6-31	.....	
			Fescue.........F	15 04	.....	70 00	....	6 31	28,450	F Buckhorn 900; common plantain 450; red sorrel 1,350

1394	Farmers Coop. Elevator Co., Seymour Timothy & Alsike, Lot E	Foster-Kendall Co. Carmel, Ind.	Alsike Clover.. C	37.00	......	90.00	......	12-30	....		
			Timothy.......C	61.50	......	90.00	......	12-30	....	C	Common plantain 90; red sorrel 90
			Timothy........F	61.58	0.39	82.00	......	4-31	....		
			Alsike Clover...F	37.15	......	84.25	10.00	4-31	4,491	F	Common plantain 18; red sorre 198
1562	Fortville Grain Co., Fortville Red Clover, Alfalfa and Sweet Clover Mixture	Foster-Kendall Co. Carmel, Ind.	Red Clover.....C	92.03	......	78.00	20.00	12-30	....		
			Alfalfa..........C	2.30	......	......	......	12-30	....		
			Sweet Clover...C	4.30	......	......	......	12-30	....	C	None
			Red Clover.....F	94.45	0.04	84.50	15.00	4-31	3,177	F	Dodder 27
997	Weer, F. W., Anderson Alsike and Sweet Clover, Lot A189	Hooton-Davis Seed Co. Lebanon, Ind.	Alsike Clover...C	87.82	......	79.00	11.00	10-31	....		
			Sweet Clover...C	9.31	......	41.00	34.00	10-31	....	C	None
			Alsike Clover...F	84.43	1.12	91.50	6.50	4-31	....		
			Sweet Clover...F	12.35	......	37.00	40.00	4-31	10,125	F	Yellow trefoil 7,650
1532	Wilson Shirley Grain Co., Blountsville Alsike and Sweet Clover, Lot A189	Hooton-Davis Seed Co. Lebanon, Ind.	Alsike Clover...C	87.82	......	79.00	11.00	-30	....		
			Sweet Clover...C	9.31	......	41.00	34.00	-30	....	C	None
			Alsike Clover...F	85.32	0.99	80.50	8.00	5-31	....		
			Sweet Clover...F	10.56	......	31.50	40.00	5-31	14,004	F	Curled dock 33; mustard 18; yellow trefoil 10,125
934	Henry Co. Farm Bureau, Newcastle Red Clover and Alfalfa, Lot X910	Indiana Farm Bureau Coop. Ass'n, Inc. Indianapolis, Ind.	Red Clover.....C	85.80	......	80.15	......	12-30	....		
			Alfalfa..........C	12.50	......	72.20	......	12-30	....	C	None
			Red Clover.....F	85.16	0.47	80.50	17.00	4-31	....		
			Alfalfa..........F	13.13	......	70.50	15.50	4-31	2,979	F	Curled dock 171; yellow trefoil 18
630	Shelby Co. Farm Bureau Coop. Ass'n, Inc., Shelbyville Red Clover and Alfalfa, Lot X910	Indiana Farm Bureau Coop. Ass'n, Inc. Indianapolis, Ind.	Red Clover.....C	85.80	......	80.00	15.00	12-30	....		
			Alfalfa..........C	12.50	......	72.00	20.00	12-30	....	C	None
			Red Clover.....F	85.84	0.68	80.00	17.50	4-31	....		
			Alfalfa..........F	7.23	......	66.00	26.00	4-31	....		
			Sweet Clover...F	5.38	......	68.00	16.00	4-31	2,907	F	Curled dock 18; yellow trefoil 99
891	Wayne Co. Farm Bureau, Inc., Richmond Red Clover and Alfalfa, Lot X910	Indiana Farm Bureau Coop. Ass'n, Inc. Indianapolis, Ind.	Red Clover.....C	85.80	......	80.15	......	12-30	....		
			Alfalfa..........C	12.50	......	72.20	......	12-30	....	C	None
			Red Clover.....F	87.55	0.38	79.00	15.50	4-31	....		
			Alfalfa..........F	11.10	......	77.00	14.00	4-31	2,727	F	Buckhorn 9; curled dock 72; dodder 27; yellow trefoil 99
1566	Block Co., Wm., Indianapolis[194] Lincoln Park Mixed Lawn Seed	Johnson, Inc., J. Oliver Chicago, Ill.	Domestic Rye Grass.........C	34.00	......	80.00	......	1-31	....		
			Red Top........C	5.00	......	90.00	......	1-31	....		
			Timothy.......C	38.00	......	90.00	......	1-31	....		
			White Clover...C	1.00	......	80.00	......	1-31	....	C	None
			Red Top........F	10.17	22.68	69.50	......	5-31	....		
			Timothy.......F	28.15	......	54.25	......	5-31	....		
			Ital. Rye Grass.F	35.48	......	76.00	......	5-31	24,300	F	Buckhorn 450; common plantain 1,800; oxeye daisy 450; red sorrel 4,950

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*Not labeled.
†Certified by retailer.
C and F stands, respectively, for Claimed and Found.

[192] Removed from sale. Misbranded. All sold.
[193] Removed from sale. Misbranded. Retagged.
[194] Removed from sale. Misbranded.

MIXTURES—Continued

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, per cent	Inert Matter, per cent	Germination, per cent	Hard Seeds, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds	Number per Pound of each of the Noxious Weed Seeds Specified in the Law
1112	Grant Brothers, Lowell[195] Lincoln Park Mixed Lawn Grass Seed	Johnson, Inc., J. Oliver Chicago, Ill.	Perennial Rye Grass C	32.00		90.00				
			Red Top C	7.00		93.00				
			Timothy C	38.00		95.00				
			White Clover C	1.00		90.00				C None
			Timothy F	42.56	23.50	64.50		5–31		
			Lolium spp. (mostlyitalicum) F	24.08		60.00		5–31		
			Red Top F	6.67		70.75		5–31	13,950	F Common plantain 1,350; red sorrel 450; white top 450
1265	Huntertown Grain Co., Huntertown[196] Timothy and Alsike Clover, Lot 56	Kraus, Sam Ft. Wayne, Ind.	Timothy C	79.25		92.00		12–30		
			Alsike Clover C	9.60		90.00		12–30		C None
			Timothy F	81.62	1.95	87.75		5–31		
			Alsike Clover F	14.67		40.00	7.25	5–31	10,440	F Canada thistle 18; common plantain 7,200; curled dock 18; red sorrel 54
679	Indiana State Highway Commission, Indianapolis Alsike and White Clover, Lot A748	Louisville Seed Co. Louisville, Ky.	Alsike Clover C	79.00		80.00		10–30		
			White Clover C	17.00		60.00		10–30		C Red sorrel 2,500; yellow trefoil 150
			Alsike Clover F	80.06	0.35	85.75	3.25	2–31		
			White Clover F	17.11		76.25	22.50	2–31	7,380	F Canada thistle 54; common plantain 558; curled dock 54; red sorrel 2,475; yellow trefoil 864
1113	Indiana State Highway Commission, Indianapolis Alsike and White Clover	Louisville Seed Co. Louisville, Ky.	Alsike Clover C	79.00		80.00				
			White Clover C	17.00		60.00				C None
			Alsike Clover F	81.48	0.05	94.25	3.75	3–31		
			White Clover F	17.45		82.00	15.25	3–31	3,528	F Red sorrel 90; yellow trefoil 1,188
675	Jackson & Sons, P. E., Lawrenceburg[197] Emerald Lawn Seed, Lot 4339	McCullough Seed Co., The J. Chas. Cincinnati, Ohio	Red Top C	23.70		90.00		11–30		
			Ky. Blue Grass C	22.65		84.00		11–30		
			Rye Grass C	18.00		94.00		11–30		
			Meadow Fescue C	6.32		92.00		11–30		
			White Clover C	6.82		88.00		11–30		
			Red Fescue C	5.27		84.00		11–30		C None
			Ky. Blue Grass F	26.26	16.09	90.00		4–31		

			Red Top........F	23.99	......	77.00	......	4-31	....		
			Rye Grass......F	20.73	......	98 00	......	4-31	....		
			Fescue..........F	5.33	......	12.00	......	4-31	22,050	F	Common plantain 450; red sorrel 450; white top 450; yellow trefoil 450
296	Wayne Co. Farm Bureau, Inc., Richmond[198] Emerald Lawn Seed, Lot 4329...........	McCullough Seed Co., The J. Chas........... Cincinnati, Ohio.........	Red Top........C	23 70	......	90 00	......	8-30	....		
			Ky. Blue Grass.C	22.65	......	84.00	......	8-30	....		
			Rye Grass......C	18.00	......	94 00	......	8-30	....		
			Meadow Fescue.C	6.32	......	92.00	......	8-30	....		
			White Clover...C	6.82	......	88.00	......	8-30	....		
			Red Fescue.....C	5.37	......	84.00	......	8-30	....	C	None
			Red Top........F	12.57	5.57	68.25	......	1-31	....		
			Ky. Blue Grass.F	17.05	......	54.00	......	1-31	....		
			Rye Grass......F	48.08	......	93.00	......	1-31	....		
			Meadow Fescue.F	5 18	......	95.00	......	1-31	10,800	F	Red sorrel 1,350
1157	McMahan Seed Co., The, Valparaiso[199].... Timothy and Alsike Clover..............	McMahan Seed Co., The... Valparaiso, Ind..........	Timothy........C	80.00	......	93.00	......	1-31	....		
			Alsike Clover...C	16.00	......	94.00	......	1-31	....	C	None
			Timothy........F	72.82	1.83	75.75	......	4-31	....		
			Alsike Clover...F	22.32	......	67.25	7 00	4-31	25,425	F	Red sorrel 18,450
1161	McMahan Seed Co., The, Valparaiso[200]..... Timothy and Alsike Clover..............	McMahan Seed Co., The... Valparaiso, Ind..........	Alsike Clover...C	27.00	......	94 00	......	1 31	....		
			Timothy........C	70 00	......	93 00	......	1-31	....	C	None
			Timothy........F	82.89	1.72	82.50	......	4-31	....		
			Alsike Clover...F	13.57	......	82.00	14.25	4-31	11,925	F	Red sorrel 2,250
905	Boonshot Hardware Co., Petersburg[201]..... Timothy and Alsike Clover, Lot 3926....	Mangelsdorf & Bros., Ed. F. St. Louis, Mo...........	C	....	......	....	......	......	....	C	
			Timothy........F	71.27	3.41	98 25	......	3-31	....		
			Alsike Clover...F	24.53	......	82.75	8.50	3-31	576	F	Buckhorn 18; common plantain 36; curled dock 36; red sorrel 36
1476	Woolworth Co., F. W., Indianapolis[202]...... Devonshire Lawn Seed..................	Nungesser-Dickinson Co.... New York, N. Y........	Red Top........C	31.70	......	85 00	......	1-31	....		
			Ky. Blue Grass.C	19.50	......	85.00	......	1-31	....		
			Domestic Rye Grass.........C	19.30	......	85.00	......	1-31	....		
			Chewings FescueC	10.30	......	85.00	......	1-31	....		
			Timothy.......C	7 30	......	85 00	......	1-31	....	C	None
			Red Top........F	27.44	8.83	86.50	......	6-31	....		
			Ky. Blue Grass.F	15.83	......	54 00	......	6-31	....		
			Dom. Rye Grass (mostly Italian) F	23.84	......	85 00	......	6-31	....		
			Chewings FescueF	9.02	......	43 00	......	6-31	....		
			Timothy........F	10.64	......	89.50	......	6-31	18,450	F	Common plantain 900; red sorrel 450; yellow trefoil 900

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*Not labeled.

†Certified by retailer.

C and F stand, respectively, for Claimed and Found.

[196] Removed from sale. Misbranded. Returned to Distributor.

[196] Removed from sale. Misbranded. Returned to Distributor.

[197] Removed from sale. Misbranded. All sold.

[198] Removed from sale. Misbranded. Returned to Distributor.

[199] Removed from sale. Misbranded. All sold.

[200] Removed from sale. Misbranded. All sold.

[201] Not tagged. Labels furnished.

[202] Removed from sale. Misbranded.

MIXTURES—Continued

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, per cent	Inert Matter, per cent	Germination, per cent	Hard Seeds, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds	Number per Pound of each of the Noxious Weed Seeds Specified in the Law
120	Menke, J. H., Richmond[203] Lawn Grass, Condons Velvet Green Mixture, Lot T	Rock River Valley Seed Farm Rockford, Ill.	Ky. Blue Grass. C	29 75		80 00		1 30		
			Red Top. C	28 80		93 00		1–30		
			Ital. Rye Grass. C	22.50		93.00		1–30		
			White Clover. C	6 80		92 00		1 30		C None
			Ky. Blue Grass. F	22 86	15 76	67 50		10–30		
			Red Top. F	21.60		86 00		10 30		
			Ital. Rye Grass. F	28 60		93 00		10 30		
			White Clover. F	9.04		69.00	26.00	10–30	21,150	F Common plantain 450; red sorre 4,950; white top 450
1460	Griener Co., C. E., Indianapolis Regular Lawn Mixture, Lot Reg	Scott & Sons Co., O. M. Marysville, Ohio	Ky. Blue Grass. C	46 00		80 00		8–30		
			Red Top. C	14 00		92 00		8 30		
			Rhode Is. Bent. C	8.00		90 00		8–30		
			Poa Trivialis. C	4.00		90 00		8–30		
			Timothy. C	7.00		92 00		8 30		
			White Clover. C	7.00		90.00		8–30		C None
			Ky. Blue Grass. F	43.29	3.45	82 00		6–31		
			Red Top. F	19 80		94 50		6–31		
			Rhode Is. Bent. F	6 25		64 50		6 31		
			Poa Trivialis. F	12 07		92 00		6–31		
			Timothy. F	11.50		89.00		6–31	3,600	F None
1468	Griener Co., C. E., Indianapolis Scotts Shady Lawn Seed, Lot Shady	Scott & Sons Co., O. M. Marysville, Ohio	Poa Trivialis. C	65.00		90.00		1 31		
			Canada Blue Grass. C	8.00		85.00		1·31		
			Ky. Blue Grass. C	8.00		88 00		1 31		
			Red Top. C	9.00		94.00		1–31		C None
			Poa Trivialis. F	58 69	2.86	87.00		6–31		
			Ky. Blue Grass. F	15.89		84 00		6 31		
			Red Top. F	21.87		96.50		6–31	14,400	F None
1162	*†Johnson & Chenoweth, Shoals Pasture Mixture	Scott Seed Co. New Albany, Ind.	C							C
			Red Clover. F	14 94	22.03	36 00	5.00	4–31		
			Timothy. F	13.89		74 00	4.00	4–31		
			Meadow Fescue. F	8.81		64 00		4–31		
			Sweet Clover. F	24.24		38.50		4–31	103,050	F Buckhorn 450; Canada thistle 450; common plantain 12,150; dodder 450; red sorrel 1,350; wild carrot 450; white top 1,800

1506	Brown Hardware Co., Brazil[204]	Seedtown Products Co.	Ky. Blue Grass . C	45.00	.....	70.00	.....	2-31	.....	
	Seedtown Lawn Grass Mixture	Chicago, Ill.	Red Top . C	21.00	.....	90.00	.....	2-31	.....	
			Rye Grass . C	9.50	.....	95.00	....	2-31	.....	
			White Clover . C	4.50	.....	95.00	.....	2-31	....	C None
			Red Top . F	18.27	23.15	95.25	..	5-31	....	
			Ky. Blue Grass . F	42.64	.....	65.50	....	5-31	.....	
			Ital. Rye Grass . F	10.03	.....	85.00	.....	5-31	31,950	F Bracted plantain 450; red sorrel 2,700; white top 900; yellow trefoil 450
994	Pritchard & Rafert, Inc., Pendleton	Teweles Seed Co., L.	Alsike Clover . C	91.00	.....	92.00	6.00	1-31	.....	
	Alsike and White Clover	Milwaukee, Wis.	White Clover . C	7.65	....	90.00	6.00	1-31	....	C None
			Alsike Clover . F	89.84	0.19	92.75	4.50	4-31	....	
			White Clover . F	8.21	.....	87.00	10.50	4-31	1,440	F Common plantain 18; yellow trefoil 72
1072	Protsman & Son, George L., Plymouth	Teweles Seed Co., L.	Alsike Clover . C	88.83	.....	88.00	10.00	1-31	....	
	Alsike and White Clover	Milwaukee, Wis.	White Clover . C	9.05	.....	77.00	9.00	1-31	....	C Common plantain 60; curled dock 50
			Alsike Clover . F	91.25	0.34	89.25	8.00	4-31	....	
			White Clover . F	7.17	.....	74.50	23.00	4-31	666	F Common plantain 18; curled dock 18; red sorrel 36; yellow trefoil 144
1238	Steckley Feed Mill, Kendallville	Teweles Seed Co., L.	Alsike Clover . C	90.63	...	92.00	6.00	1-31	.....	
	Alsike Clover and White Clover, Lot G337	Milwaukee, Wis.	White Clover . C	.....	....	83.00	16.00	1-31	....	C Bracted plantain 30; red sorrel 25
			Alsike Clover . F	90.89	0.49	87.00	9.00	4-31	....	
			White Clover . F	7.39	.....	81.00	17.00	4-31	1,818	F Red sorrel 18
1076	Syler & Syler, Plymouth	Teweles Seed Co., L.	Timothy . C	51.06	.....	90.00			....	
	Timothy and Alsike Clover	Milwaukee, Wis.	Alsike Clover . C	47.50	...	84.00	10.00	2-31	.....	C Red sorrel 600
			Timothy . F	51.30	.....	92.00	.....	4-31	....	
			Alsike Clover . F	47.27	0.49	83.00	13.75	4-31	2,736	F Red sorrel 36
1078	Syler & Syler, Plymouth	Teweles Seed Co., L.	White Clover . C	91.23	....	83.00	14.00	2-31	....	
	Alsike Clover and White Clover	Milwaukee, Wis.	Alsike Clover . C	7.36	....	87.00	7.00	2-31	.....	C Common plantain 500
			White Clover . F	91.81	0.10	81.50	16.75	4-31	....	
			Alsike Clover . F	7.15	.....	72.00	10.00	4-31	2,169	F Common plantain 1,440; red sorre 54
1082	Syler & Syler, Plymouth	Teweles Seed Co., L.	Alsike Clover . C	91.89	.....	85.00	7.00	2-31	....	
	Alsike Clover and White Clover	Milwaukee, Wis.	White Clover . C	6.46	.....	82.00	16.00	2-31	....	C Red sorrel 60; yellow trefoil 600
			Alsike Clover . F	90.46	0.14	91.00	4.75	4-31	....	
			White Clover . F	7.68	.....	88.00	10.00	4-31	8,622	F Curled dock 18; red sorrel 108; yellow trefoil 846

Not labeled.
†Certified by retailer.
C and F stands, respectively, for Claimed and Found.

[203] Removed from sale. Misbranded. Retagged.
[204] Removed from sale. Misbranded. Part sold. Balance destroyed.

MIXTURES—Continued

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, per cent	Inert Matter, per cent	Germination, per cent	Hard Seeds, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds	Number per Pound of each of the Noxious Weed Seeds Specified in the Law
1474	†Vonnegut Hardware Co., Indianapolis[205]	Whitney Eckstein Co.	Ky. Blue Grass.C	35.00	......	80.00	......	12-30	......	
	Vonnegut's Best Lawn Seed	Buffalo, N. Y.	Fancy Red Top.C	29.00	......	94.00	......	12-30	......	
			White Clover...C	10.00	......	90.00	......	12-30	......	
			German Bent Grass.......C	8.00	......	80.00	......	11-30	......	
			N. Z. Chewings Fescue........C	5.00	......	80.00	......	11-30	......	C Buckhorn 900; red sorrel 450
			Ky. Blue Grass.F	9.37	18.07	52.50	......	6-31	......	
			Fancy Red Top.F	50.56	......	95.50	......	6-31	......	
			White Clover..F	5.80	......	74.00	13.00	6-31	......	
			German Bent Grass.........F	6.25	......	66.50	......	6-31	......	
			N. Z. Chewings Fescue........F	6.18	......	62.00	......	6-31	39,150	F Bracted plantain 450; buckhorn 900; red sorrel 1,800
1477	†Vonnegut Hardware Co., Indianapolis	Whitney Eckstein Co.	Fancy Red Top.C	18.00	......	92.00	......	12-30	......	
	Shady Spot Lawn Seed	Buffalo, N. Y.	Ky. Blue Grass.C	10.00	......	80.00	......	12-30	......	
			Canada Blue Grass.......C	10.00	......	84.00	......	12-30	......	
			English Rye Grass........C	20.00	......	90.00	......	12-30	......	
			Hardy Fescue..C	5.00	......	80.00	......	12-30	......	
			Timothy.......C	10.00	......	92.00	......	12-30	......	
			Crested Dog's Tail..........C	5.00	......	90.00	......	12-30	......	C Buckhorn 450; common plantain 900; red sorrel 900
			Fancy Red Top.F	10.81	14.10	91.75	......	6-31	......	
			Ky. Blue Grass.F	6.29	......	57.50	......	6-31	......	
			Canada Blue Grass.........F	10.62	......	88.00	......	6-31	......	
			Ital. Rye Grass.F	25.84	......	85.00	......	6-31	......	
			Timothy.......F	13.44	......	83.25	......	6-31	......	
			Crested Dog's Tail..........F	7.43	......	59.00	......	6-31	22,950	F Bracted plantain 450; buckhorn 1,800; common plantain 4,500

*Not labeled.
†Certified by retailer.

C and F stands, respectively, for Claimed and Found.

[205] Removed from sale. Misbranded.

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, per cent	Inert Matter, per cent	Germination per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds		Number per Pound of each of the Noxious Weed Seeds Specified in the Law
1267	Ort & Co., Churubusco[206]	Associated Seed Growers, Inc.	C	......	......	90.00	......	....	C	None
	Southport Yellow Globe Onions, Lot T3826	New Haven, Conn.	F	99.93	0.07	75.50	3–31	....	F	None
1268	Ort & Co., Churubusco	Associated Seed Growers, Inc.	C	......	......	90.00	......	....	C	None
	Southport White Globe Onions, Lot T3701X	New Haven, Conn.	F	99.98	0.02	92.50	3–31	....	F	None
530	Trembley & Co., The S. F., Columbia City [207]	Associated Seed Growers, Inc.	C	......	......	95.00	......	....	C	None
	Southport White Globe Onions, Lot T370.1X	New Haven, Conn.	F	99.94	0.02	96.50	2–31	....	F	None
531	Trembley & Co., The S. F., Columbia City [208]	Associated Seed Growers, Inc.	C	......	......	90.00	......	....	C	None
	Southport Yellow Globe Onions, Lot T382.6	New Haven, Conn.	F	99.90	0.10	78 50	1–31	....	F	None
1252	Wolff & Sons, G., Hamilton[209]	Associated Seed Growers, Inc.	C	99.50	......	90 00	12–30	....	C	None
	Clark's Sel S. W. Globe Onions	New Haven, Conn.	F	99.85	0.15	75.50	3–31	....	F	None
1289	Wolff & Sons, G., Hamilton	Associated Seed Growers, Inc.	C	99.50	......	96 00	12 30	....	C	None
	Clark's Sel S. W. Globe Onions	New Haven, Conn.	F	99.99	0.01	91.50	3–31	....	F	None
1269	Ort & Co., Churubusco	Brigham, Dexter	C	100 00	......	95.00	1–31	....	C	None
	Yellow Onion, Lot 28	Decatur, Mich.	F	99.96	0.04	96.00	3–31	....	F	None
1570	Krist Milling Co., Knox	Condon Brothers, Seedsmen	C	99.00	......	90.00	12–30	....	C	None
	C's Model Yellow Globe Onion, Lot U	Rockford, Ill.	F	99.98	0.02	97.00	4–31	....	F	None
1337	*Wedrick & Co., W. R., Silver Lake	Condon Brothers, Seedsmen	C	......	......	......	......	....	C	
	Yellow Globe Onion	Rockford, Ill.	F	99.94	0.06	71.00	4–31	....	F	None
1281	Trembley Co., The S. F., Columbia City	Crabbs Reynolds Taylor Co.	C	99.00	......	96.00	1–31	....	C	None
	Southport White Globe Onion, Lot 1214	Crawfordsville, Ind.	F	99.90	0.10	90.50	3–31	....	F	None
1282	Trembley Co., The S. F., Columbia City	Crabbs Reynolds Taylor Co.	C	99.00	......	97.00	1–31	....	C	None
	Southport Yellow Globe Onion, Lot 1213	Crawfordsville, Ind.	F	99.98	0.02	89.00	3–31	....	F	None
1272	Trembley Co., The S. F., Columbia City	Ferry-Morse Seed Co.	C	97.00	......	88.00	1–31	....	C	None
	Yellow Onion, Lot 488	Detroit, Mich.	F	99 95	0.05	77.00	3–31	....	F	None
1277	Trembley Co., The S. F., Columbia City	Ferry-Morse Seed Co.	C	98.00	......	88 00	1–31	....	C	None
	Red Onion, Lot 4488	Detroit, Mich.	F	99.95	0 04	88 00	3–31	....	F	Wild carrot 45

*Not labeled.

†Certified by retailer.

C and F stands, respectively, for Claimed and Found.

[206] Removed from sale. Misbranded. Returned to Distributor.

[207] Not tagged. Labels furnished.

[208] Not tagged. Returned to Distributor.

[209] Removed from sale. Misbranded. Retagged.

GARDEN SEED—Continued

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, per cent	Inert Matter, per cent	Germination, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds		Number per Pound of each of the Noxious Weed Seeds Specified in the Law
1278	Trembley Co., The S. F., Columbia City	Ferry-Morse Seed Co.	C	95.00		94.00	1-31		C	None
	Southport White Onion, Lot 448	Detroit, Mich.	F	99.87	0.13	84 50	3-31		F	None
1273	Luckey & Nestel, Churubusco	Gardner Seed Co.	C			97.00			C	None
	Southport Yellow Globe Onion, Lot B-12	Rochester, N. Y.	F	99.90	0.10	85.50	3-31		F	None
1274	Luckey & Nestel, Churubusco[210]	Gardner Seed Co.	C			92.00			C	None
	Southport Red Onion	Rochester, N. Y.	F	99.96	0.02	77 50	3-31		F	None
1276	Luckey & Nestle, Churubusco	Gardner Seed Co.	C			90 00			C	None
	Southport White Globe Onion, Lot B47-50	Rochester, N. Y.	F	99.93	0.07	91.50	3-31		F	None
1340	Ort & Co., Churubusco	Gardner Seed Co.	C			95.00			C	None
	Southport Yellow Globe Onion	Rochester, N. Y.	F	99.87	0.12	89 00	3-31	45	F	None
1322	Wedrick & Co., W. R., Silver Lake[211]	Gardner Seed Co.	C			90 00			C	
	Southport White Globe Onion, Lot B42-49	Rochester, N. Y.	F	99.98	0.02	91.00	3-31		F	None
1338	Ort & Co., Churubusco	Gunson & Co., L. P.	C	99.50		94.00	1-31		C	None
	Southport White Globe Onion, Lot 52144	Rochester, N. Y.	F	99.98	0.01	87.00	4-31	45	F	None
1325	Wedrick & Co., W. R., Silver Lake	Gunson & Co., L. P.	C	99.50		95.00	1-31		C	None
	Southport Yellow Globe Onion, Lot A5401	Rochester, N. Y.	F	99.96	0.04	97.50	3-31		F	None
1075	*Wells, Guy M., Knox	Leonard Seed Co.	C						C	
	Southport Yellow Globe Onion	Chicago, Ill.	F	99.90	0.10	91.00	3-31		F	None
1184	Moore, Ralph, Nappanee	Moore, Ralph	C	99.93		93.50	12-30		C	None
	Southport Yellow Globe Onion, Lot 51213	Nappanee, Ind.	F	99.94	0.06	95.00	5-31		F	None
593	Strock, Frank, Hudson	Quirk, J. B.	C	99.80		90.00	11-30		C	None
	Ohio Yellow Globe Onion	North Madison, Ohio	F	99.90	0.10	84.50	2-31		F	None
594	Strock, Frank, Hudson	Quirk, J. B.	C	99.80		90.00	11-30		C	None
	Southport White Globe Onion	North Madison, Ohio	F	99.88	0.12	91.50	2-31		F	None
1249	Varner, J. M., R. R. 1, Hamilton	Varner, J. M.	C	99.64		98.00	12-30		C	None
	Southport Yellow Globe Onion, Lot 51290	R. R. 1, Hamilton, Ind.	F	99.93	0.07	97.00	3-31		F	None
1339	Ort & Co., Churubusco	Woodruff & Sons, F. H.	C	100 00		96.00	12-30		C	None
	Southport Yellow Globe Onion, Lot 2150	Milford, Conn.	F	99.94	0.06	98.00	3-31		F	None
1578	Ort & Co., Churubusco	Woodruff & Son, F. H.	C	99.50		90.00	12-30		C	None
	Southport White Globe Onion	Milford, Conn.	F	99.90	0.09	89.50	4-31	45	F	None
1579	Ort & Co., Churubusco	Woodruff & Sons, F. H.	C	99.50		95.00	12-30		C	None
	Southport Yellow Globe Onion, Lot 2121	Milford, Conn.	F	99.98	0.01	96.00	4-31		F	None

1317	Wedrick & Co., W. R., Silver Lake	Woodruff & Sons, F. H.	C	100.00	......	98.00	12-30	....	C	None
	Southport Red Globe Onion, Lot 2228	Milford, Conn.	F	99.99	0.01	78.00	3-31	....	F	None
1321	Wedrick & Co., W. R., Silver Lake	Woodruff & Sons, F. H.	C	100.00	......	94.00	12-30	....	C	None
	Southport White Globe Onion, Lot 2279	Milford, Conn.	F	99.97	0.03	86.50	3-31	....	F	None
1324	Wedrick & Co., W. R., Silver Lake	Woodruff & Sons, F. H.	C	100.00	......	96.00	12-30	....	C	None
	Southport Yellow Globe Onion, Lot 2156	Milford, Conn.	F	99.96	0.04	96.00	3-31	....	F	None

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*Not labeled.

†Certified by retailer.

C and F stands, respectively, for Claimed and Found.

[210] Tag incomplete. Removed from sale. Misbranded.

[211] Tag incomplete.

MISCELLANEOUS

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, per cent	Inert Matter, per cent	Germination, per cent	Hard Seeds, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds		Number per Pound of each of the Noxious Weed Seeds Specified in the Law
1086	†Seberger Seed Co., Crown Point	Dickinson Co., The Albert	C	98.05	......	77.00	......	11-30	....	C	None
	Amber Cane, Lot 9622	Chicago, Ill.	F	97.62	2.27	70 00	......	4-31	18	F	None
428	Farmers Grain Co., Liberty Center	Kraus, Sam	C	97.60	......	96.00	......	9-30	....	C	None
	Meadow Fescue, Lot L	Ft. Wayne, Ind.	F	98.04	0.77	97.00	......	2-31	1,530	F	None
80	Turley, Jas. E., English	Louisville Seed Co.	C	98.00	......	90.00	......	5-30	....	C	None
	Crimson Clover, Lot XXX	Louisville, Ky.	F	97.40	1.24	81.50	3.00	8-30	8,381	F	Buckhorn 27; common plantain 27; curled dock 18; red sorrel 81
685	Behlmer, E. A., Napoleon	McCullough Seed Co., The J. Chas.	C	98.20	......	80.00	......	7-30	....	C	None
	Crimson Clover, Lot 4318	Cincinnati, Ohio	F	98.30	1.19	72.00	0.00	2-31	851	F	Curled dock 16; red sorrel 40; yellow trefoil 120
168	Trow Co., W., Madison[212]	McCullough Seed Co., The J. Chas.	C	99.00	......	90.00	......	8-30	....	C	None
	White Northern Rye, Lot 4364	Cincinnati, Ohio	F	94.28	4.84	85.50	......	10-30	124	F	None
295	Wayne Co. Farm Bureau, Inc., Richmond	McCullough Seed Co., The J. Chas.	C	99.00	......	91.00	......	8-30	....	C	Curled dock 160
	Winter Vetch, Lot 4364	Cincinnati, Ohio	F	98.56	0.25	80.50	2.50	12-30	216	F	Corn cockle 54
1630	Quinlan Seed Store, Terre Haute	Quinlan Seed Store	C	98.00	......	78.00	......	6-31	....	C	None
	Orange Cane	Terre Haute, Ind.	F	97.71	2.12	68.50	......	6-31	....	F	None
172	Dunlevy & Son, D. R., Henryville[213]	Scott Seed Co.	C	98.00	......	90.00	......	8-30	....	C	None
	Rye	New Albany, Ind.	F	93.73	4.60	85.50	......	10-30	16	F	Curled dock 4
1315	Gienger & Co., John, Jeffersonville	Scott Seed Co.	C	99.44	......	94.00	......	2-31	....	C	None
	Speltz	New Albany, Ind.	F	99.18	0.48	95.50	......	5-31	52	F	None

*Not labeled.
†Certified by retailer.
C and F stands, respectively, for Claimed and Found.

[212] Removed from sale. Misbranded. All sold.

[213] Removed from sale. Misbranded. All sold.

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Circular No. 187 February, 1932

Purdue University
Agricultural Experiment Station
Lafayette, Indiana

ELECTRIC BROODERS ON INDIANA FARMS

Truman E. Hienton
Department of Agricultural Engineering

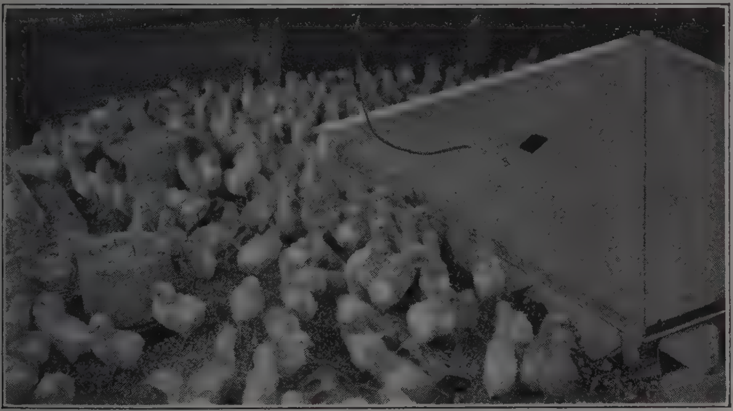

Fig. 1. Electric Brooder in Operation on Howard County Farm.

Electric brooders are being used in increasing numbers on Indiana farms where electric service is available from central station plants. This 660-watt electric brooder is shown during its second year of operation on a farm in Howard County.

Many millions of chicks are raised each year in Indiana by brooders heated by various devices. Electrically heated brooders are probably the newest and least known but are receiving greater attention and increasing in use as electric lines are extended to farms throughout the state. This increase in use of electric brooders has facilitated the securing of data regarding two of their important operating characteristics, current consumption and mortality of chicks.

During the past three years 48 electric brooders in operation on Indiana farms have been metered under the direction of the Department of Agricultural Engineering to determine their use of electrical energy. Records were kept by their operators on the chicks lost, energy used, and duration of brooding periods. The averages of the results obtained each year are given in Table I and the ranges in results are shown in Tables II and III.

TABLE I.—AVERAGES OF RESULTS FOR 48 ELECTRIC BROODERS OPERATED ON INDIANA FARMS IN 1929, 1930, AND 1931

Year	1929	1930	1931	All
Number flocks	6	28	14	48
Average number chicks started per flock	447	362	362	372
Average mortality, per cent	9.5	12.3	16.0	12.9
Average number chicks raised per flock	404	317	304	324
Average kilowatt-hours per chick raised	0.419	0.359	0.678	0.456
Average cost for fuel per chick raised, cents*	1.26	1.08	2.03	1.31
Average brooding period, days	49	40.5	50	41.4

* Electric energy at 3 cents per kilowatt-hour.

Mortality of Chicks

Percentage of chicks raised by any brooder is dependent upon a number of factors so that mortality may or may not be a true indication of the performance of the brooder. Disease conditions may be present and result in losses which are not chargeable to the brooder. Usually, however, the success of a brooder is measured in the percentage of chicks raised, so that these figures were secured for the electric brooders which were metered.

It is estimated by Prof. C. W. Carrick in Purdue University Agricultural Extension Bulletin 177 that more than a third of the chicks started on Indiana farms die before they reach marketable age or maturity. The average mortality of chicks, during the brooding period, started under 6 electric brooders in 1929 was 9.5 per cent, under 28 brooders in 1930 was 12.3 per cent and in 1931 with 14 brooders was 16.0 per cent while the average of the entire group of 48 was 12.9 per cent.

Inspection of the distribution of mortality by flocks (Table II) shows that 24 or one-half of the entire number had a mortality of less than 10 per cent and 13, or more than one-half of the remaining group, from 10 to 20 per cent, 3 from 20 to 30 per cent, 3 from 30 to 50 per cent, and 5 had 50 per cent or more. In the case of two brooders, with more than 50 per cent loss in 1931, the presence of Pullorum disease was definitely established by veterinarians of Purdue University and the State Veterinarian's office.

TABLE II.—MORTALITY OF CHICKS[1]

Year	1929	1930	1931	All
Less than 10 per cent	4	14	6	24
Ten to 20 per cent	1	7	5	13
Twenty to 30 per cent	0	3	0	3
Thirty to 50 per cent	1	2	0	3
More than 50 per cent	0	2	3	5

[1] Figures denote numbers of flock.

Fig. 2. Electric Brooder Equipped with Two 500-watt Heating Elements.

Baby chicks with electric brooder on Clinton County farm. Two 500-watt heating elements, each controlled by a separate thermostat, are used in this brooder.

Consumption of Electric Energy

Six of the electric brooders metered were started during March, 12 from April 1 to 15, 19 from April 16 to 30, and 11 after May 1. It would seem from the data obtained that greater consumption per chick raised may be expected for brooding started early in March than that started in April. Of the six brooders started in March, three used between one-half and one kilowatt-hour per chick raised, while the other three exceeded one kilowatt-hour, the average for the entire group of 48 being 0.456 kilowatt-hour. In the case of those exceeding one kilowatt-hour two of the three brooders were those in which Pullorum disease was identified.

Of the five brooders, in which more than one kilowatt-hour per chick raised was used, the mortality in four of them exceeded 50 per cent and that of the fifth was 32 per cent. This would indicate that higher current consumption and consequently higher cost per chick raised is to be expected with high mortality.

TABLE III.—KILOWATT-HOURS USED PER CHICK RAISED[1]

Year	1929	1930	1931	All
Less than one-fourth	1	6	0	7
One-fourth to one-half	4	13	4	21
One-half to one	0	7	8	15
More than one	1	2	2	5

[1] Figures denote numbers of flocks.

The operator of the brooder is probably the most important factor affecting the amount of current consumed by an electric brooder, as revealed from the data obtained. Brooders of the same make started at the same time and operated for the same period with equal numbers of chicks vary widely in consumption of electric current indicating that the difference must be attributed to the operator. It would seem therefore that careful operation would result in lower current consumption.

Success with brooding chicks depends upon several factors besides the brooder stove. The Agricultural Extension Bulletin No. 177 recommends six important practices: Clean chicks, clean ground, clean house, clean litter, clean feed, and clean management.

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Circular No. 188 February, 1932

Purdue University
Agricultural Experiment Station
Lafayette, Indiana

SUCKLING PIG LOSSES AND ANEMIA

L. P. DOYLE

The heavy death loss of pigs during the nursing period presents a serious problem for the swine producer. It has been estimated that at least one-fourth of the pigs farrowed die before they are weaned. Strangely enough, the death losses have increased with the use of some of the modern methods of raising swine. For example, it has been a common occurrence for farmers to find that their efforts to raise pigs in modern hog houses have often been much less successful than were their efforts under more primitive conditions where less expensive equipment was used.

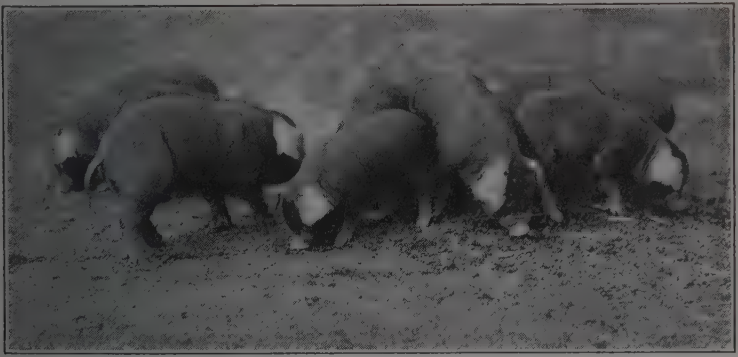

Figure 1.—A litter of anemic pigs, three weeks old. These pigs had been kept inside of a central hog house continuously since they were born. Figure 2 shows a more advanced stage of anemia in some of these same pigs.

In a series of experiments at the Purdue Agricultural Experiment Station, it was found that anemia in suckling pigs was intimately associated with a high death rate. In these experiments approximately 60 per cent of the anemic pigs died when from one to eight weeks of age, while only 4 per cent of the non-anemic animals died during the same age period. This work at Purdue

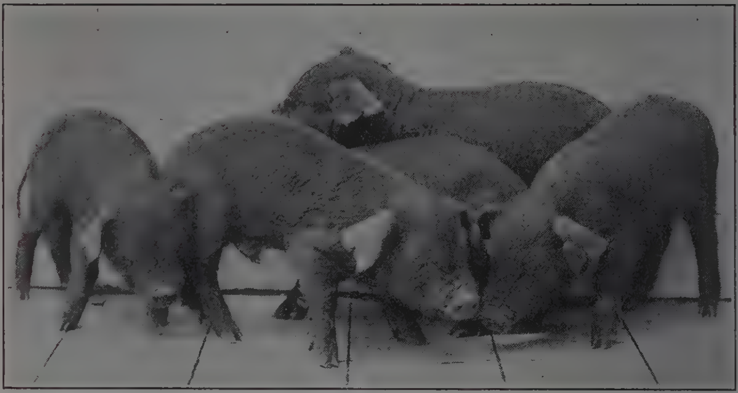

Figure 2.—The surviving pigs in the anemic litter shown in Figure 1. Almost one-h of the litter died when from three to five weeks old.

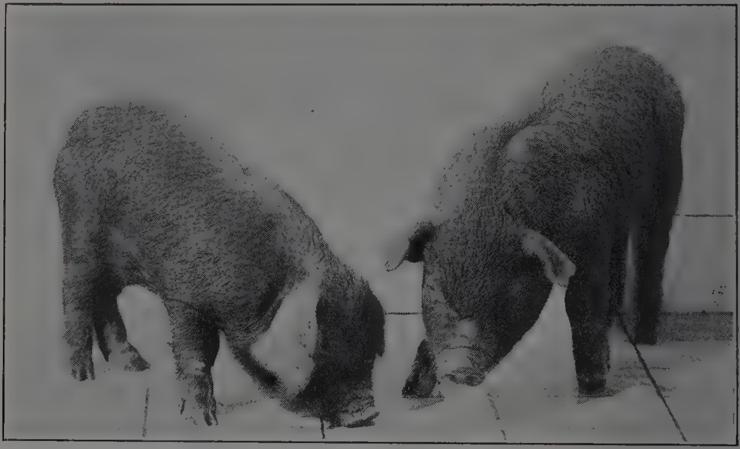

Figure 3.—Two anemic pigs. The one at the right is still in fair flesh, but it shows t lack of stamina which results from anemia.

was the first in the United States to call attention to the occurrence of anemia in pigs. Since the discovery of anemia in this country, Experiment Station workers in several states have turned their attention to the disease, and have found it to be an important cause of pig losses. It is interesting to note that anemia in pigs was definitely identified more than 40 years ago in Germany. At that time it became so destructive that swine-raising had to be abandoned in certain regions. The disease has also been recognized in England. The occurrence of anemia undoubtedly accounts for a large portion of the disappointing results which have followed efforts to raise pigs inside of barns or central hog houses. The investigations made at Purdue showed that a severe anemia was often ten times as prevalent in pigs which were kept inside as it was in those kept outside.

Anemia may be defined as an impoverished condition of the blood in which there is a deficiency in the number and quality of red blood cells. It is especially likely to develop in suckling pigs which are kept inside until they are ten days to four or five weeks of age. The disease sometimes occurs in pigs at birth, particularly when the pigs are farrowed by sows which have not been properly fed and managed during the gestation period.

The cause of anemia is the failure to supply the pigs with what is needed for the normal production of blood. The sow's milk is lacking in materials essential for normal blood formation, consequently, if the young pigs do not store up enough blood-building materials before they are born, anemia will develop during the nursing period unless something is supplied in addition to the mother's milk. A way has not yet been found to supply the necessary blood-forming materials through the milk of the sow.

The symptoms of anemia are quite characteristic, particularly in pigs which are from two to six weeks of age. In animals only a few days old the symptoms may not be so well defined. As a rule the pigs which become anemic are at first fat and make rapid gains in weight. In fact, the animals which make the most rapid gains up until the time they are four or five weeks of age are usually the ones which become most severely anemic if they subsist on milk alone. Anemic pigs, even though they appear well nourished, lack stamina, quickly become exhausted when made to exert themselves, and show a labored, jerky breathing which is usually called "thumps." They frequently develop scours in which

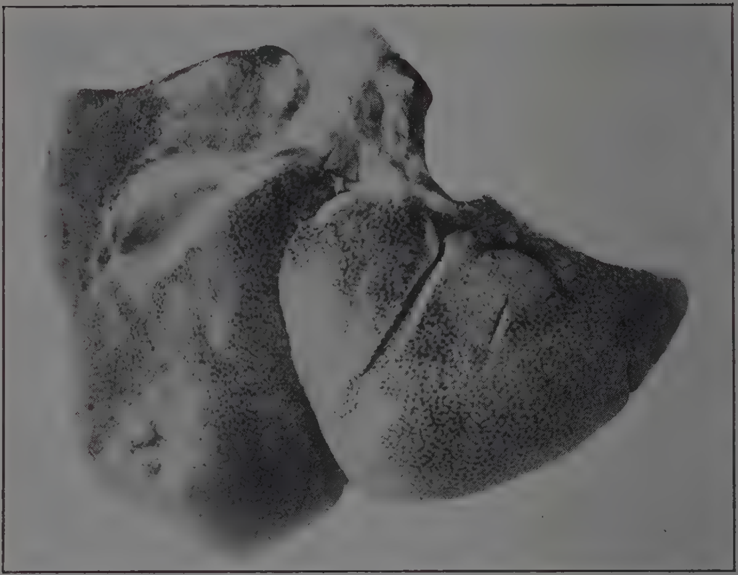

Figure 4.—The liver from a pig that died of anemia. It shows the grayish, mottled pearance which results from degenerative changes within the liver tissue.

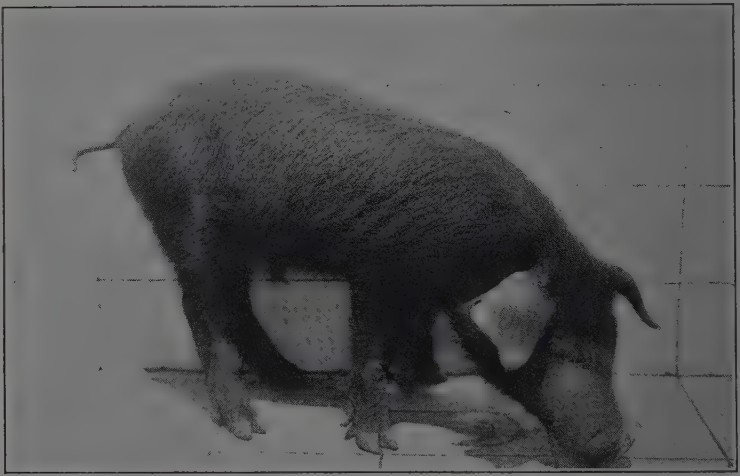

Figure 5.—An anemic pig which had been exposed to "bull nose" twenty days previou Note the diseased condition of the snout.

the bowel discharges are pale yellow or whitish in color. As the disease progresses, the pigs become listless and a paleness or pallidness becomes apparent in the skins of white and of red animals. This paleness can best be seen in the ears and on the under side of the body. A good many of the affected pigs develop a thickening along the under side of the neck and about the ears.

If severe anemia continues for any length of time, the pigs become stunted in growth, develop a wrinkled skin and rough coat of hair and show all the characteristics of "runts." This lasting damage done by the anemia which occurs in the early part of a pig's life is an important way in which the disease causes financial loss to the hog raiser. The delayed damaging effect of anemia is well illustrated by the following experience of farmers: Pigs are kept inside of a central hog house or barn continuously until they are three, four or five weeks old, and are then turned out. During the time the pigs are kept inside they often make rapid gains and become fat and sleek. Soon after being turned out they "go to pieces"; that is, they cease to grow and become unthrifty. The farmer too frequently makes the mistake of assuming that turning the pigs out caused the damage. The fact is the damage was done by keeping the young animals inside and merely became manifest soon after they were turned out. It is important to recognize the fact that many pigs die quite suddenly of anemia while they are still fat. Whole litters sometimes die of the disease during the nursing period.

Anemia greatly increases the pig's susceptibility to certain infections. Experiments at Purdue showed that it is much easier to produce so-called bullnose in anemic pigs than in non-anemic ones.

Fatal anemia in the young pig affects some of the internal organs and tissues in a very characteristic way. A post mortem examination of a pig which has died of anemia shows the following disease changes: The blood and muscles are pale and the heart is dilated so as to partially crowd the lungs from their normal position. The liver is often somewhat enlarged and nearly always shows fine, grayish mottling on the surface. There is usually an increased amount of fluid in the abdominal cavity, and often in the thoracic cavity. The spleen is sometimes enlarged. An experienced veterinarian can readily recognize anemia by the symptoms and post mortem findings. It is well to remember that some of

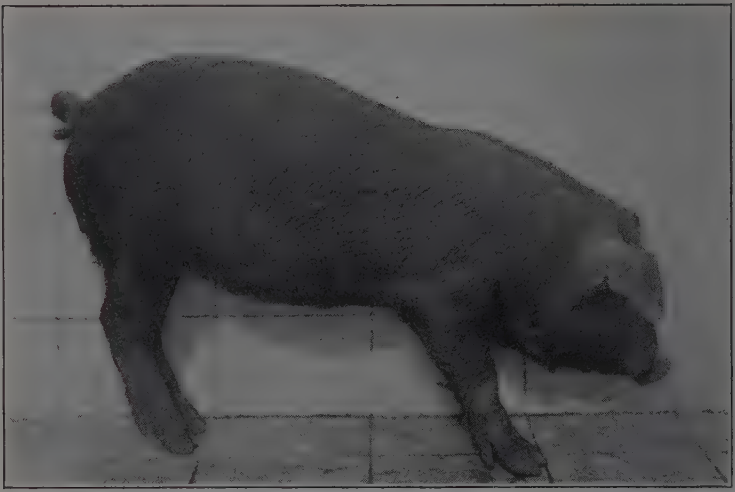

Figure 6.—A non-anemic pig, litter mate of the one shown in Figure 5, which had be exposed to "bull nose" twenty days previously. This pig was able to successfully resist t infection which caused bull nose in its anemic litter mate.

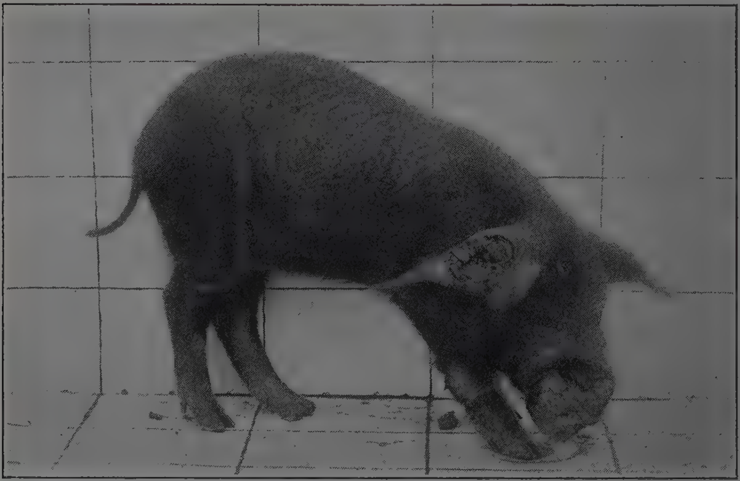

Figure 7.—Another anemic pig which had been exposed to the infection causing "bull nose This pig developed a pronounced form of "Necrobacillosis" of the ear and snout, while no anemic pigs which were exposed in the same way remained healthy.

the symptoms of anemia, such as scours and thumps, may also occur in other diseases.

The remedy for anemia is prevention. Preventive measures are even more important with anemia than with some other diseases. Ordinarily it is not possible to feed and manage the brood sow during the gestation period in such a way as to consistently prevent anemia in the young pigs which are kept inside for three or four weeks and not fed anything but the sow's milk. Anemia has been observed at birth in pigs farrowed by sows which had been in feed ots during the gestation period. It has also been found at birth n the pigs of sows which had been fed liberally on fattening rations even though the sows were on range during the gestation period. It is important to remember, however, that supplying good range for the sows and feeding an adequate ration without overfeeding during the gestation period are important steps toward nsuring vigorous pigs at farrowing time. If these pigs are then given access to outside conditions, particularly to blue grass sod, within the first week after being farrowed, they will almost invariably be amply protected against anemia, unless inclement weather causes the pigs to remain inside of the shelter house too much of the time.

The beneficial effect of allowing young pigs to have access to blue grass pasture was well shown by the results of the following experiment:* Twenty-two pregnant gilts which had been kept in dry lots during the gestation period were divided into two groups of eleven each. Both groups farrowed inside of a central hog house with a concrete floor. One group of sows and their pigs were kept nside the hog house continuously until the pigs were four weeks old. The other group of sows and their pigs were put outside when the pigs were from three to six days old. The sows which were put outside were kept in small pens with cinder floors and provided with individual houses for shelter. The pigs, however, were llowed to run over a small plat of blue grass sod. At four weeks of age the pigs which had been allowed to run on blue grass sod had nearly three times as much hemoglobin (red coloring matter) n their blood as the ones which had been kept inside the central hog house. The majority of the pigs which were kept inside were anemic before the end of four weeks.

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* Professor C. M. Vestal of the Animal Husbandry Department, generously cooperated in arrying out this experiment.

Pigs are sometimes farrowed during the winter or early sprin when the weather is so cold or stormy that the young animals ca not be put out of doors. In such instances the placing of piec of blue grass sod in the pens where the pigs can eat it is qui effective in preventing anemia. It is essential that the pigs e some of the sod in order to obtain the beneficial effects. Sometim it is necessary to confine the pigs in a small portion of the pe with the sod for a few hours each day in order to induce them form the habit of eating the sod. Rich soil which is free from so when placed in the pens with the young pigs, is also helpful preventing anemia. However, it is better to use sod because youn pigs usually eat the sod much more readily than any other kind solid material. The sod does not necessarily need to be blue gras any other sod which is readily eaten by the young pigs should equally satisfactory.

Teaching the pigs to eat solid food as young as possible is great aid in reducing the losses due to anemia. Young anima which are only slightly affected by anemia make very satisfacto recoveries soon after they begin to eat a good ration.

How to Prevent Anemia in Pigs

(1) Provide a good range, preferably on sod, for the brood sow duri the gestation period; and feed an adequate ration but avoid overfeeding:

(2) Whenever possible, put the sow and pigs out on clean sod within c week after farrowing.

(3) If it is necessary to keep the pigs inside, put blue grass or so other good sod in the pens where the young pigs can have access to it—beg ning when the pigs are three to four days old.

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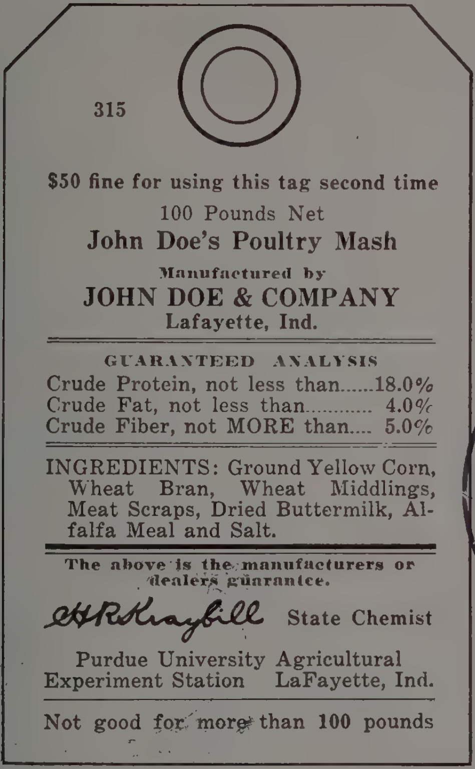
Circular No. 189 March, 1932

COMMERCIAL FEEDING STUFFS



315

$50 fine for using this tag second time

100 Pounds Net

John Doe's Poultry Mash

Manufactured by

JOHN DOE & COMPANY

Lafayette, Ind.

GUARANTEED ANALYSIS

Crude Protein, not less than......	18.0%
Crude Fat, not less than...........	4.0%
Crude Fiber, not MORE than....	5.0%

INGREDIENTS: Ground Yellow Corn, Wheat Bran, Wheat Middlings, Meat Scraps, Dried Buttermilk, Alfalfa Meal and Salt.

The above is the manufacturers or dealers guarantee.

H R Kraybill State Chemist

Purdue University Agricultural
Experiment Station LaFayette, Ind.

Not good for more than 100 pounds

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The Indiana tag gives valuable information to the purchasers of commercial feed.

Purdue University
Agricultural Experiment Station
Lafayette, Indiana

This circular contains a condensed report of commercial feed inspection in Indiana for the year 1931.

From the sale of tags it is estimated that 322,125 tons of commercial feeding stuffs with a retail value of $11,939,153 were sold in Indiana in 1931. The inspectors of the State Chemist department secured 2,804 samples, or approximately one sample for each 115 tons of feed sold in this state.

All of the 2,804 samples were examined microscopically and 2,420 of them were analyzed chemically. It was found that 85 per cent of the samples were equal to or better than the manufacturer's guarantee as declared on the official tag.

Of the 431 samples incorrectly guaranteed, 271 of them would be classed as seriously deficient or misbranded and sold in violation of the law. Shipments not tagged or seriously deficient were withdrawn from sale and manufacturers relabeled such feeds correctly and made refunds to the agents and consumers.

Method for calculating chemical analysis of a mixed feed.

Explanation of terms used in the analysis of feeds.

Table I Average analyses of the common cereals and by-product feeds.

Definition of feeding stuffs.

Table II Summary of withdrawals from sale.

Table III Estimated Sales of various classes of feeding stuffs.

Table IV Summary of the annual tonnage and expenditures for commercial feeding stuffs since 1911.

Table V Summary of inspection giving the standing of each feed manufacturer.

COMMERCIAL FEEDING STUFFS

H. R. KRAYBILL, State Chemist

O. S. ROBERTS, P. B. CURTIS, C. C. YUND, G. E. HALLIDAY, D. M. DOTY

Before a commercial feeding stuff may be legally sold or offered for sale in Indiana it is necessary that the feed be registered with the State Chemist, Purdue University Agricultural Experiment Station and that each package be properly labeled with an Indiana State Chemist tag. This is in accordance with the provisions of the Indiana Feeding Stuffs law passed in 1907 and amended in 1909. The object of this law is to have the feed in the bag correctly described on the Official Indiana State Chemist tag so that the purchaser may know just what kind of feed he is buying. The tag states the manufacturer's minimum guarantees for crude protein and crude fat, a maximum guarantee for crude fiber and the specific name of each ingredient contained in the feed. This information serves as an excellent guide in estimating the feeding value of the material.

To determine the correctness of the feed manufacturer's guarantee, 2,804 samples of commercial feeding stuffs were collected from manufacturers, dealers and consumers in various parts of the state during the year 1931. One inspection sample was secured from approximately each 115 tons of commercial feed sold in Indiana. All of the 2,804 samples were examined microscopically and 2,420 of them were analyzed chemically for moisture, crude protein, crude fat, crude fiber and ash content. Fifty samples of mineral feed were analyzed for lime (CaO), phosphoric acid (P_2O_5) and salt (NaCl) content.

The year's inspection shows that 85 per cent of the samples were equal to or better than the manufacturer's guarantee, as compared to 80 per cent in 1930. Of the 2,804 samples collected 431 of them were found to be guaranteed incorrectly and 271 were classed as being seriously deficient or misbranded and not sold in accordance with the Indiana Feeding Stuffs Law.

Shipments found to be seriously deficient were removed from sale immediately and the manufacturers either replaced the shipments with feed up to guarantee or relabeled them with a correct guarantee. Where deficient feed had already been sold, refunds were made to the dealers and consumers. The sum of $327.52 was refunded on 50 shipments by 41 different feed manufacturers.

During 1931 upon the advice of the State Chemist 353.6 tons of feeding stuffs were withdrawn from sale on account of non-tagging, deficiency and other reasons (Table II). Of this amount 276.3 tons, representing 157 shipments, were removed because of absence of Indiana State tags.

Estimated Sales of Commercial Feeding Stuffs in 1931

The year 1931 was a difficult year in practically all lines of business and that of feed was no exception. Based on the sale of official tags by the State Chemist, it is estimated that 322,125 tons of commercial feeding stuffs with a retail value of $11,939,153 were sold in Indiana in 1931. Compared with the sales of 1930 this represents a decrease of 37 per cent in tonnage and a corresponding decrease of 51 per cent in expenditures.

The principal increases in tonnage (Table III) sold were for alfalfa products, animal by-products, dried and condensed milk products and soybean oil meal. In practically all of the remaining classes of feed the tonnage dropped enormously. Especially, was this true of hominy feed and ready mixed feeds such as poultry mashes, poultry scratch feeds, cattle and dairy feeds and hog and pig meals. Although this general class of ready mixed feeds showed a decided decrease in tonnage there was a marked increase in the number of registrations of ready mixed protein supplements. In general it appears that the farmer was more interested in buying feeds to supplement his home grown grains than in purchasing prepared complete feeds.

Attention!

The official Indiana tag required by the Indiana Feeding Stuffs law bears the facsimile signature of the State Chemist and contains the manufacturer's guarantee.

Manufacturers or distributors should not neglect to attach these tags to each and every bag of feed shipped into Indiana in order to protect their dealers. The only products exempt are unmixed whole seeds and unmixed meals made directly from the entire grains.

When commercial feedings stuffs are sold in bulk either in carload lots or in pound lots from bags, barrels or other original containers, a tag or label must be delivered to the purchaser with each 100 pounds or fraction thereof.

Dealers and consumers should not accept any shipment or purchase without State Chemist tags or with such tags showing alterations. When such a shipment is received it should not be accepted until official Indiana tags are furnished to cover it.

Dealers and farmers should represent and purchase from manufacturers whose records show that they are complying with the law both in regard to labeling and maintaining guarantees of composition and ingredients. Table V "Summary of Feed Inspection" gives a record of the standing of each feed manufacturer for the year 1931.

Dealers and consumers are requested not to send miscellaneous samples of feed to the State Chemist without giving full information as to name of manufacturer, brand name, amount on hand and reasons for desiring an analysis. This also includes samples of feed suspected of having caused ill effects on animals or poultry. If sufficient quantity of such feed is on hand perhaps an official sample can be drawn under the direction of the State Chemist.

Manufacturers having difficulty in computing proper guarantees for their feed formulas may follow the following procedure as an example.

Method for Calculating Chemical Analysis Guarantee of a Mixed Feed

Ingredients in Batch of Feed	Pounds	Pounds of Fat	Pounds of Protein	Pounds of Fiber
Ground yellow corn	500	20.00	47.50	10.00
Soft wheat bran	200	7.00	29.00	16.00
Wheat middlings	200	7.00	31.00	12.00
Meat scraps 50% protein	100	6.00	50.00	3.00
Dried buttermilk	25	1.37	7.50	....
Alfalfa leaf meal	75	1.88	15.00	13.50
	1,100	43.25	180.00	54.50

Explanation—

(1) List the ingredients and amount of each used in batch.

(2) By using the information in Table I calculate the number of pounds of fat, protein and fiber furnished by each ingredient.
Example—500 lbs. of corn x 4.0% fat in corn = 20.00 lbs. of fat in 500 lbs. of corn.

(3) The sum of each column gives the total number of pounds of fat, protein and fiber in the particular batch.

(4) By dividing each total by the total pounds in the batch, the percentages of fat, protein and fiber are obtained.

Example— $\frac{43.25 \times 100}{1100} = 3.9\%$ fat

$\frac{180.00 \times 100}{1100} = 16.3\%$ protein

$\frac{54.50 \times 100}{1100} = 4.9\%$ fiber

From these percentages a safe guarantee would be 3.5% fat, 16.0% protein and 5.0% fiber.

Mineral Feeds

Mixed feeds containing both feed and more than 5 per cent of mineral ingredients require, in addition to the usual declaration of the chemical feed analysis, a declaration of each ingredient contained therein and the minimum percentages of lime expressed as CaO, phosphoric acid expressed as P_2O_5, iodine (I), and the maximum percentage of salt (NaCl) if same be present. If minerals predominate in the mixture, the usual declaration of the chemical feed analysis, with the exception of protein, may be omitted.

Mineral feeds containing no organic ingredient do not require the usual chemical feed guarantee, but do require a declaration of each ingredient contained therein and the minimum percentage of lime expressed as CaO, phosphoric acid expressed as P_2O_5, iodine (I), and the maximum percentage of salt (NaCl) if same be present.

That the mineral ingredients be stated in the common English terms, if any such terms exist.

It being impossible to classify separately the drug ingredients and the mineral ingredients, be it resolved:*

(1) That all mixtures containing mineral ingredients generally regarded as dietary factors essential for the normal nutrition of animals and which are sold or represented for the primary purpose of supplying these minerals as additions to rations in which these same mineral factors may be deficient, be classified as mineral feeds.

(2) That all other preparations which are sold or represented primarily for the cure, mitigation or prevention of disease be classified by this Association as drugs, medicines or specifics.

Manufacturers of mineral feeds who do not know just what guarantees of lime (CaO), phosphoric acid (P_2O_5), iodine (I) and salt (NaCl) to use for their particular formula are invited to write to the State Chemist Department for information regarding this matter.

Detailed information pertaining to the provisions of the Indiana Feeding Stuffs law will be gladly furnished upon request made to the State Chemist.

Explanation of Terms used in the Analysis of Feeding Stuffs

Moisture is the varying quantity of water occurring in feeding stuffs which can be driven off by heat at the temperature of boiling water. The amount of water present varies with the temperature, moisture content of the air, process of manufacture and the character of the substance. In most concentrates this value ranges from five to fifteen per cent.

Crude Fat consists mainly of fats and oils with small amounts of waxes, resins, coloring matter and similar substances, dissolved from feeding stuffs by dry ether. In calculating the heat and energy value of a feed, the fat is considered 2.25 times greater than that of either carbohydrates or protein.

Crude Protein is the term applied to the nitrogenous constituents of a feeding stuff. It is obtained by multiplying the total nitrogen by 6.25. Protein is the most important as wel as the most costly constituent in a feed. Plants have the power of building up protein from the inorganic elements o the soil and air while animals must secure their protein from the plants or other animals. The plant proteins contain varying amounts of the essential amino acids, therefore it is necessary to carefully select a variety of feeds which will furnish the essential amino acids economically.

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* Adopted by the Association of American Feed Control Officials.

Crude Fiber is the woody portion of a feeding stuff, for th most part cellulose, and is insoluble in dilute acids and alkalis Most of the common seeds and grains contain very little fibe while the hulls, husks and stems are high in this constituent In poultry and swine, crude fiber when present in considerabl quantities exerts a retarding influence on the digestion of nutrients present.

Ash, the mineral matter of plants, is the residue left afte burning a feeding stuff at low redness. It consists chiefly o the phosphates, sulphates, chlorides and carbonates of sodium potassium, calcium and magnesium. The calcium and phosphorus are absolutely essential for the proper nutrition of th animal.

Nitrogen Free Extract consists of sugars, starches, pentoses, non-nitrogenous organic acids, etc., and is determine by subtracting the sum of moisture, crude fat, crude protein crude fiber and ash from 100.

Carbohydrates is the sum of the crude fiber and Nitrogen free extract.

TABLE I—AVERAGE ANALYSIS OF CEREALS AND BY-PRODUCTS

Material	Description of	Pounds in One Hundred		
		Crude Fat	Crude Protein	Crude Fiber
Alfalfa meal	Entire ground hay	1.5	13.0	33.0
Alfalfa leaf meal	Largely alfalfa leaves	2.5	20.0	18.0
Barley	Whole or ground	1.8	11.0	6.0
Beet pulp	Dried	0.9	8.5	18.0
Blood (dried)	Blood meal	0.5	80.0	none
Bone (raw)	Raw bone	3.0	20.0	1.0
Bone (steamed)	Steamed bone	0.5	6.0	1.0
Brewers' dried grains	From manufacture of beer	6.0	26.0	15.0
Buckwheat	Whole or ground	2.2	10.0	10.0
Buckwheat mixed feed	Entire product from manufacture of buckwheat flour	3.2	12.0	28.0
Buckwheat middlings	Entire product from manufacture of buckwheat flour, except the hulls	7.3	28.8	6.4
Buttermilk (dried)	Dried buttermilk	5.5	30.0	none
Buttermilk (condensed)	Condensed buttermilk	2.0	10.0	none
Cane seed	(Sorghum) removed from head and cleaned	2.5	9.0	2.5
Charcoal	Charcoal	none	none	90.0
Cob meal	Ground corn cob	0.5	2.0	31.0
Cocoanut oil meal	Dried cocoanut meats with partial extraction of oil	8.0	22.0	9.0
Corn	Old corn No. 2	4.0	9.5	2.0
Corn and cob meal	Ear corn (old)	3.5	8.0	8.0
Corn bran	Containing little corn germ	2.5	7.0	10.0
Corn mill feed	Corn bran germ and some meal from manufacture of meal or corn flour	7.4	11.0	4.2
Corn feed meal	Manufacture of cracked corn	3.5	9.0	2.0
Corn germ oil meal	Corn germ with part of the oil removed	8.0	20.0	8.0
Corn gluten feed	Remains after the larger part of starch and germ is removed	2.0	25.0	7.0
Corn gluten meal	From manufacture of corn starch and glucose	1.0	42.0	2.0
Corn screenings	Small and broken grains of corn, small pieces cob, etc., removed from shelled corn	2.7	8.6	8.6
Cottonseed meal (prime quality)	Sold as 36 per cent protein	6.0	36.0	14.0
Cottonseed meal (prime quality)	Sold as 41 per cent protein	6.0	41.0	12.0
Cottonseed meal (prime quality)	Sold as 43 per cent protein	6.0	43.0	10.0
Cottonseed feed	Below 36 per cent protein	4.0	22.8	22.0
Cottonseed hulls	Contains trace of lint and meal adhering	1.8	4.6	38.0
Cowpea	Seeds, pods removed	1.4	20.8	4.1
Distillers' grain (dried)	From corn or rye	9.0	27.0	12.0
Emmer	Often called spelt	2.0	11.5	10.0
Fish meal	Dried ground tissues of fish with or without the extraction of part of the oil	6.0	55.0	2.0
Flaxseed	Whole grain or meal without extraction of oil	32.0	22.0	7.0
Flax plant by-product	Shives, pods, etc.	2.1	15.0	31.0
Flaxseed screenings	Small and broken grains, flaxseed, weed seed and other foreign material cleaned from flaxseed	8.0	14.0	14.0

TABLE I—Continued

Material	Description of	Pounds in One Hundred		
		Crude Fat	Crude Protein	Crude Fiber
Hominy feed, meal or chop	Manufacture of hominy grits or meal by degerminator process	6.0	11.0	6.0
Kafir corn	Milo	2.5	10.0	2.5
Kelp (dried)	Ground dried kelp	1.0	6.0	10.0
Linseed meal (old process)	Oil extracted by pressure	6.0	34.0	8.0
Malt sprouts	Sprout of the barley grain	1.3	27.9	12.1
Meat scraps	Ground dry rendered residue from animal tissues	6.0	50.0	3.0
Millet	Italian millet seed	3.9	10.3	9.4
Milo	Whole or ground	2.5	10.7	2.5
Molasses	From beets	none	3.0	....
Molasses	Blackstrap from cane	none	3.0	....
Oats	Ground or whole	4.0	11.0	11.0
Oat-clipped by-product	Clippings	2.0	9.0	30.0
Oat-groats	Kernels of oat berry	6.5	15.0	2.0
Oat hulls	Oat hulls	1.5	4.0	32.0
Oat meal mill by-product	Oat hulls and oat shorts	1.5	6.0	28.0
Oat middlings	Floury portion of oat groat	5.0	15.0	5.0
Peanut oil feed	Peanut meats and peanut hulls	6.0	30.0	25.0
Peanut oil meal	Residue after the extraction of part of the oil from peanut kernels	6.0	40.0	6.0
Peanut shells	Whole or finely ground	1.2	5.5	70.9
Rice bran	Cuticle layer beneath hull	12.0	12.0	12.0
Rye	Rye	1.5	11.0	2.0
Rye feed	Rye feed	3.5	16.0	5.0
Skimmed milk (dried)	Dried skimmed milk	0.5	30.0	none
Soybean	Seed pods removed	19.0	35.0	5.0
Soybean oil meal	Ground	6.0	40.0	6.0
Sunflower seed	Whole or ground	19.0	16.0	30.0
Tankage (digester)	60 per cent reinforced with concentrated tank water or dried blood	6.0	60.0	3.0
Unscreened flaxseed oil feed	Flaxseed meal and flaxseed screenings	6.0	30.0	9.0
Velvet bean feed	Velvet beans and pods	4.0	19.0	17.0
Wheat	Whole or ground	1.9	11.9	2.4
Wheat bran (soft)	Wheat bran	3.5	14.5	8.0
Wheat bran (hard)	Wheat bran	4.0	16.0	10.0
Wheat middlings	Wheat middlings	3.5	15.5	6.0
Wheat standard middlings	With and without screenings	4.0	16.0	9.5
Wheat red dog flour	Red dog flour	3.5	15.0	4.0
Wheat mixed feed and mill run screenings	Bran, middlings, red dog flour and screenings	3.5	15.0	8.0
Whey (dried)	Dried whey	0.5	12.0	none

DEFINITIONS OF FEEDING STUFFS*

Alfalfa Products

Chopped Alfalfa is the entire alfalfa hay, chopped and not ground finely enough to become a meal. It must not contain an admixture of alfalfa straw or other foreign material.

Alfalfa Meal is the product obtained from the grinding of the entire alfalfa hay, without the addition of any alfalfa stems, alfalfa straw or foreign material, or the abstraction of leaves. It must be reasonably free from other crop plants and weeds, and must not contain more than 33 per cent of crude fibre.

Alfalfa Leaf Meal is the ground product consisting chiefly of leafy materials separated from alfalfa hay. It must be reasonably free from other crop plants and weeds and must not contain more than 18 per cent of crude fibre.

Alfalfa Stem Meal is the ground product remaining after the separation of the leafy material from alfalfa hay or meal. It must be reasonably free from other crop plants and weeds.

Animal By-Products

Blood Meal is ground, dried blood.

Blood Flour is dried blood, prepared by special processes and reduced to a fine powder.

Digester Tankage, Meat Meal Tankage or Feeding Tankage is the residue from animal tissues exclusive of hoof, horn, manure and stomach contents, except in such traces as might occur unavoidably in good factory practice, especially prepared for feeding purposes by tanking under live steam or by dry-rendering or a mixture of the products made suitable by drying and grinding. When these products contain more than 10 per cent phosphorus (P_2O_5) they shall be designated Digester Tankage with Bone, Meat and Bone Meal Digester Tankage, Meat and Bone Meal Tankage, or Feeding Tankage with Bone. If they bear a name descriptive of their kind, composition or origin they must correspond thereto.

Meat Scraps is the ground dry rendered residue from animal tissues exclusive of hoof, horn, manure and stomach contents, except in such traces as might occur unavoidably in good factory practice. When this product contains more than 10 per cent phosphorus (P_2O_5), it shall be designated Meat and Bone Scrap. If they bear a name descriptive of their kind, composition or origin they must correspond thereto.

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* These definitions have been adopted by the Association of American Feed Control Officials.

Raw Bone Meal is the dried, ground product suitable for animal feeding, obtained by cooking in water at atmospheric pressure, undecomposed bone, just enough to remove excess fat and meat. It must not contain less than 23 per cent of protein.

Steamed Bone Meal is the dried, ground product suitable for animal feeding obtained by cooking bones with steam under pressure.

Special Steamed Bone Meal is the dried, ground product suitable for animal feeding obtained by cooking dried bone after the removal of grease and meat fibre with steam under pressure in the process of obtaining gelatine or glue.

Brewers' and Distillers' Products

Brewers' Dried Grains are the properly dried residue from cereals obtained in the manufacture of beer.

Distillers' Dried Grains are the dried residue from cereals obtained in the manufacture of alcohol and distilled liquors. The product shall bear the designation indicating the cereal predominating.

Distillers' Corn Solubles, a by-product from the manufacture of alcohol from corn, is a mash liquor concentrated after the removal of the alcohol and wet grains.

Distillers' Rye Solubles, a by-product from the manufacture of alcohol from rye, is a mash liquor concentrated after the removal of the alcohol and wet grains.

Distillers' Corn and Rye Solubles, a by-product from the manufacture of alcohol from corn and rye, is a mash liquor concentrated after the removal of the alcohol and wet grains.

Malt Sprouts are the sprouts of the barley grain obtained in the malting process. Sprouts derived from any other malted cereal must be designated by the name of that cereal.

Yeast or Vinegar Dried Grains are the properly dried residue from the mixture of cereals, malt and malt sprouts (sometimes cottonseed meal) obtained in the manufacture of yeast or vinegar, and consists of corn or corn and rye from which most of the starch has been extracted, together with malt added during the manufacturing process to change the starch to sugars, and malt sprouts (sometimes cottonseed meal) added during the manufacturing process to aid in filtering the residue from the wort and serve as a source of food supply for the yeast.

Buckwheat Products

Buckwheat Shorts or Buckwheat Middlings are that portion of the buckwheat grain immediately inside the hull after separation from the flour.

Corn Products

Corn Meal (Feeding) is finely ground, unbolted corn.

Corn Bran is the outer coating of the corn kernel, with little or no starchy part or germ.

Corn Feed Meal is the fine siftings obtained in the manufacture of screened corn chop, screened ground corn or screened cracked corn, with or without its aspiration products added.

Corn Chop, Ground Corn or Cracked Corn is the entire product made by grinding, cutting or chopping the grains of sound Indian corn, and may be fine, medium or coarse, and must not contain more than 4 per cent of foreign material.

Screened Corn Chop, Screened Ground Corn, or Screened Cracked Corn is the coarse portion of corn chop, ground corn or cracked corn from which most of the fine particles have been removed, and must not contain more than 4 per cent of foreign material.

Corn Grits, Hominy Grits are the fine or medium sized, hard flinty portions of Indian corn containing little or no bran or germ.

Ear Corn Chops is corn and cob chopped, without the husk, with no greater proportion of cob than occurs in the ear corn in its natural state.

Corn Gluten Meal is that part of commercial shelled corn that remains after the separation of the larger part of the starch, the germ and the bran, by the processes employed in the manufacture of corn starch. It may or may not contain corn solubles.

Corn Gluten Feed is that part of commercial shelled corn that remains after the separation of the larger part of the starch and the germs by the processes employed in the manufacture of corn starch. It may or may not contain corn solubles.

Maltose Process Corn Gluten Feed is the dried residue from degermed corn, after removal of starch in the manufacture of malt syrup.

Hominy Feed, Hominy Meal or Hominy Chop is the kiln-dried mixture of the mill-run bran coating, the mill-run germ, with or without a partial extraction of the oil, and a part of the starchy portion of the white corn kernel obtained in the manufacture of hominy, hominy grits, and cornmeal by the degerming process.

Yellow Hominy Feed, Yellow Hominy Meal or Yellow Hominy Chop is a kiln dried mixture of the mill-run bran coating, the mill-run germ, with or without a partial extraction of the oil, and a part of the starchy portion of the yellow corn kernel obtained in the manufacture of yellow hominy grits and yellow corn meal by the degerming process.

Corn Oil Cake consists of the corn germ from which part of the oil has been pressed and is the product obtained in the wet milling process of manufacture of corn starch, corn syrup, and other corn products.

Corn Oil Meal is ground corn oil cake.

Corn Germ Cake consists of corn germ with other parts of the corn kernel from which part of the oil has been pressed, and is the product obtained in the dry milling process of manufacture of corn meal, corn grits, hominy feed, and other corn products.

Corn Germ Meal is ground corn germ cake.

Corn Screenings are the small light grains of corn, parts of grains of corn and/or other cereals, and other materials having feeding value, obtained by screening shelled corn, excluding sand, dirt and other similar inert materials.

Cottonseed Products

Cottonseed Meal is a product of the cottonseed only, composed principally of the kernel with such portion of the hull as is necessary in the manufacture of oil; provided that nothing shall be recognized as cottonseed meal that does not conform to the foregoing definition and that does not contain at least 36 per cent of protein. Cottonseed meal shall be graded and classed as follows:

1. **Cottonseed Meal,** Prime Quality. Cottonseed meal, prime quality, must be finely ground, not necessarily bolted, of sweet odor, reasonably bright in color, yellowish, not brown or reddish, free from excessive lint, and shall contain not less than 36 per cent of protein. It shall be designated and sold according to its protein content. Cottonseed meal with 36 per cent of protein shall be termed "36 per cent Protein Cottonseed Meal, Prime Quality," and higher grades similarly designated (as "43 per cent Protein Cottonseed Meal, Prime Quality"), etc.

2. **Cottonseed Meal,** Off Quality. Cottonseed meal not fulfilling the above requirements as to color, odor and texture shall be graded "36 per cent Protein Cottonseed Meal, Off Quality," and higher grades similarly designated.

Cottonseed Feed is a mixture of cottonseed meal and cottonseed hulls, containing less than 36 per cent of protein.

Cold, Pressed Cottonseed is the product obtained from the subjection of the whole undecorticated cottonseed to the cold pressure process for the extraction of oil and includes the entire cottonseed less the oil extracted.

Ground Cold Pressed Cottonseed is the product obtained by grinding cold pressed cottonseed.

Linseed and Flax Products

Linseed Cake or Meal is oil cake or meal made from flaxseed; provided that the final product shall contain less than 6 per cent of weed seeds and other foreign materials and; provided further, that no portion of the stated 6 per cent of weed seeds and other foreign materials shall be deliberately added.

Old Process Oil Meal, Old Process Linseed Meal is oil meal as defined or linseed meal as defined produced by crushing, cooking and hydraulic pressure.

New Process Oil Meal, New Process Linseed Meal is oil meal as defined or linseed meal as defined produced by crushing, heating and the use of solvents.

Flax Plant By-Products is that portion of the flax plant remaining after the separation of the seed, the bast fiber and a portion of the shives, and consists of flax shives, flax pods, broken and immature flax seeds, and the cortical tissues of the stem.

Ground Flaxseed or Flaxseed Meal is the product obtained by grinding flaxseed which has been screened and cleaned of weed seeds and other foreign materials by the most improved commercial process; provided that the final product shall contain less than 4 per cent of weed seeds and other foreign materials, and; provided further, that no portion of the stated 4 per cent of weed seeds and other foreign materials shall be deliberately added.

Unscreened Flaxseed Oil Feed Cake is the product obtained by extraction of part of the oil from unscreened flaxseed by crushing, cooking and hydraulic pressure, or by crushing, heating and the use of solvents. The ingredients shall be stated as partially extracted flaxseed and foreign seeds (wheat, wild buckwheat, pigeon grass, wild mustard, etc.).

Ground Unscreened Flaxseed Oil Feed is the ground unscreened flaxseed oil feed cake.

Screenings Oil Feed is the ground product obtained after extraction of part of the oil by crushing, cooking and hydraulic pressure, or by crushing, heating and the use of solvents from the smaller imperfect grains, weed seeds and other foreign materials, having feeding value, separated in cleaning the grain. The name of the grain from which the screenings are separated shall be prefixed to "screenings oil feed."

Oil Cake is the product obtained after the extraction of part of the oil by crushing, cooking and hydraulic pressure, or by crushing, heating and the use of solvents, from seeds which have been screened and cleaned of weed seeds, and other foreign material by the most improved commercial process. When used alone the term "Oil Cake" shall be understood to designate linseed cake as defined. When used to cover any other products the name of the seed from which it is obtained shall be prefixed to the words "Oil Cake."

Oil Meal or Ground Oil Cake is oil cake ground to a meal.

Oat Products

Oat Hulls are the outer coverings of the oat.

Oat Middlings are the floury portions of the oat groat obtained in the milling of rolled oats.

Oat Shorts are the covering of the oat grain lying immediately inside the hull, being a fuzzy material carrying with it considerable portions of the fine floury part of the groat obtained in the milling of rolled oats.

Oat Chop, Ground Oats, Pulverized Oats, Crushed Oats and Crimped Oats consists of the entire product made by chopping, cutting, grinding, crushing or crimping oats.

Oat Groats are the kernels produced from cleaned and dried oats in the process of manufacturing oat meal.

Hulled Oats, Undried Oat Groats are the kernels produced from the undried grain in the process of hulling oats.

Oat Meal, Ground Oat Groats is the product produced by cutting, cracking or grinding oat groats.

Rolled Oat Groats (Rolled Oats) is the product obtained in the process of rolling oat groats.

Clipped Oat By-Products is the by-product obtained in the manufacture of clipped oats. It may contain the light chaffy material broken from the end of the hulls, empty hulls, light immature oats and dust. It must not contain an excessive amount of oat hulls.

Wheat Products

Wheat Bran is the coarse outer covering of the wheat kernel as separated from cleaned and scoured wheat in the usual process of commercial milling.

Standard Middlings consists mostly of fine particles of bran, germ and very little of the fibrous offal obtained from the "tail of the mill." This product must be obtained in the usual commercial process of milling and shall not contain more than 9.5 per cent crude fiber.

Flour Middlings shall consist of standard middlings and red dog flour combined in the proportions obtained in the usual process of milling and shall not contain more than 6.0 per cent crude fiber.

Wheat Red Dog, a by-product obtained in the usual commercial process of flour milling, consists principally of aleurone with small quantities of flour and fine bran particles and shall not contain more than 4.0 per cent crude fiber.

Wheat Low Grade Feed Flour, a by-product obtained in the usual commercial process of flour milling, consists principally of flour with small quantities of aleurone and fine bran particles and shall not contain more than 1.5 per cent crude fiber.

Wheat Bran and Standard Middlings consists of the two commodities as defined above, mixed in the proportions obtained in the usual process of commercial milling.

Hard Wheat Mixed Feed (Mill-run wheat feed) consists of pure wheat bran and flour middlings combined in the proportions obtained in the usual process of commercial milling. This product shall not contain more than 9.5 per cent crude fiber.

Brown Shorts (Red Shorts) consists mostly of the fine particles of bran, germ and very little of the fibrous offal obtained from the "tail of the mill." This product must be obtained in the usual commercial process of milling and shall not contain more than 7.5 per cent crude fiber.

Gray Shorts (Gray Middlings or Total Shorts) consists of the fine particles of the outer bran, the inner bran or bee-wing bran, the germ and the offal or fibrous materials obtained from the "tail of the mill." This product must be obtained in the usual process of commercial milling and shall not contain more than 6.0 per cent crude fiber.

White Shorts or White Middlings consists of a small portion of the fine bran particles and the germ and a large portion of the fibrous offal obtained from the "tail of the mill." This product must be obtained in the usual process of flour milling and shall not contain more than 3.5 per cent crude fiber.

Wheat Mixed Feed (Mill-run wheat feed) consists of pure wheat bran and the gray or total shorts combined in the proportions obtained in the usual process of commercial milling. This product shall not contain more than 8.5 per cent crude fiber.

Screenings consists of the smaller imperfect grains, weed seeds, and other foreign materials, having feeding value, separated in cleaning the grain.

Scourings consists of such portions of the cuticle, brush, white caps, dust, smut and other materials as are separated from the grain in the usual commercial process of scouring.

(NOTE) If to any of the wheat or rye by-products feeds there should be added screenings or scourings—as above defined, either ground or unground, bolted or unbolted, such bran shall be so registered, labeled and sold as clearly to indicate this fact. The word "Screenings" or "Scourings" as the case may be, shall appear as part of the name or brand and shall be printed in the same size and face of type as the remainder of the brand name. When the word "Screenings" appears it is not necessary to show also on the labeling the word "Scourings."

Miscellaneous Products

Dried Beet Pulp is the dried residue from sugar beets which have been cleaned and freed from crown, leaves and sand, and which have been extracted in the process of manufacturing sugar.

Cocoanut Oil Meal or "Copra Oil Meal" is the ground residue from the extraction of part of the oil from the dried meat of the cocoanut.

Ivory Nut Meal is the ground waste material resulting from the manufacture of buttons and similar articles from the vegetable ivory nut.

Processed Garbage is composed of animal and vegetable waste from garbage collected sufficiently often that harmful decomposition has not set in and is separated from material such as crockery, glass, or similar material. Its odor must not be suggestive of the presence of decomposition and it must contain less than one per cent of glass. None of it shall contain knife like or needle like particles, and providing further, that the maximum percentage of glass be stated on the label when present in excess of one-fifth of one per cent.

Palm Kernel Oil Meal is the ground residue from the extraction of part of the oil by pressure or solvents from the kernel of the fruit of Elaeis guineensis or Elaeis malanococco.

Chop is a ground or chopped feed composed of one or more different cereals or by-products thereof. If it bears a name descriptive of the kind of cereals, it must be made exclusively of the entire grains of those cereals.

Head Chops consists of the entire head of the grain sorghums chopped, and should bear the name of the sorghum from which it is made. This includes, among others, kaffir head chops, milo head chops, feterita head chops, and sorghum head chops.

Head Stems consists of the head of the grain sorghums, from which the grain has been removed, and should bear the name of the sorghum from which it is made.

TENTATIVE DEFINITIONS

Table Scrap Meal is the properly cooked, dried and ground residue resulting from freshly collected hotel and house garbage from which all metal, crockery, glass, and other foreign material has been removed except in such traces as may unavoidably occur in good factory practice. The finished product must not be suggestive of material decomposition in odor. It must not contain any sharp, needle pointed pieces of glass and must not contain more than one-fifth of one per cent of finely ground glass or dull particles of glass.

Whole Pressed Cottonseed, Prime Quality, is the product resulting from subjecting the whole, sound, mature, clean undecorticated cottonseed to pressure for the extraction of oil, and includes the entire cottonseed less the oil extracted and the lint removed. It must be designated and sold according to its protein content.

Ground, Whole Pressed Cottonseed, Prime Quality, is whole pressed cottonseed, ground. It must be designated and sold according to its protein content.

Iodized Salt (Feeding) is common salt (NaCl) containing an alkaline iodide in quantity not less than 0.015 per cent iodine, uniformly distributed.

Hominy Feed or Meal is a mixture of corn bran, corn germ (with or without a partial extraction of the oil), a part of the starchy portion of either white or yellow corn kernels or mixture thereof, obtained in the manufacture of hominy, hominy grits or table meal, and contains not less than 5 per cent of fat. If prefixed with the words white or yellow the product must correspond thereto.

Oat Mill Feed (Oat Hulls, Oat Shorts, and Oat Middlings) is the entire by-product produced in the manufacture of oat groats and consists of oat hulls, oat shorts and oat middlings.

Milk Products

Dried Buttermilk (Feeding) is the product resulting from the removal of water from clean, sound buttermilk derived from natural cream, to which no foreign substances have been added, excepting such as are necessary and permitted in the manufacture of butter. It contains not more than 8 per cent of moisture, not more than 13 per cent of mineral matter (ash), and not less than 5 per cent butterfat, as determined by the Roese-Gottlieb method.

Dried Soured Skimmed Milk (Feeding) is the product resulting from the removal of water from clean, sound skimmed milk which has been soured by a suitable culture of lactic bacteria. It contains not more than 8 per cent moisture.

Milk Sugar Feed (Dried Whey) is the by-product from the manufacture of cheese containing at least 70 per cent lactose (milk sugar).

Evaporated Soured Skimmed Milk (Feeding), **Concentrated Soured Skimmed Milk** (Feeding), **Condensed Soured Skimmed Milk** (Feeding) is the product resulting from the removal of a considerable portion of water from the clean, sound skimmed milk which has been soured by a suitable culture of lactic bacteria. It contains not less than 27 per cent total solids.

Marine Products

Fish Meal (Feeding) is clean, dried, ground tissues of undecomposed whole fish and/or fish cuttings with or without the extraction of part of the oil, and contains not more than 3 per cent salt (NaCl).

Fish Residue Meal (Feeding) is the clean, undecomposed residue from the manufacture of glue from non-oily fish, and contains not more than 3 per cent salt (NaCl).

Crab Meal (Feeding) is prepared from the undecomposed waste of the crab industry and contains the shell, viscera and part or all of the flesh. It contains not less than 25 per cent protein and not more than 3 per cent salt (NaCl).

Shrimp Meal (Feeding) is prepared from the undecomposed waste of the shrimp industry and contains the head, hull and/or the whole shrimp and not more than 3 per cent salt (NaCl).

Fish Oils

Cod Liver Oil is the product obtained by extraction of part of the oil from cod livers.

Sardine Oil, Pilchard Oil is the product obtained by extraction of part of the oil from the whole Pacific sardine or pilchard or from cannery refuse of this species of fish.

Salmon Oil is the product obtained by extraction of part of the oil from the cannery refuse of salmon.

Tuna Oil is the product obtained by extraction of part of the oil from the cannery refuse of tuna.

Menhaden Oil is the product obtained by the extraction of part of the oil from whole Menhaden.

TABLE II—WITHDRAWALS FROM SALE

Number of Shipments Withdrawn From Sale	Number of Manufacturers Represented	Reasons for Withdrawal from Sale	Amount Withdrawn Tons
157	93	Not tagged	276.3
15	13	Deficient in crude protein	43.9
1	1	Deficient in crude protein and excess fiber	14.0
12	10	Misbranded	13.5
6	6	Mutilated tags	4.2
1	1	Deficient in crude fat and excess fiber	0.8
1	1	Deficient in crude fat and crude protein	0.5
1	1	Deficient in phosphoric acid	0.3
1	1	Deficient in crude fat	0.1
195	....	Totals	353.6

TABLE III—Estimated Sales of Commercial Feeding Stuffs in Indiana

Kind of Feed	Estimated Tons			Estimated Retail Values, Dollars	
	1929	1930	1931	1930	1931
Alfalfa meal and leaf meal	2,657	3,063	3,906	135,997	156,240
Animal by-products (Tankage, meat scraps, etc.)	26,094	27,750	32,719	1,709,400	1,328,391
Brewers, distillers' and yeast dried grains	63	94	63	2,914	1,764
Condimental poultry and stock feeds*	1,657	406	1,156	94,192	219,640
Corn feed meal	3,875	4,500	1,031	169,650	24,538
Corn germ meal	1,125	563	563	20,831	16,890
Corn gluten meal and feed	813	1,469	781	60,523	23,586
Corn and oats chop and miscellaneous chops	4,406	3,969	2,781	149,234	71,194
Cottonseed meal	9,406	11,750	6,750	478,225	193,725
Dried buttermilk, dried skimmed milk, condensed, etc.	7,063	6,219	8,813	956,482	850,455
Hominy meal and hominy feed	49,031	41,219	16,188	1,529,225	406,319
Linseed oil meal	9,719	7,031	4,938	371,940	189,125
Mill by-products—wheat bran, middlings, rye feeds, etc., with and without screenings	120,133	117,156	84,719	3,924,726	1,846,874
Mineral feeds	9,188	7,125	5,062	582,825	376,613
Oat meal by-products—oat shorts, oat hulls, oat middlings, oat groats, etc.	188	1,719	1,625	43,319	33,150
Poultry scratch feed— with and without grit	40,906	45,969	19,187	2,059,411	706,082
Poultry mash	120,563	142,406	88,344	7,903,533	3,798,792
Proprietary feeds—total ready mixed	88,781	87,844	39,905	4,028,940	1,575,088
Cattle and dairy feeds†	....	56,894	23,719	2,389,548	775,611
Hog and pig meals†	....	22,330	10,687	1,201,354	478,778
Horse and mule feeds†	....	6,051	2,281	240,225	73,676
Rabbit and dog feeds†	....	1,219	2,437	93,863	182,044
Calf meals†	....	1,350	781	103,950	64,979
Soybean oil meal	531	125	2,281	6,963	68,430
Miscellaneous—beet pulp, rice bran, processed garbage, cocoanut oil meal, kelp, peanut oil meal, etc.	2,688	1,719	1,313	65,322	52,257
Totals	498,887	512,096	322,125	24,293,652	11,939,153

*Not all condimental feeds come under the law.
†Not included in total.

TABLE IV—SUMMARY OF THE ANNUAL TONNAGE AND EXPENDITURES FOR COMMERCIAL FEEDING STUFFS SINCE 1911

Year	1911	1912	1913	1914	1915	1916	1917
Estimated sales, tons	179,000	196,752	217,689	271,751	270,339	317,664	379,152
Estimated retail value, dollars	5,056,906	6,371,571	6,406,645	8,461,751	8,221,684	10,316,516	21,700,101
Year	**1918**	**1919**	**1920**	**1921**	**1922**	**1923**	**1924**
Estimated sales, tons	439,152	506,958	390,078	283,256	340,197	389,971	419,441
Estimated retail value, dollars	26,717,086	33,013,463	27.014,049	11,716,745	14,244,175	18,026,682	19,720,313
Year	**1925**	**1926**	**1927**	**1928**	**1929**	**1930**	**1931**
Estimated sales, tons	408,713	337,298	440,534	524,476	498,887	512,096	322,125
Estimated retail value, dollars	20,945,026	16,837,512	24,173,605	29,818,566	26,491,777	24,293,652	11,939,153

TABLE V—SUMMARY OF FEED INSPECTION

January 1, 1931 to January 1, 1932

Name and Address of Manufacturer	Number of Samples Examined	Number of Samples Passed	Number of Samples not Passed	Number of Samples not Tagged
Abilene Flour Mill Co., Abilene, Kansas	1	1		
Abingdon Milling & Cattle Feeding Co., Abingdon, Ill.	2	2		
Acme-Evans Co., Indianapolis, Ind.	33	30	3	3
Allied Mills, Inc., Chicago, Ill.	59	58	1	8
American Maize Products Co., New York, N. Y.	3	3		1
American National Mineral Corp., Hillsboro, Ind.	8	6	2	
Amo Milling Co., Amo, Ind.	3	1	2	
Amos Pig Grow Tonic & Food Co., Kokomo, Ind.	6	3	2	1
Anchor Feed Co., Kokomo, Ind.	2	2		
Anchor Milling Co., Rochester, Ind.	10	8	2	
Angola Flour Mills, Angola, Ind.	4	3	1	
Angola Reduction Co., Angola, Ind.	1	1		
Arcady Farms Milling Co., Chicago, Ill.	17	13	3	2
Archer-Daniels-Midland Co., Minneapolis, Minn.	13	13		5
Armour & Co., Chicago, Ill.	24	22	2	
Armour Creameries, Chicago, Ill.	1	1		
Associated Feed Dealers of America, Inc., South Bend, Ind.	11	9	2	2
Aubrey & Co., Louisville, Ky.	4	4		1
Auburn Roller Mills, Auburn, Ind.	2	2		
Augenbaugh & Co., Everett, Waseca, Minn.	1	1		
Aukerman Bros.-Catey Co., Amboy, Ind.	10	10		
Aukerman Bros. Co., Peru, Ind.	14	13	1	
Aurora Farmers Supply Co., Aurora, Ind.	2	2		
Aurora Flour & Feed Co., Aurora, Ind.	7	7		
Aviston Milling Co., East St. Louis, Ill.	2	1		1
Badenoch Co., J. J., Chicago, Ill.	8	8		
Badger Grain & Feed Co., Inc., Milwaukee, Wis.	1	1		
Bahler Feed Co., Remington, Ind.	5	5		
Baker, Jesse I., Hagerstown, Ind.	4		4	
Ballard Packing Co., Marion, Ind.	2	1	1	
Bash & Co., C. E., Huntington, Ind.	5	5		
Bashore Feed Store & Hatchery, Silver Lake, Ind.	5	5		
Bashore Feed Store and Hatchery, Warsaw, Ind.	2	2		
Batesville Fertilizer Co., Batesville, Ind.	4	3	1	
Batesville Roller Mills, Batesville, Ind.	2	2		
Battle Creek Dog Food Co., Battle Creek, Mich.	2	2		
Bausback Fertilizer Co., Shelbyville, Ind.	5	5		
Bay Chemical Co., New Orleans, La.	1	1		
Beck Grain & Feed Co., Shelbyville, Ind.	9	7	2	
Bee Line, The, LaPorte, Ind.	6	6		3
Benz Co., The, Batesville, Ind.	1	1		
Berne Grain & Hay Co., Berne, Ind.	7	5	2	
Bickels Feed & Supply Store, Corydon, Ind.	3	3		
Bisbee Linseed Co., Chicago Heights, Ill.	13	13		1
Bishop Feed Line, LaPorte, Ind.	1	1		
Blackburn Milling Co., Omaha, Nebr.	1		1	
Blanton Milling Co., Indianapolis, Ind.	2	2		
Blatchford Calf Meal Co., Waukegan, Ill.	1	1		
Blish Milling Co., Seymour, Ind.	3	3		
Bloomington Milling Co., Bloomington, Ind.	1	1		
Bloomington Packing Co., Bloomington, Ind.	5	3	2	

TABLE V—Summary of Feed Inspection

January 1, 1931 to January 1, 1932

Name and Address of Manufacturer	Number of Samples Examined	Number of Samples Passed	Number of Samples not Passed	Number of Samples not Tagged
Blue River Reduction Co., Edinburg, Ind.	8	8	......	......
Board of Sanitary Commissioners, Indianapolis, Ind.	5	5	......	1
Bohnert & Son, A. M., Jasper, Ind.	1	1	......	......
Boldt Milling Co., Waynetown, Ind.	6	6	......	......
Boonville Milling Co., Boonville, Ind.	5	5	......	......
Bowman Dairy Co., Chicago, Ill.	1	......	1	......
Branch Grain & Seed Co., Martinsville, Ind.	1	1	......	......
Brazil Tankage Co., Brazil, Ind.	1	......	1	......
Brewer, O. F., Tipton, Ind.	2	1	1	......
Brode Corporation, F. W., Memphis, Tenn.	4	4	......	1
Brook Feed Mill, Brook, Ind.	1	1	......	......
Brook Manufacturing Co., Brook, Ind.	8	7	1	......
Brown Bros. Inc., Indianapolis, Ind.	4	3	1	......
Brown Ice & Fuel Co., West Terre Haute, Ind.	1	1	......	......
Brown Supply Co., Valparaiso, Ind.	1	1	......	......
Buchsieb, E. G., Columbus, Ohio	9	9	......	1
Buckeye Cotton Oil Co., Louisville, Ky.	6	4	2	2
Buhner Fertilizer Co., Seymour, Ind.	1	1	......	......
Bundy Brothers Mill Co., Medora, Ind.	6	6	......	......
Bundy Brothers Mill Co., Vallonia, Ind.	18	18	......	......
Burk Elevator Co., Decatur, Ind.	1	1	......	......
Burket Elevator Co., Burket, Ind.	2	2	......	......
Burnettsville Elevator Co., Burnettsville, Ind.	2	2	......	......
Busenbark Grain Co., Crawfordsville, Ind.	7	7	......	1
Butler Milling Co., Butler, Ind.	5	1	4	......
Butt & Co., L. T., Center Point, Ind.	11	8	3	......
Cairo Meal & Cake Co., Cairo, Ill.	13	8	5	......
Cambridge Feed Mill, Cambridge City, Ind.	4	4	......	......
Campbellsburg Milling Co., Campbellsburg, Ind.	3	3	......	......
Capital Flour Mills, Inc., Minneapolis, Minn.	5	5	......	......
Carmer Company, J. M., Auburn, Ind.	1	1	......	......
Cartwright & Headington Elevator Co., Portland, Ind.	2	2	......	......
Cayuga Milling Co., Cayuga, Ind.	7	7	......	......
Central Indiana Reduction Co., Greenfield, Ind.	2	1	......	1
Central States Elevator Corp., Indianapolis, Ind.	7	6	1	......
Chalmers Grain Co., Chalmers, Ind.	1	1	......	......
Champion Milling & Grain Co., Clinton, Iowa	3	......	......	3
Chapman-Doake Co., Decatur, Ill.	21	21	......	......
Charlestown Milling Co., Charlestown, Ind.	7	7	......	......
Choctaw Sales Co., Kansas City, Mo.	2	2	......	......
Cincinnati Grain & Hay Co., Cincinnati, Ohio	1	1	......	......
City Mills, Rising Sun, Ind.	1	1	......	......
City Roller Mills, Vevay, Ind.	1	1	......	......
Clayton Feed Store, Clayton, Ind.	1	1	......	......
Clayton Milling Co., Clayton, Ind.	1	1	......	......
Clendenin & Co., Richmond, Ind.	1	......	1	......
Cloverleaf Creameries, Inc., Decatur, Ind.	2	2	......	1
Cloverleaf Mills, Kokomo, Ind.	14	12	2	......
Cohee & Clark, Kempton, Ind.	6	3	3	......
Collis Products Co., Clinton, Iowa	2	2	......	2

TABLE V—Continued

Name and Address of Manufacturer	Number of Samples Examined	Number of Samples Passed	Number of Samples not Passed	Number of Samples not Tagged
Columbian Hog & Cattle Powder Co., Kansas City, Mo.	7	......	......	7
Columbus Milling Co., Columbus, Ind.	10	10	......	......
Columbus Sanitary Reduction Co., Columbus, Ind.	5	5	......	......
Community Mill, Edinburg, Ind.	9	6	3	......
Community Mill, Newberry, Ind.	1	1	......	......
Conders Feed Store, LaPorte, Ind.	1	1	......	......
Conkey Co., G. E., Cleveland, Ohio	1	1	......	1
Consolidated Products Co., Chicago, Ill.	10	9	1	2
Cooperative Elevator Co., Winamac, Ind.	4	4	......	......
Corn Belt Feed Co., Boswell, Ind.	15	11	4	1
Corn Products Refining Co., New York, N. Y.	4	4	......	1
Cottrell Bros., Terre Haute, Ind.	9	9	......	......
Crabbs Reynolds Taylor Co., Lafayette, Ind.	41	33	8	1
Crescent Mills, Branch Blish Milling Co., Seymour, Ind.	2	2	......	......
Crete Mills, The, Crete, Nebr.	7	5	2	2
Cynthiana Reduction Plant, Cynthiana, Ind.	1	1	......	......
Daniel Brothers, Columbia City, Ind.	2	1	1	......
Darling & Co., Chicago, Ill.	24	24	......	......
Dar-Mer Milk Products Co., Greenville, Ohio	1	1	......	......
Daviess Co., Farm Bureau, Washington, Ind.	7	7	......	......
Davis, G. G., Tipton, Ind.	2	1	1	......
Davis, S. P., Little Rock, Ark.	5	5	......	1
Davis Fertilizer Co., Plainfield, Ind.	1	1	......	......
Dawson Chemical Co., Indianapolis, Ind.	1	1	......	......
Dayton Grain & Feed Co., Dayton, Ohio	1	......	1	......
Dealers Dairy Products Co., Cleveland, Ohio	1	......	1	......
Decatur County Cooperative Co., Greensburg, Ind.	2	2	......	......
Decatur Milling Co., Decatur, Ill.	9	9	......	......
Decatur Rendering Plant, Decatur, Ind.	5	5	......	......
Dekalb Tanking Co., Auburn, Ind.	2	1	1	......
Denver Alfalfa Milling & Products Co., Lamar, Colo.	2	2	......	1
Depoy Feed Co., Muncie, Ind.	3	2	1	......
Dextora Company, Indianapolis, Ind.	2	......	2	......
Diamond Feed Mill, Cedar Grove, Ind.	2	2	......	......
Dickey, H., Parker, Ind.	1	1	......	......
Dickinson Co., The Albert, Chicago, Ill.	11	11	......	2
Dreyer Commission Co., St. Louis, Mo.	1	1	......	1
Dryfus Packing & Provision Co., Lafayette, Ind.	2	2	......	......
Dry Milk Products Co., Columbus, Ohio	3	1	2	......
Dubois County Farm Bureau Cooperative Ass'n., Huntingburg, Ind.	1	1	......	......
Dwiggins & Son, Charles, Waynetown, Ind.	6	3	3	......
Eagle Roller Mill Co., New Ulm, Minn.	2	2	......	1
Eagle Stock Mineral Co., Indianapolis, Ind.	6	5	1	......
Early & Daniel Co., Cincinnati, Ohio	5	5	......	3
Easton's Feed Store, Bedford, Ind.	1	1	......	......
Eavey Co., Richmond, Ind.	1	......	......	1
Eberts & Bros., North Vernon, Ind.	2	1	1	......
Eberts Grain Co., Louisville, Ky.	1	1	......	......
Eckhart Milling Co., B. A., Chicago, Ill.	4	4	......	1

TABLE V—Continued

Name and Address of Manufacturer	Number of Samples Examined	Number of Samples Passed	Number of Samples not Passed	Number of Samples not Tagged
Economy Hog & Cattle Powder Co., Shenandoah, Iowa	1	......	1	......
Edwards & Co., Inc., S. T., Chicago, Ill.	3	3	......	2
Egloff Milling Co., Vincennes, Ind.	4	4	......	......
Elkhart County Fertilizer Co., Wakarusa, Ind.	1	1	......	......
Emge & Sons, Fort Branch, Ind.	5	3	2	......
Emmert, C. B., Clarksburg, Ind.	1	1	......	......
English & Milltown Milling Co., Milltown, Ind.	1	1	......	......
Erie Elevator Co., Rochester, Ind.	4	4	......	......
Eureka Milling Co., Corydon, Ind.	3	3	......	1
Evans Milling Co., Indianapolis, Ind.	17	17	......	......
Ewing Mill Co., Brownstown, Ind.	1	1	......	......
Ewing's Sons Co., D. H., Louisville, Ky.	2	2	......	......
Ewing-Von Allmen Dairy Company, Inc., Louisville, Ky.	2	2	......	1
Excelsior Milling Co., Minneapolis, Minn.	8	8	......	2
Farm Aid Limestone Co., Huntington, Ind.	2	1	1	......
Farm Bureau Elevator & Supply Co., Crawfordsville, Ind.	2	1	1	1
Farm Bureau Service Inc., Columbus, Ind.	7	7	......	......
Farm Products Association, Indianapolis, Ind.	4	4	......	......
Farmers Cooperative Co., Cicero, Ind.	1	1	......	......
Farmers Cooperative Co., Sheridan, Ind.	1	1	......	......
Farmers Cooperative Co., Southport, Ind.	3	3	......	......
Farmers Cooperative Co. of Knox, Knox, Ind.	1	1	......	......
Farmers Cooperative Elevator Co., Seymour, Ind.	11	10	1	......
Farmers Cooperative Elevator, Winamac, Ind.	1	1	......	1
Farmers Elevator Co., Morocco, Ind.	1	1	......	......
Farmers Elevator Co., South Whitley, Ind.	6	5	1	......
Farmers Exchange, Inc., Warren, Ind.	1	1	......	......
Farmers Feed & Coal Co., Bloomington, Ind.	4	4	......	......
Farmers Feed & Grain Co., Darlington, Ind.	7	7	......	......
Farmers Grain & Supply Co., Modoc, Ind.	2	2	......	......
Farmers Grain & Supply Co., Windfall, Ind.	3	3	......	......
Farmers Marketing Association, Columbus, Ind.	1	1	......	......
Farmers & Merchants Exchange, New Albany, Ind.	3	3	......	......
Farmers Mill, The, Huntingburg, Ind.	1	1	......	......
Farmers Mill & Elevator Co., Columbia City, Ind.	6	5	1	......
Farmers Produce Co., Salem, Ind.	1	1	......	......
Feed Mills, The, Cambridge City, Ind.	1	1	......	......
Fisher-Lambert Feed & Coal Co., Anderson, Ind.	2	1	1	......
Flynn Bros. Grain & Feed Co., St. Louis, Mo.	1	1	......	......
Forbes Bros.—Central Mills, Topeka, Kans.	1	1	......	......
Ford Milling Co., New Harmony, Ind.	1	......	1	......
Foster-Kendall Co., Carmel, Ind.	5	4	1	......
Fostoria Animal Products Inc., Fostoria, Ohio	1	1	......	......
Fowler Roller Mills, Fowler, Ind.	2	2	......	......
Frankfort Rendering Co., Frankfort, Ind.	9	9	......	......
Freese's Sons, George, Nappanee, Ind.	2	2	......	......
Fretz Feed Store, R. C., Waterloo, Ind.	4	3	1	......
Fry Elevator, The Herbert B., Argos, Ind.	9	9	......	......
Fuhrer-Ford Milling Co., Mt. Vernon, Ind.	4	4	......	......
Fulks & Son, Willard, Columbus, Ind.	3	3	......	......
Fulton Mill, Fulton, Ind.	3	3	......	......

TABLE V—Continued

Name and Address of Manufacturer	Number of Samples Examined	Number of Samples Passed	Number of Samples not Passed	Number of Samples not Tagged
Fyke Milling Co., Kendallville, Ind.	7	6	1	......
Galesburg Milling Co., Galesburg, Ill.	2	2	......	1
Garland Milling Co., Greensburg, Ind.	1	1	......	......
Garten Feed Co., Indianapolis, Ind.	18	16	2	......
Geabes Brothers, Clay City, Ind.	17	16	1	......
Geneva Equity Exchange, Geneva, Ind.	1	1	......	......
Geneva Milling & Grain Co., Geneva, Ind.	8	8	......	......
Gibson County Shipping Association, Princeton, Ind.	3	3	......	......
Goeke Sons, Edward F., Evansville, Ind.	36	25	9	3
Goldreich Fertilizer Co., Marion, Ind.	1	1	......	......
Goodrich Brothers Co., Winchester, Ind.	33	29	4	......
Grabill Grain & Milling Co., Graybill, Ind.	2	1	1	......
Graft, C. V., Winchester, Ind.	14	13	1	......
Grant Coal & Feed Co., Marion, Ind.	8	7	1	......
Great Atlantic & Pacific Tea Co., New York, N. Y.	5	5	......	2
Greenfield Mills, Greenfield Mills, Ind.	1	1	......	1
Grimes & Finch, Portland, Ind.	7	7	......	......
Gutwein Milling Co., Francesville, Ind.	13	10	3	......
Habig Brothers, Indianapolis, Ind.	25	22	3	1
Haines-Thompson Milling Co., Crawfordsville, Ind.	1	1	......	......
Hales & Hunter Co., Chicago, Ill.	11	9	2	1
Hallawells Feed Store, North Vernon, Ind.	1	1	......	......
Hamlet Grain & Feed Co., Hamlet, Ind.	7	6	1	......
Hammel Milling Co., Freemont, Ind.	1	1	......	......
Hartford City Milling Co., Hartford City, Ind.	5	5	......	......
Hartley, Clarence, Campbellsburg, Ind.	2	2	......	......
Hartman & Dotterer, Bluffton, Ind.	5	3	2	......
Hayes, W. E., Kokomo, Ind.	8	8	......	......
Hayes Branch Mills, Dillsboro, Ind.	2	2	......	......
Hayesville Milling Co., Rte. 3, Jasper, Ind.	1	1	......	......
Haynes Milling Co., Portland, Ind.	10	9	1	......
Heise Brothers, Orleans, Ind.	19	17	2	......
Heldt Co., The, Evansville, Ind.	2	1	1	......
Heppe Co., The, Logansport, Ind.	6	6	......	......
Hirst & Begley Linseed Works, Chicago, Ill.	6	6	......	......
Hite Brothers, Peru, Ind.	2	2	......	......
Hobbs Grain Co., Hobbs, Ind.	2	2	......	......
Holser & Co., B. I., Walkerton, Ind.	5	3	2	1
Home Grain Co., Lagrange, Ind.	1	......	1	......
Home Mill & Grain Co., Mt. Vernon, Ind.	2	1	1	......
Home Packing & Ice Co., Terre Haute, Ind.	3	3	......	......
Hoosier Mineral Feed Co., Greenwood, Ind.	12	9	3	2
Hooton-Davis Co., Lebanon, Ind.	1	1	......	......
Hubbard, J. W., Monrovia, Ind.	3	2	1	......
Hughes-Curry Packing Co., Anderson, Ind.	10	10	......	......
Hulman & Co., Terre Haute, Ind.	1	1	......	1
Humphreys-Godwin Co., Memphis, Tenn.	12	12	......	1
Huntington Equity Exchange Co., Huntington, Ind.	4	3	1	......
Huntington Mill Co., Huntington, Ind.	9	9	......	......
Hutchins Bros. Mineral Works, Hillsboro, Ind.	2	1	1	......
Igleheart Bros., Inc., Evansville, Ind.	5	5	......	......
Illinois Linseed Meal Co., Chicago Heights, Ill.	1	1	......	......
Imperial Meal Co., Minneapolis, Minn.	4	4	......	1

TABLE V—Continued

Name and Address of Manufacturer	Number of Samples Examined	Number of Samples Passed	Number of Samples not Passed	Number of Samples not Tagged
Imperial Mills, Cambridge City, Ind.	2	2		
Indiana Dairy Marketing Association, Muncie, Ind.	10	7	3	1
Indiana Farm Bureau Cooperative Ass'n. Inc., Indianapolis, Ind.	102	99	3	8
Indiana Flour & Feed Co., Muncie, Ind.	20	18	2	
Indiana Hide & Tallow Co., South Bend, Ind.	14	12	2	
Indiana State Milling Co., South Bend, Ind.	4	3	1	
Indianapolis Abattoir Corp., Indianapolis, Ind.	1	1		
Iroquois Roller Mills, Rensselaer, Ind.	15	14	1	
Jay Grain Co., Elwood, Ind.	1	1		
Jenner & Son, W. E., Marengo, Ind.	1	1		
Jennison Co., W. J., Minneapolis, Minn.	1	1		
Jersee Co., The, Minneapolis, Minn.	11	8	3	
Jones Brothers, Attica, Ind.	1	1		
Joslin-Schmidt Corp., Cincinnati, Ohio	22	22		
Kahn's Sons Co., The E., Cincinnati, Ohio	3	3		
Kaiser, W. F., Harrison, Ohio	2	1	1	
Kansas Flour Mills Corp., Kansas City, Mo.	1			1
Kansas Flour Mills Corp., Wichita, Kans.	1	1		1
Kasch, Louis, Logansport, Ind.	1	1		
Kellogg & Sons, Inc., Spencer, Buffalo, N. Y.	1	1		1
Kendallville Fertilizer Co., Rte. 3, Kendallville, Ind.	2	2		
Kentland Reduction Co., Kentland, Ind.	1	1		
Kentucky Chemical Manufacturing Co., Covington, Ky.	4	4		
Kerlin Elevator & Feed Co., Sullivan, Ind.	6	5	1	
Kibler, F. M., West Terre Haute, Ind.	1	1		
Kiefer Feed & Supply Co., Elwood, Ind.	14	12	2	
Kiest Milling Co., Knox, Ind.	4	4		
Kingan & Co., Indianapolis, Ind.	6	6		
King Elevator Co., Wabash, Ind.	5	5		
King Milling Co., Lowell, Mich.	1			1
Klondike Milling Co., Danville, Ind.	2	2		
Knecht Milling Co., Hartford City, Ind.	4	4		
Knightstown Grain Co., Knightstown, Ind.	6	6		2
Knights Feed Store, Ft. Wayne, Ind.	1	1		
Knox County Fertilizer Co., Vincennes, Ind.	3	2	1	
Koschnick & Co., Indianapolis, Ind.	4	3		1
Kosciusko County Farm Bureau, Warsaw, Ind.	1	1		
Kraft-Phenix Cheese Corp., Chicago, Ill.	1	1		1
Kraus, Sam, Ft. Wayne, Ind.	2	2		
Kraus Milling Co., Chas. A., Milwaukee, Wis.	9	9		
Kuhner Packing Co., Muncie, Ind.	2	2		
Lafayette Milling Co., Lafayette, Ind.	1	1		
Lagrange County Farm Bureau, Lagrange, Ind.	7	7		
Lagro Equity Exchange, Lagro, Ind.	1	1		
L. & H. Products Co., Yorktown, Ind.	1	1		
Lake & Reagan Grain Co., Manson, Ind.	2	2		
Lamar Alfalfa Milling Co., Lamar, Colorado	2	2		
Landman Milling Co., St. Henry, Ohio	1	1		
Lanesville Milling Co., Lanesville, Ind.	6	6		
Land O'Lakes Creameries Inc., Minneapolis, Minn.	1		1	
Larabee Flour Mill Co., Kansas City, Mo.	1	1		

TABLE V—Continued

Name and Address of Manufacturer	Number of Samples Examined	Number of Samples Passed	Number of Samples not Passed	Number of Samples not Tagged
Larkin & Denny, Cloverdale, Ind.	2	2		
Larrow Milling Co., Detroit, Mich.	2	2		1
Lash Flour Mills, Fred B., Farmersburg, Ind.	2	2		
Lawrenceburg Roller Mills Co., Lawrenceburg, Ind.	12	12		1
Lemon Milling Co., Bedford, Ind.	7	7		
Lingeman, Adams & Co., Brownsburg, Ind.	1	1		
Linkhart & Son, North Vernon, Ind.	1	1		
Livestock Remedy Co., St. Louis, Mo.	2			2
Loughery Bros. Milling & Grain Co., Monticello, Ind.	1	1		
Louisville Cereal Mill Co., Louisville, Ky.	1	1		
Lovitt & Co., L. B., Memphis, Tenn.	8	8		2
Lukens Milling Co., Atchison, Kans.	2	2		
Lyon & Greenleaf Co., Ligonier, Ind.	5	5		1
Lyons Milling Co., Lyons, Kans.	1	1		1
McCardle & Wallace, Terhune, Ind.	1	1		
McCarty Seed Co., J. A., Evansville, Ind.	7	7		
McComas & Pritchard, Mohawk, Ind.	1		1	
McCormick Co., Chas. W., Logansport, Ind.	1	1		1
McMahan Seed Co., Valparaiso, Ind.	3	3		
Macdonald, C. L., Route 5, Marion, Ind.	2	1	1	
Magee, E. R., Monticello, Ind.	1	1		
Mahan, J. P., Morristown, Ind.	1	1		
Major Bros. Packing Co., Mishawaka, Ind.	1	1		
Major, Ray, Bath, Ind.	1	1		1
Major, E. C., Michigan City, Ind.	6	6		
M. & R. Grain Corp., Indianapolis, Ind.	3	2	1	
Marianna Sales Co., Memphis, Tenn.	4	4		
Markle Feeding & Rendering Co., Markle, Ind.	1	1		
Marlatt, E. H., Attica, Ind.	1	1		
Marshall Feed & Grain Co., Marshall, Ind.	1	1		
Martin Grain Co., A. B., LaFontaine, Ind.	1	1		
Martin, John D., Lafayette, Ind.	3	3		
Martinsville Milling Co., Martinsville, Ind.	9	5	4	1
Mason Mills, Inc., Pauls Valley, Oklahoma	3	2	1	
Massie Hatchery, Columbus, Ind.	2	2		
Maxwell Grain Co., Maxwell, Ind.	1	1		
Mayer Grain Co., South Whitley, Ind.	8	8		2
Mayflower Mills, Ft. Wayne, Ind.	3	3		
Medaryville Cooperative Co., Medaryville, Ind.	3	2	1	
Meier Packing Co., Indianapolis, Ind.	2	2		
Mesquakie Mills, Cedar Rapids, Iowa	4	4		1
Metamora Roller Mills, Inc., Metamora, Ind.	4	3	1	1
Mexico Elevator & Livestock Co., Mexico, Ind.	4	4		
Mexico Roller Mills, Mexico, Ind.	3	3		
Miami Milling Co., Oxford, Ohio	2	2		
Midwest Flour & Feed Co., St. Louis, Mo.	1	1		
Miesenhelder Bros., Palestine, Ill.	1	1		
Milford Grain & Milling Co., Milford, Ind.	1	1		
Milford Mills, Milford, Nebr.	1	1		1
Miller, A. J., Montpelier, Ind.	1	1		
Miller Cereal Mills, Omaha, Nebr.	12	12		
Miller Grain Co., Bainbridge, Ind.	3	3		
Milltown Milling Co., Milltown, Ind.	2	1	1	

TABLE V—Continued

Name and Address of Manufacturer	Number of Samples Examined	Number of Samples Passed	Number of Samples not Passed	Numbe of Sample not Tagged
Minneapolis Milling Co., Minneapolis, Minn.	1		1	1
Mishawaka Grain & Coal Co., Mishawaka, Ind.	3	3		
Missouri Cotton Oil Co., Cairo, Ill.	13	13		
Moellerings Flour Mill, Ft. Wayne, Ind.	8	7	1	
Mooreland Grain Co., Mooreland, Ind.	1		1	
Mooresville Milling Co., Mooresville, Ind.	1	1		
Moorman Manufacturing Co., Quincy, Ill.	4	2		2
Morris & Co., (Branch North American Provision Co.), Chicago, Ill.	13	13		
Morrison Teagarden Co., Saratoga, Ind.	1	1		
Morrow Grain Co., Wabash, Ind.	4	4		
Moutoux, T. E., Evansville, Ind.	3	3		
Mt. Jackson Feed & Seed Co., Indianapolis, Ind.	4		4	
Mt. Vernon Milling Co., Mt. Vernon, Ind.	4	4		
Murphy Products Co., Burlington, Wis.	7	4	2	3
Mutschler Packing Co., Fred, Decatur, Ind.	3	3		
Myers & Co., J. M., Chili, Ind.	3	2	1	
Myers & Smith, Chili, Ind.	1	1		
Naber & Co., Chas. F. Alexandria, Ind.	6	4	2	
Naber & Co., Chas. F., Fairmount, Ind.	1	1		
Nading Grain Co., William, Greensburg, Ind.	5	4	1	
Nappanee Milling Co., Nappanee, Ind.	17	15	2	
National Feed Co., St. Louis, Mo.	2	2		
National Feeders Co., Tiffin, Ohio	2			2
National Livestock Remedy Co., Chicago, Ill.	1	1		
New Albany Milling Co., New Albany, Ind.	2	2		
New Palestine Elevator Co., New Palestine, Ind.	1	1		
New Paris Creamery Co., New Paris, Ind.	1	1		
New Paris Feed & Coal Co., New Paris, Ind.	3	3		
New Ross Grain & Lumber Co., New Ross, Ind.	4	4		
Newsome Feed & Grain Co., Pittsburgh, Pa.	5	5		
Nieman, C. (Succeeded by The Sunman Flour Mills) Sunman, Ind.	2	2		
Niles Creamery Co., Niles, Mich.	2	2		
Noblesville Milling Co., Noblesville, Ind.	3	3		
North Manchester Fertilizer Co., North Manchester, Ind.	3	3		
North Manchester Milling Co., North Manchester, Ind.	1		1	1
Northern Indiana Cooperative Ass'n., Mentone, Ind.	3	3		
Northfield Milling Co., Minneapolis, Minn.	1	1		
Nowak Milling Corp., Buffalo, N. Y.	1	1		
Nowak Milling Corp., Hammond, Ind.	9	9		2
Nunn & Sons Milling Co., Chas., Evansville, Ind.	22	20	2	
Oakford Elevator, Oakford, Ind.	1	1		
Odon Milling Co., Odon, Ind.	4	4		
Ohio Valley Seed Co., Evansville, Ind.	4	2	2	1
Orestes Fertilizer Co., Anderson, Ind.	6	2	2	2
Page Mill Co., The Thomas, Topeka, Kans.	1	1		
Park Inc., Phillip R., San Pedro, Calif.	1	1		
Park & Pollard Co. of Illinois, Chicago, Ill.	1		1	
Parke County Farm Bureau, Rockville, Ind.	2	1	1	
Paxson, C. E., Elkhart, Ind.	1	1		

TABLE V—Continued

Name and Address of Manufacturer	Number of Samples Examined	Number of Samples Passed	Number of Samples not Passed	Number of Samples not Tagged
Pearl Packing Co., Inc., Madison, Ind.	4	3	1	......
Pecos Valley Alfalfa Mill Co., Hagerman, N. Mex.	5	5	......	5
Penman Bros., Brazil, Ind.	4	4	......	......
Pennington Feed Store, Bloomington, Ind.	1	1	......	......
Pennville Milling Co., Pennville, Ind.	6	6	......	......
Peoples Cooperative Feed Store, Wolcott, Ind.	2	2	......	......
Petersburg Milling & Grain Co., Petersburg, Ind.	2	2	......	......
Pfeffer Milling Co., Lebanon, Ill.	3	3	......	......
Phillips, J. C., Star City, Ind.	1	1	......	......
Pickaway Dairy Co., Circleville, Ohio	1	......	1	......
Pillsbury Flour Mills Co., Minneapolis, Minn.	10	10	......	1
Pioneer Elevator Co., Worthington, Ind.	1	1	......	......
Plymouth Fertilizer Co., Plymouth, Ind.	2	2	......	......
Portland Equity Exchange, Portland, Ind.	1	1	......	......
Portland Fertilizer Plant, Portland, Ind.	3	3	......	......
Posey Seed & Feed Co., Mt. Vernon, Ind.	6	4	2	......
Postum Co., Inc., Battle Creek, Mich.	1	1	......	......
Prairie Creek Mills, Prairie Creek, Ind.	1	1	......	......
Pratt Food Co., Hammond, Ind.	23	22	1	3
Pratt Food Co., Philadelphia, Pa.	1	1	......	1
Priddy & Co., Inc., Chas. W., Norfolk, Va.	5	4	1	......
Pritchard & Rafert, Inc., Pendleton, Ind.	2	2	......	......
Proctor & Gamble Co., Cincinnati, Ohio	2	2	......	1
Producers Creamery, Marion, Ind.	8	7	1	1
Purcell Seed Co., Inc., Evansville, Ind.	7	5	2	......
Quaker Oats Co., Chicago, Ill.	31	31	......	2
Rach Milling Co., Cairo, Ill.	22	21	1	3
Rakestraw, H. E., Oakford, Ind.	1	1	......	......
Ralston Purina Co., St. Louis, Mo.	44	43	1	2
Rankin & Co., M. G., Milwaukee, Wis.	1	1	......	......
Rapier Sugar Feed Co., Owensboro, Ky.	6	3	3	......
Rauh & Sons Animal Feed Co., E., Indianapolis, Ind.	1	1	......	......
Rawleigh Co., W. T., Freeport, Ill.	1	......	......	1
Read Phosphate Co., New Albany, Ind.	3	3	......	......
Reed Elevator Co., Decatur, Ind.	8	6	2	......
Richmond Feed Milling Co., Richmond, Ind.	21	13	8	3
Riverdale Products Co., Chicago, Ill.	23	20	3	1
Riverside Mills, Clinton, Ind.	1	1	......	......
Roberts Cotton Oil Mill, Cairo, Ill.	1	1	......	......
Roberts Feed & Produce Co., Brookville, Ind.	6	5	1	......
Robinson Feed Co., Perrysville, Ind.	6	6	......	......
Roby, Harry B., Route 5, Winchester, Ind.	2	1	1	......
Rochester Cooperative Elevator Co., Rochester, Ind.	3	3	......	......
Rochester Fertilizer & Tankage Co., Rochester, Ind.	2	2	......	......
Rodocker, W. E., Broad Ripple, Ind.	1	1	......	......
Roper & Brown, Hobart, Ind.	3	3	......	......
Rose & Co., G. P., Nashville, Tenn.	1	1	......	......
Rosedale Elevator Co., Rosedale, Ind.	1	1	......	......
Rowe Sons Co., A., Terre Haute, Ind.	4	3	1	......
Rund Packing Co., Inc., Lafayette, Ind.	4	2	2	......
Rush County Mills, Rushville, Ind.	16	14	2	3

TABLE V—Continued

Name and Address of Manufacturer	Number of Samples Examined	Number of Samples Passed	Number of Samples not Passed	Number of Samples not Tagged
Rush Service Bureau, Rushville, Ind.	5	4	1	......
Russell & Martin, Elkhart, Ind.	1	1	......	......
Russell-Miller Milling Co., Minneapolis, Minn.	1	1	......	......
Salamonie Roller Mills, Warren, Ind.	3	2	1	......
Sample, John L., Madison, Ind.	3	3	......	......
Schaefer, John H., Columbus, Ind.	6	6	......	......
Schlemmer Feed Co., Harrison, Ohio	8	6	2	......
Schlosser Brothers, Frankfort, Ind.	4	4	......	......
Schmadel Packing & Ice Co., Evansville, Ind.	3	3	......	......
Schnaible Co., M. & J., Lafayette, Ind.	2	2	......	......
Schreiber Milling & Grain Co., St. Joseph, Mo.	2	2	......	2
Schultz Brothers, Elberfeld, Ind.	4	4	......	......
Schultz, Baujan & Co., Beardstown, Ill.	10	9	1	1
Schuppert Milling Co., New Salisbury, Ind.	2	1	1	......
Scottsburg Elevator Co., Scottsburg, Ind.	2	2	......	......
Sellars Grain Co., Forrest, Ind.	2	2	......	......
Seneca Salt Co., Tiffin, Ohio	2	......	......	2
Sheridan Milling Co., Sheridan, Ind.	7	6	1	......
Sherman-White & Co., Goodland, Ind.	1	1	......	......
Sherwin-Williams Co., Cleveland, Ohio	2	2	......	......
Silver Lake Egg Farm & Hatchery, Silver Lake, Ind.	4	4	......	......
Silver Lake Elevator, North Manchester, Ind.	2	2	......	......
Silver Lake Elevator, Silver Lake, Ind.	1	1	......	......
Sims Milling Co., Frankfort, Ind.	5	5	......	......
Slugg, W. G., Milwaukee, Wis.	2	2	......	......
Smock & Caca, Noblesville, Ind.	3	3	......	......
Sommerfield & Swanson, LaPorte, Ind.	1	1	......	......
Southern Indiana Reduction Co., Salem, Ind.	2	1	1	......
Southwestern Milling Co., Kansas City, Mo.	1	1	......	......
Sparks Milling Co., Terre Haute, Ind.	5	5	......	......
Springs Valley Milling Co., French Lick, Ind.	1	1	......	......
Spurgin, Archie B., Columbus, Ind.	6	5	1	......
Stahl Packing Co., Evansville, Ind.	3	1	2	......
Staley Manufacturing Co., A. E., Decatur, Ill.	1	1	......	1
Staley Milling Co., Kansas City, Mo.	5	5	......	......
Stanard Tilton Milling Co., St. Louis, Mo.	1	1	......	......
Stanchfield Co., A. L., Minneapolis, Minn.	4	4	......	......
Stanley Feed Co., Salem, Ind.	2	2	......	......
Star Milling Co., Shoals, Ind.	2	2	......	......
Starr Mills, South Bend, Ind.	3	2	......	1
Starr Roller Mills, Burlington, Ind.	3	3	......	......
Steckleys Feed Mill, Kendallville, Ind.	3	3	......	......
Steuben County Farm Bureau, Angola, Ind.	2	1	1	......
Stock & Sons, F. W., Hillsdale, Mich.	1	1	......	......
Stolle & Sons, Anton, Richmond, Ind.	1	1	......	......
St. Louis Independent Packing Co., St. Louis, Mo.	1	1	......	......
Strauch, Albert H., Royal Center, Ind.	1	1	......	......
Strauss & Sons, J. W., North Manchester, Ind.	2	2	......	......
Street Milling Co., J., LaPorte, Ind.	4	4	......	......
Struven & Co., Charles M., Baltimore, Md.	1	1	......	1
Success Mills, Inc., Chicago, Ill.	7	7	......	......
Suckow Milling Co., Franklin, Ind.	6	6	......	......
Sullivan Fertilizer Co., Sullivan, Ind.	2	2	......	1

TABLE V—Continued

Name and Address of Manufacturer	Number of Samples Examined	Number of Samples Passed	Number of Samples not Passed	Number of Samples not Tagged
Sunman Flour Mills, Sunman, Ind.	2	2		
Sunnyside Milling Co., Evansville, Ind.	5	5		
Swift & Co., Chicago, Illinois	32	32		
Syler & Syler, Nappanee, Ind.	4	4		
Tarkio Molasses Feed Co., Kansas City, Mo.	1	1		
Terre Haute Abattoir & Stock Yards, Terre Haute, Ind.	1	1		
Thomas & Son, A. R., Markle, Ind.	4	4		
Thomas Milling Co., Marion, Ind.	17	15	1	1
Thompson, Ernest, Danville, Ind.	4	3		1
Thornburg Milling & Elevator Co., Martinsville, Ind.	3	3		
Tipton Fertilizer Co., Tipton, Ind.	1	1		
Tipton Milling Co., Tipton, Ind.	3	3		
Tower & Merryman, Marengo, Ind.	1	1		
Trow Co., W., Madison, Ind.	4	4		
Ubiko Milling Co., Cincinnati, Ohio	3	3		
Uncle Sam Stock Medicine Co., Quincy, Ill.	1			1
Union Mills, Wabash, Ind.	4	4		
United Bi-Products Co., Chicago, Ill.	5	5		
United States Food Co., Cambridge, Ohio	1	1		
Urbana Mills, The, Urbana, Ohio	2	2		2
Urmston Grain & Seed Co., Anderson, Ind.	7	7		
Urmston Grain & Seed Co., Elwood, Ind.	2	2		
Utterback, Frank E., Washington, Ind.	1	1		
Valentine & Co., Terre Haute, Ind.	4	4		
Veedersburg Roller Mills, Veedersburg, Ind.	5	4	1	1
Vermillion Farmers Cooperative Ass'n., Dana, Ind.	2	2		
Versailles Feed Co., Versailles, Ind.	3	3		
Vevay Flour Mills, Vevay, Ind.	5	4	1	
Victoria Mill & Elevator Co., Jasper, Ind.	4	4		
Vigo County Farm Bureau Cooperative Ass'n., Inc., Terre Haute, Ind.	2	2		
Vitality Mills, Inc., Chicago, Ill.	8	6	2	
Vogel Brothers, Seymour, Ind.	3	2	1	
Wachtel Co., John, Indianapolis, Ind.	7	7		
Wakarusa Milling Co., Wakarusa, Ind.	2	2		
Walker & Co., Peter M., Loogootee, Ind.	4	3	1	
Walker & Co., Peter M., Washington, Ind.	4	4		
Walker & Son, J. M., Middletown, Ind.	1	1		
Wall, N. A., Pittsboro, Ind.	1	1		
Ward Dry Milk Co., St. Paul, Minn.	7	6	1	2
Warsaw Milling & Grain Co., Warsaw, Ind.	3	3		
Washburn Crosby, General Mills, Inc., Minneapolis, Minn.	6	6		3
Washington County Farm Bureau Cooperative Ass'n., Salem, Ind.	17	15	2	
Waterloo Mills, Waterloo, Ind.	4	4		
Weber Milling Co., Brookville, Ind.	2	2		
Weisburg-Sunman Tankage Co., Sunman, Ind.	2	2		
Wellington Milling Co., Anderson, Ind.	14	14		
Western Coal & Feed Co., New Castle, Ind.	1	1		
Westville Hammer Mill, Westville, Ind.	1	1		
Whelan, Omer G., Richmond, Ind.	5	2	3	2

TABLE V—Continued

Name and Address of Manufacturer	Number of Samples Examined	Number of Samples Passed	Number of Samples not Passed	Number of Samples not Tagged
Whitelock Mill Co., Petersburg, Ind.	1	1	......	......
Wiedlocher & Sons, Springfield, Ill.	2	1	1	......
Wildcat Roller Mills, Route 2, Cutler, Ind.	6	6	......	......
Williams, T. L., Muncie, Ind.	1	1	......	......
Wilson & Co., Chicago, Ill.	11	11	......	......
Wilson Bros., Fertilizer Co., Noblesville, Ind.	3	3	......	......
Winders, J. G., Arcadia, Ind.	1	1	......	......
Witte Milling Co., Dale, Ind.	2	2	......	......
Wolcottville Elevator Co., Wolcottville, Ind.	1	......	1	......
Wolfe Grain Co., Shipshewana, Ind.	2	2	......	......
Woodbury-Elliott Grain Co., Muncie, Ind.	5	3	2	......
Worthington Grain Co., Worthington, Ind.	1	1	......	......
Wright, John H., Clinton, Ind.	6	6	......	......
Wuichet Fertilizer Co., Dayton, Ohio	1	1	......	1
Yeddo Farmers Grain Co., Yeddo, Ind.	1	......	1	......
Young, W. H., Rushville, Ind.	1	1	......	......
Yum Yum Feed Mills, Inc., Brookville, Ind.	4	4	......	......
Ziliak & Schaefer Milling Co., Evansville, Ind.	16	15	1	......

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Circular No. 190 April, 1932

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COMMERCIAL FERTILIZERS

Unfertilized Fertilized

Effect of Fertilizer in Hastening the Maturity of Corn

Purdue University
Agricultural Experiment Station
Lafayette, Indiana

The Indiana Fertilizer Law protects the purchaser of commercial fertilizers as well as the honest and efficient manufacturer, dealer and agent. This circular gives a detailed report of the inspection of commercial fertilizers sold in Indiana for the year 1931. In order to obtain maximum protection the consumer must read carefully and understand thoroughly the information on the state tag.

Purchasers of commercial fertilizer for the Fall of 1932 and the Spring of 1933 should read the paragraph entitled "SPECIALS" on page 5 of this circular.

Table 2 shows the tonnages of the different analyses for which there was the most demand. The tonnage sales of 2-12-6 were far above those of any other analysis. Over 80% of the total tonnage was confined to 33 grades while less than 20% was divided among 167 different grades. Considerable saving could be made by the manufacturers if the number of grades were materially reduced.

Approximately 131,512 tons of high grade and only 2,956 tons of low and medium grade mixed fertilizer were sold in Indiana in 1931.

The average content of actual plant food in all of the fertilizer sold in 1931 was 490 pounds per ton. The average analysis was 2.4% total nitrogen, 13.0% available phosphoric acid and 7.1% water soluble potash.

Sales of raw materials such as nitrogen salts, potash salts, superphosphates, bone products and raw rock phosphates were slightly higher while sales of mixtures of these in which the bulk of the tonnage is sold were decidedly less than last year.

There was an improvement in the number of samples which were found equal to the guarantee in every particular (Table 8).

Due to lack of funds the table giving the analyses of individual samples is omitted from the report this year. It is the intention to resume publication of this table in future publications as soon as funds are available.

COMMERCIAL FERTILIZERS

H. R. KRAYBILL, *State Chemist*

). S. ROBERTS O. W. FORD L. E. HORAT

M. H. THORNTON

From the sale of tags it is estimated that 170,777 tons of commercial ertilizer having a retail value of $5,504,088 were sold in Indiana in 1931. nspectors from the State Chemist department drew 1,396 official samples epresenting one sample for every 122 tons of fertilizer sold. Of these samples ,315 were equal to or above the guarantee in value; 74 were within 10% f the value guaranteed and 7 were 10% or more below the guaranteed value. ix of the 922 samples which contained nitrogen showed inferior nitrogen.)f these four were dried manures and one was a tobacco product.

The object of the Indiana Fertilizer Law is to secure correct labeling f the fertilizer offered for sale. It is not the intent of the law to determine hat type of fertilizer may be sold. The law is designed to furnish the urchaser with certain information on the state tag that will enable him to ecide whether or not the fertilizer is the type that will meet his needs. he Indiana state tag gives a statement of the percentages of total nitrogen, tal or available phosphoric acid and water soluble potash. With this inormation available the purchaser should be able to judge whether the ferlizer offered for sale meets his requirements. *In order to do this the conumer must read carefully and understand thoroughly the information on the tate tag.*

The Indiana Fertilizer Law protects the honest and efficient manufacturer, ealer and agent as well as the consumer. Full cooperation on the part of the anufacturer, dealer, agent and consumer is necessary in order to accomplish he full purpose of the law.

A copy of the full text of the law will be sent to persons making requests or the same to the State Chemist, Purdue University Agricultural Experiment tation, Lafayette, Indiana.

REFUNDS

The deficiencies on which refunds in 1931 were based were fairly well istributed among nitrogen, phosphoric acid and potash. Available phosphoric cid deficiencies resulting from the use of anhydrous ammonia should be liminated in future shipments on account of the adoption of the new method* r determination of insoluble phosphoric acid.

Every year a few cases of deficiencies occur due to errors in labeling e fertilizer. This results from carelessness on the part of the person reponsible for attaching the tags. Manufacturers should guard against such rrors.

When deficiencies in analysis amounting to $1.00 or more per ton on aw materials, as calculated from the wholesale price, are found, refunds re calculated and indicated on the report of the analysis which is sent to the manufacturer and to the consumer. Refunds on mixed fertilizers a usually calculated when one ingredient is deficient to the extent of $1.00 more per ton regardless of the excess in amounts of the other ingredient Nitrogen, phosphoric acid and potash play definite roles in crop productio An excess of one ingredient will not necessarily compensate for a deficien of another.

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* The use of one gram of sample in place of 2 grams and digesting for a period of one ur in place of one half hour.

All refunds are required to be distributed to the consumer wherever po sible and receipts for the same must be filed with the State Chemist. In ca there are no records as to the consumer the refunds may be turned over a local charitable organization but receipts for the same must be filed wi the State Chemist.

The payment of a refund by the manufacturer to the consumer does n remove the violation but it does indicate good intentions on the part of t manufacturer and shows his willingness to do what he can to correct t violation in so far as possible. However the payment of the refund does n nullify anyone in the state to call a deficiency of analysis to the attenti of the Prosecuting Attorney.

Refunds amounting to $493.21 were paid by 20 manufacturers on 62 shi ments of fertilizer in 1931.

MANUFACTURERS

Manufacturers should not ship fertilizer without having it proper labeled with Indiana state tags. Experience has shown that when this done it is difficult to avoid the sale of untagged fertilizer. *Several cases this kind were called to the attention of the Prosecuting Attorney in 19 with the result that the manufacturer paid a fine of $50 and costs.*

The State Chemist has no authority to grant permission to a manufa turer to ship unlabeled fertilizer.

All fertilizer offered or exposed for sale or sold in the state which do not equal the minimum guarantee for each ingredient stated on the offici label is mislabeled. An excess of one ingredient in this case will not co pensate for a deficiency in another.

Before offering or exposing for sale any material used for manuring pu poses except barnyard manure, marl, lime, wood ashes and plaster it must registered with the State Chemist and properly tagged with Indiana sta tags or labels. Each package of 200 pounds or fraction thereof must ha attached to it an Indiana state tag. Bulk shipments must be accompani by labels sufficient to cover the total weight of the material.

AGENTS, DEALERS AND DISTRIBUTORS

Each package of fertilizer offered or exposed for sale or sold in India must have attached to it the Indiana state tag bearing the facsimile signatu of the State Chemist (see reproduction page 13). Any alteration of the I diana state tag constitutes a violation of the law. Two cases of this natu by one manufacturer were called to the attention of the Prosecuting Attorn in 1931.

Make contracts on the basis of the guarantee on the official state lab Since local agents are directly responsible for the fertilizer that they off or sale they should deal only with those manufacturers who agree to assume ll responsibility in cases where the fertilizer fails to meet the requirements f the law.

When inspection reports show that fertilizer in your possession is deficient nough so that a refund is calculated on it, withdraw it from sale at once and otify the State Chemist giving the date and the amount withdrawn from sale.

CONSUMERS

Refuse to accept any fertilizer which does not have the Indiana state tag r label attached to each package showing a guaranteed analysis agreeing vith the guarantee under which it was purchased.

When inspections are desired do not forward samples but notify the State hemist telling how much you have on hand and send in a copy of the official abel which is attached to the fertilizer.

Purchase the type of fertilizer that will meet the plant food requirements f your crops. Consult circular No. 162 of the Purdue University Agricultural xperiment Station entitled "Fertilizer for Indiana Soils and Crops."

Let the formula be your guide rather than the brand name. Study the nnual fertilizer inspection circulars of this department and purchase your ertilizer from those companies whose records of inspection show that they re shipping properly tagged fertilizer which meets the guarantee.

SPECIALS

The Indiana Fertilizer Law is essentially a correct labeling law. A poor ertilizer may be sold under the law provided it is correctly labeled. The resence of the official Indiana tag does not mean that the fertilizer is recomnended by the State Chemist. It merely shows that the manufacturer has omplied with the fertilizer law by registering the material and attaching o it an Indiana state tag on which is shown the manufacturer's guaranteed nalysis.

In order to obtain the full benefit of the law it is necessary for the conumer to read the tag carefully, to consider the information given on the state ag and to be guided by the analysis rather than by the brand name or claims f the agent.

There are now registered and offered for sale in Indiana mixtures of ock phosphate and potash and mixtures of rock phosphate, potash and nitroen salts of which the following are typical examples:

1. Mixtures of rock phosphate and potash in which the guarantees are 19.0% total phosphoric acid and 19.0% water soluble potash or 24.0% total phosphoric acid and 12.0% water soluble potash.
2. Mixtures of rock phosphate, potash and nitrogen salts in which the guarantees are as follows: 2.0% total nitrogen, 24.0% total phosphoric acid and 6.0% water soluble potash or 4.0% total nitrogen, 22.0% total phosphoric acid and 6.0% water soluble potash.

These mixtures have been referred to in unfair trade practices as 0-19-19, -24-12, 2-24-6 and 4-22-6. The consumer should keep in mind the difference etween total and available phosphoric acid. A fertilizer of the grade 0-24-12 recognized as containing 24% available phosphoric acid. These mixtures made from rock phosphate contain much smaller amounts of available phosphoric acid. The value of the total phosphoric acid in one of these mixtures is 30 cents per unit while that of available phosphoric acid is $1.00 per unit.

Different fertilizers may be satisfactorily evaluated by calculating the value of the ingredients of each one according to the same standard. Using $1.50 per unit for nitrogen, $1.00 per unit for potash, $1.00 per unit for available phosphoric acid and $0.30 per unit for insoluble phosphoric acid which has about the same value as the total phosphoric acid in raw rock phosphate we find that a rock phosphate mixture containing 2.0% nitrogen, 24.0% total P_2O_5 and 6.0% water soluble potash has a value of $16.20 while a regular 2-24-6 has a value of $33.00 per ton. The method of calculation is as follows:

FOR ROCK PHOSPHATE MIXTURE

2 units of nitrogen	$3.00
24 units of total P_2O_5 from rock phosphate	7.20
6 units of water soluble potash	6.00
Total	$16.20

FOR THE REGULAR 2-24-6

2 units of nitrogen	$3.00
24 units of available P_2O_5	24.00
6 units of water soluble potash	6.00
Total	$33.00

In the group of comparisons that follow the above values were applied to the different analyses and this value was then inserted between the high and low retail price as found on the open Indiana fertilizer market in 1931.

Analysis	Minimum Retail Price	Comparative Value	Maximum Retail Price
2–12–6	$24.85	$21.00	$38.00
4–24–12	47.55	42.00	68.05
2–16–8	28.00	27.00	43.15
1–8–4	23.00	13.50	25.75
2–12–2	21.00	17.00	33.15
4–24–4	37.00	34.00	57.50
4–16–4	38.00	26.00	45.30
2–16–2	30.00	21.00	32.00
*"2–8–8–6"	35.00	19.40	35.00
*"0–6–6–10"	36.60	16.00	36.60
0–14–6	23.30	20.00	28.35
0–28–12	61.35	40.00	61.35
0–12–12	26.25	24.00	36.95
0–24–24	62.95	48.00	65.00
0–10–10	23.30	20.00	32.00
0–20–20	44.07	40.00	57.10
3–18–9	35.50	31.50	46.95
3–9–18	32.00	31.50	46.90
†1–30 Bone	17.50	22.50	40.00

* The above so-called "2-8-8-6" and "0-6-6-10" are no longer received for registration as such.
†The total phosphoric acid in bone is valued at $0.70 per unit.

MEANING OF ANALYSIS

As recognized under the Indiana Fertilizer Law there are only three valuable fertilizer elements, nitrogen, phosphorus and potassium. These three elements do not occur in a free state but are always combined as chemical compounds. This facilitates the handling of them in commercial fertilizer mixtures. A brief discussion of these, their value and availability as plant food, is given in the following paragraphs.

Nitrogen.

In 1881 when the Indiana Fertilizer Law was passed the principal source of nitrogen was of an organic nature. The nitrogen was derived largely from such products as dried blood, bone, tankage and slaughter house by-products, garbage, tankage, cottonseed meal, castor pomace, tobacco stems, manure sweepings and dried peat. Although there was little water soluble nitrogen in the above products all carry a good source of nitrogen with the exception of garbage tankage, manure sweepings, tobacco stems and dried peat. Since 1881 most of the animal products have been diverted into the mixed feed channels and water soluble forms of nitrogen have taken their place in fertilizer mixtures. Today we find that most of the nitrogen carrying fertilizers have better than 80% of their nitrogen content in some water soluble form.

A few of the sources of water soluble forms of nitrogen are as follows: nitrate of soda (natural and synthetic), ammonium sulphate, cal-urea, cal-nitro, urea and calcium nitrate.

Since water soluble forms of nitrogen are considered as being readily available for plant growth, we class a fertilizer that has 60% of its guaranteed nitrogen as water soluble as satisfactory.

If less than 60% of its guaranteed nitrogen is water soluble then the availability of the insoluble organic nitrogen is determined by the alkaline permanganate method. In this case if the active water insoluble nitrogen is equal to or greater than the inactive the nitrogen is classed as satisfactory. If less than half of the insoluble nitrogen is active the nitrogen is classed as inferior.

Manures and garbage tankages that have not been acidulated show an inferior quality of nitrogen. This is not the fault of the manufacturer when they are sold as manure and garbage tankage.

The past year's inspection had six samples showing an inferior source of nitrogen, of which number, four were dried manures and one a tobacco product. This is noted and set forth in Table 11 of this Circular.

Phosphoric Acid.

The phosphorus in the fertilizer is linked up as chemical compounds with calcium, iron and aluminum. It may be as mono-, di- or tricalcium phosphate.

As monocalcium phosphate $CaH_4(PO_4)_2$ it is water soluble and readily available to plants for growth.

As dicalcium phosphate $Ca_2H_2(PO_4)_2$ it is water soluble in the soil solution and rendered available to plants for growth.

As tricalcium phosphate $Ca_3(PO_4)_2$ it is somewhat less available to plants.

As a complex tricalcium phosphate combined with fluorine and lime (raw rock phosphate) it is much less available to plants and becomes available only slowly in the soil.

The bulk of the fertilizer sold today contains mixtures of large amounts of mono and dicalcium phosphate and some tricalcium phosphate. This is in contrast to the earlier years when most of the fertilizer used was bone where the phosphorus is present as tricalcium phosphate.

In acidulated goods the phosphorus is sold only on the basis of the available phosphoric acid (P_2O_5) content. The available is the sum of the soluble and reverted phosphoric acid (P_2O_5).

In bone and rock phosphate the phosphorus is sold only on the basis of the total phosphoric acid (P_2O_5) content. It is only fair to state, however, that about ⅓ of the total phosphoric acid (P_2O_5) content of bone is available by the neutral ammonium citrate method while only from two to four per cent of the total phosphoric acid (P_2O_5) of rock phosphate is available by the same method.

Potash.

Potash, as the official label states, must be soluble in water, in which form it is considered directly available for plant use.

No difference in crop growth has been noted in American, French or German potash. Muriate of potash (KCl) being the cheapest has largely supplanted other potash salts for general crops.

CLASSIFIED FERTILIZER SALES

In the early years of the fertilizer business in Indiana the fertilizer consisted almost entirely of bone and animal products. Recently these products have been diverted largely into the feed channels and replaced by superphosphates and nitrogen salts. Additions of potash salts to the superphosphate and nitrogen salts mixtures and various combinations of these ingredients have replaced almost entirely the tonnages that were formerly sold under the general classification of animal by-products. On account of the depressed price of these animal by-products in 1931 there was an increase in the amount of bone meal sold.

Table 1 illustrates the changes that have occurred since the Indiana Fertilizer Law was passed in 1881.

TABLE 1. Classified Fertilizer Sales Since 1883

Year	Total Tons	Tons Nitrogen Salts	Tons Potash Salts	Tons Super-Phosphate	Tons Bone	Tons Raw Rock Phosphate	Tons Phosphate Rock	Tons Ammoniated Super-Phosphate	Tons Complete
1883	8,000	....	....	....	8,000	....	....	....	....
1888	10,000	....	....	‡	10,000	....	‡	‡	‡
1893	38,000	....	....	1,000	14,000	....	1,000	4,000	18,000
1895	45,000	....	....	1,000	15,000	....	1,000	3,800	20,300
1897	49,400	....	....	7,200	13,900	50	1,500	5,200	21,450
1909	134,064	268*	2,146	8,111	13,004	804	18,769	1,009	89,287
1914	219,139	123*	3,576	12,878	11,023	2,400	40,462	1,184	148,126
1918	244,446	82*	....	57,984	13,300	1,079	9,822	83,111	78,302
1923	195,702	1,550†	3,251	49,501	8,669	....	35,494	4,309	91,220
1927	240,498	3,530†	5,200	32,041	5,050	719	41,785	520	151,112
1928	221,082	1,350†	1,700	26,997	2,782	968	40,451	....	145,709
1929	291,193	3,140	1,800	21,655	2,848	844	45,000	62	214,010
1930	219,684	2,950	1,900	12,188	2,445	1,500	34,657	....	163,136
1931	170,777	4,200	2,100	12,790	3,437	1,313	25,262	....	119,831

* Largely Nitrate of Soda.
† Nitrate of Soda and Ammonium Sulphate.
‡ Light Sales.

MANY GRADES UNNECESSARY

Table 2 shows the tonnage sold under the different grades of analyses. It will be noted that over 80 per cent of the total tonnage was confined to 33 grades while less than 20 per cent or the remaining tonnage was divided among 167 different grades. Considerable saving could be made if the number of grades were materially reduced. At least 75 per cent of these grades could be eliminated without seriously affecting the total tonnage.

TABLE 2. Showing tons sold under 33 analyses for past eight years—calculated from tag sales. A glance at the last two columns shows the difference in tons calculated by tag sales and that reported by Manufacturers as being sold under these 33 analyses for 1931.

ANALYSIS	Year 1924	Year 1925	Year 1926	Year 1927	Year 1928	Year 1929	Year 1930	Year 1931	Rept. by Mfrs. Year 1931
Nitrate of Soda	400	500	350	433	500	1,740	1,150	2,200	1,362
Ammonium Sulphate	1,250	4,100	2,350	3,000	900	1,400	1,800	2,100	657
0-16-0	28,907	23,282	16,744	12,665	8,053	6,241	3,937	5,780	6,468
0-20-0	15,912	21,093	19,518	16,281	13,000	12,826	6,781	5,753	9,389
0-40-0	8,336	11,186	9,375	2,905	3,689	1,563	750	838	522
Potash Salts	5,850	10,000	5,700	4,500	1,600	1,800	1,750	2,100	1,840
Raw Bone	2,519	2,266	900	1,750	813	869	750	1,249	‖ 2,345
Steamed Bone	6,488	3,025	4,175	2,706	1,094	1,781	1,250	2,188	
2-8-2	2,511	2,990	1,340	1,260	594	2,063	1,094	563	202
2-8-5	1,581	1,656	2,625	1,053	1,906	1,531	563	744	568
2-8-10	1,468	1,125	1,650	656	1,125	1,463	1,094	781	7,901
2-8-16	2,156	2,150	282	2,650	2,531	3,919	4,063	2,719	2,473
2-10-4	893	875	1,750	1,625	2,169	1,146	406	782	687
2-12-2	24,006	31,044	41,237	45,109	43,606	36,550	19,313	17,063	18,752
2-12-4	2,557	2,406	4,154	4,375	2,906	2,688	1,375	219	489
2-12-6	8,075	21,881	23,580	37,290	43,078	74,850	78,894	56,344	64,665
2-14-4	250	....	....	....	2,760	9,906	3,719	1,219	2,134
2-16-2	4,393	4,400	4,562	4,821	2,813	2,575	844	281	306
2-16-8	....	740	1,081	2,018	2,250	2,769	3,594	2,156	2,136
4-24-4	656	1,562	2,812	5,275	3,603	4,150	2,619	1,781	1,519
4-24-12	375	718	687	906	3,331	7,853	6,806	4,625	5,892
0- 8-24	2,868	2,400	2,687	3,962	1,681	1,750	3,444	2,563	3,195
0-10-10	10,900	10,843	10,481	15,525	11,969	7,744	7,206	6,000	6,273
0-12-12	3,531	5,325	5,031	5,312	3,438	6,813	6,500	6,063	6,817
0-20-20	150	531	1,156	2,531	2,281	1,313	2,181	2,063	2,463
0-12-6	3,781	4,187	4,056	5,312	5,312	1,954	1,000	813	785
0-14-4	875	1,750	3,156	4,312	3,750	1,625	719	500	291
0-14-6	....	....	....	....	2,063	9,150	7,425	3,250	4,279
0-8-32	....	....	....	....	343	856	656	63	395
0-16-4	....	....	....	....	2,250	313	937	594	387
0-14-14	....	....	625	718	463	813	969	375	437
0-16-8	....	....	500	593	1,313	844	94	375	404
0-12-8	156	31	....	....	....	1,844	406	188	607
33*	140,844	172,066	172,564	189,633	175,260	214,702	174,089	134,332	156,640
167†	51,573	54,082	55,716	50,865	45,822	76,491	45,595	36,445	28,201
200‡	192,417	226,148	228,280	240,498	221,082	291,193	219,684	170,777	§184,841

* Tonnage sold under these 33 analyses per year calculated by tag sales.
† Tonnage sold under 167 analyses per year calculated by tag sales.
‡ Total yearly tonnage sales calculated by tag sales.
‖ Reported together by Manufacturer.
§ This does not include the 3655 tons calculated from tag sales of companies that did not report their tonnage sales for 1931.

TABLE 3. Fertilizer Tonnage Sold in Indiana in 1931 as Reported by Fertilizer Manufacturers

A. Raw Materials—

1. Nitrogen Salts—

Nitrate of Soda	Calcium Nitrate	Ammonium Sulphate
1,361.7	194.3	656.7

2. Superphosphates—

Above 40% P_2O_5	0-32-0	0-24-0	0-20-0	0-16-0	0-14-0	0-13-0
521.6	11.0	79.0	9,389.1	6,467.6	131.0	18.0

3. Potash Salts—

Muriate of Potash	Sulphate of Potash	Manure Salts	Kainit
1,762.7	2.0	20.0	55.0

B. Phosphate and Potash Mixtures—

0-32-8	1.7
0-28-12	316.2
0-24-24	261.3
0-24-12	34.0
0-22-22	84.6
0-21-9	53.0
0-20-20	2,463.4
0-16-8	401.0
0-16-6	125.0
0-16-4	386.6
0-15-30	54.0
0-15-7	284.0
0-15-5	1.0
0-14-14	437.0
0-14-6	4,279.4
0-14-4	290.9
0-13-13	190.6
0-12-28	8.2
0-12-20	19.0
0-12-18	213.0
0-12-12	6,816.6
0-12-8	606.5
0-12-6	785.0
0-12-5	14.0
0-12-4	37.0
0-10-10	6,272.5
0-10-5	12.0
0-8-32	394.9
0-8-25	25.5
0-18-24	3,194.5
0-18-16	83.0
0-5-15	76.0

C. Complete Fertilizer Mixtures—

15-30-15	15.4
12-12-6	1.0
12-8-4	16.0
12-6-4	18.0
12-3-3	41.3
10-20-20	6.0
10-8-6	25.0
10-6-4	41.9
10-3-3	4.0
9-27-9	9.0
9-18-18	8.0
8-24-8	11.0
8-16-16	16.0
8-4-2	65.0
7-7-1	30.0
6-15-9	59.0
6-8-6	106.9
6-8-5	2.0
6-8-4	12.0
6-6-10	197.5
5-15-5	6.0
5-10-5	69.5
5-9-6	1.0
5-8-7	9.0
5-8-6	19.0
4-28-8	19.4
4-24-12	5,892.2
4-24-4	1,519.4
4-16-32	30.0
4-16-20	24.0
4-16-8	2.0
4-16-4	567.0
4-14-4	8.0
4-12-8	175.2
4-12-4	231.0
4-10-6	405.0
4-8-10	31.0
4-8-8	110.0
4-8-7	65.0
4-8-6	555.0
4-8-4	2.0
4-8-3	51.0
3-21-6	92.7
3-20-20	47.6
3-18-9	1,090.2
3-18-6	3.0
3-18-3	37.0
3-15-12	564.0
3-12-12	184.0
3-12-10	11.0
3-12-7	19.0
3-12-4	139.0
3-11-14	33.2
3-10-7	154.0
3-10-6	469.0
3-10-4	5.0
3-9-18	809.5
3-8-10	2.0
3-8-6	921.8
3-7-7	171.0
2-20-10	38.0
2-16-8	2,136.2
2-16-6	155.0
2-16-2	306.2
2-15-4	182.9
2-14-7	249.2
2-14-4	2,134.3
2-14-0	17.0
2-13-11	112.2
2-13-5	83.0
2-12-8	51.0
2-12-6	64,664.5
2-12-4	489.0
2-12-2	18,751.9
2-10-10	15.0
2-10-8	360.5
2-10-6	200.0
2-10-4	686.5
2-10-3	165.0
2-10-2	85.0
2-9-5	101.0
2-8-16	2,472.6
2-8-15	109.0
2-8-10	7,901.0
2-8-6	263.0
2-8-5	568.0
2-8-4	537.0
2-8-2	202.0
1-16-6	3.0
1-14-5	1,138.8
1-14-3	49.0
1-14-2	298.0
1-13-5	238.2
1-12-4	252.0
1-12-3	797.8
1-12-2	437.0
1-12-1	35.0
1-11-5	1,633.0
1-11-4	1,078.3
1-11-3	645.0
1-10-5	146.0
1-10-4	103.0
1-10-3	421.0
1-10-2	641.0
1-10-1	332.0
1-8-32	15.0
1-8-8	83.1
1-8-7	7.0
1-8-4	1,038.0
1-8-3	787.0
1-8-2	300.2
1-8-1	2.5
1.6-8-2	3.7
.8-8-8	22.4
3-9-9-3	102.0
2-8-8-6	38.8
2-8-8-2	62.6
2-8-4-6	1,087.0
2-8-4-2	269.0
2-6-6-3	428.0
1-8-4-2	219.0

D. Bone Products (Steam and Raw Bone—Fertilizer Tankages)—2,345.2
E. Miscellaneous—2,622.5.

Summary—
1. Total tons reported—184,840.9.
2. Tag sales from firms not reporting—3,655.0.
3. Total tonnage based on reports (Items 1 and 2)—188,495.9.
4. Total tonnage from tag sales—170,777.

EXPLANATION OF TABLES

Buyers of fertilizer for the Fall of 1932 and the Spring of 1933 should read this circular before buying.

A brief study of the column headings will aid in a better understanding of the various tables appearing in this circular.

In case of deficient samples manufacturers were given ten days' advance notice and opportunity to secure a portion of our sample for review of our results by their chemists.

Table 4 sets forth the total tonnage, retail value, cost per ton, pounds of actual plant food per ton and the cost per pound of plant food for the past 12 years.

TABLE 4

YEAR	Tonnage Per Year	Retail Value Dollars	Cost per Ton Dollars	Pounds per Ton Actual Plant Food	Cost per Pound Plant Food Cents
1920	231,791	8,637,055	37.26	328	0.114
1921	187,923	6,031,305	32.10	354	0.091
1922	209,310	5,730,536	27.40	372	0.074
1923	198,581	6,293,033	31.70	412	0.077
1924	192,417	6,479,605	33.68	446	0.075
1925	226,148	8,253,670	36.50	458	0.079
1926	228,280	8,464,607	37.22	452	0.082
1927	240,498	8,998,412	37.41	444	0.084
1928	221,082	8,254,591	37.33	444	0.084
1929	291,193	11,327,868	38.89	417	0.094
1930	219,684	8,521,905	38.79	518	0.075
1931	170,777	5,503,088	32.22	490	0.065

Since 1920 there has been a gradual falling off in sales of low and medium grade mixed fertilizers while that of high grade fertilizers has maintained a high level.

The comparison of mixed fertilizer sales for the past 12 years follows:

TABLE 5

Mixed Fertilizer	1920 Tons	1921 Tons	1922 Tons	1923 Tons	1924 Tons	1925 Tons	1926 Tons	1927 Tons	1928 Tons	1929 Tons	1930 Tons	1931 Tons
Low and Medium Grade..	84,760	55,887	43,459	25,773	21,759	17,989	16,892	13,722	6,562	10,506	5,001	2,956
High Grade....	57,881	59,809	89,527	104,990	98,832	127,928	146,177	179,695	179,597	248,566	192,792	131,512

Table 6 shows the comparison of tonnages sold for the past twelve years with the amount of actual plant food in tons per year and with the retail value per year. Values were calculated from tag sales and inspection slips.

TABLE 6

Year	Tons Reported by Manufacturer	Fertilizer Tons	Tons of Nitrogen, Phosphoric Acid and Potash	Cost Indiana Farmers
1920	....	231,791	37,961.57	$8,637,055.00
1921	....	187,923	33,170.08	6,031,305.00
1922	....	209,310	39,026.25	5,730,536.00
1923	....	198,581	40,929.03	6,293,033.00
1924	....	192,417	*43,004.72	*6,479,605.00
1925	....	226,148	51,803.84	8,253,670.00
1926	....	228,280	51,572.55	8,464,607.00
1927	....	240,498	53,388.66	8,998,412.00
1928	....	221,082	49,038.59	8,254,591.00
1929	†237,590	291,193	60,737.35	11,327,868.00
1930	†246,009	219,684	56,813.27	8,521,905.00
1931	†188,495	170,777	41,916.29	5,503,088.00

* Corrected figures for 1924.

† Estimated from manufacturer's reports and tag sales of companies that did not report their tonnage sales.

A glance at Table 7 shows the total nitrogen, potash, available phosphoric acid, insoluble phosphoric acid, total phosphoric acid from bone and the total phosphoric acid from rock expressed in tons of actual plant food for the past twelve years.

TABLE 7. Plant Food in Tons

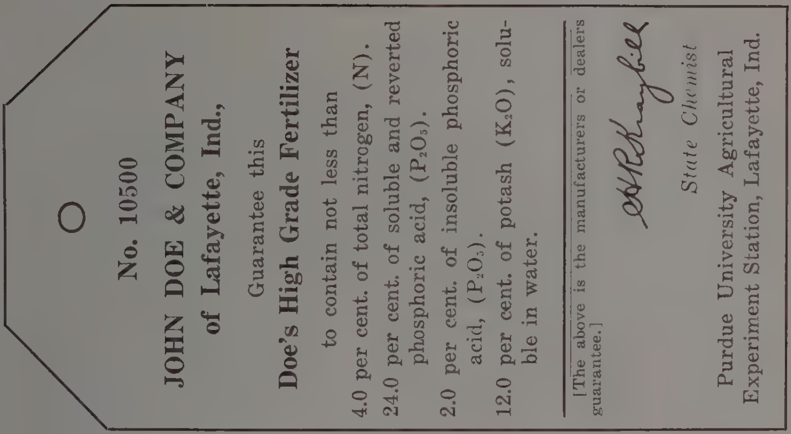
YEAR	Nitrogen	Available Phosphoric Acid	Insoluble Phosphoric Acid	Total Phosphoric Acid (Bone)	Total Phosphoric Acid (Rock)	Potash
1920	1,748.56	25,129.73	3,401.61	2,840.77	1,045.18	3,795.72
1921	1,640.07	21,657 09	2,407 64	2,615.83	289.99	4,559.46
1922	1,887.08	24,870.10	2,791.37	2,778.99	9.28	6,689.43
1923	2,348.63	24,124.84	2,777.82	2,545.94	....	9,131.80
1924	2,159.37	*25,731.53	*2,340.83	2,740.71	....	10,032.16
1925	3,160.08	31,182 63	2,987.80	1,567.16	....	12,906.17
1926	3,167.26	31,811.25	3,196.64	1,529.17	37.13	11,831.11
1927	3,822.06	31,214.50	2,912.51	1,141.05	210.67	14,087.88
1928	3,142.32	30,471.69	1,840.96	708.66	302.02	12,572.95
1929	5,978 96	31,760.58	3,632.01	732.02	274.30	18,361.48
1930	4,304 99	33,875.30	3,114.06	556.76	449.36	14,512.80
1931	4,076.88	22,231.65	2,138.00	735.90	532.14	12,201.72

* Corrected figures for 1924.
Values calculated from tag sales and inspection reports.

TABLE 8. Summary of Inspection for the Past Thirty Years

YEAR	Number of samples reported	Number equal to guarantee in every particular	Number equal in value of guarantee	Number within 10 per cent of value of guarantee	Number not within 10 per cent of value of guarantee
1902	679	335	564	93	22
1903	674	286	492	139	43
1904	643	248	451	148	44
1905	734	312	528	158	48
1906	879	374	642	176	61
1907	793	265	481	210	102
1908	901	391	683	171	47
1909	969	417	720	215	34
1910	1,118	441	834	242	42
1911	1,095	527	896	180	19
1912	1,220	636	1,034	175	11
1913	1,204	714	1,021	178	5
1914	1,396	727	1,152	239	5
1915	1,368	684	1,145	214	9
1916	1,367	870	1,183	168	16
1917	919	622	830	76	13
1918	1,285	888	1,142	121	22
1919	1,401[1]	936	1,227	141	32
1920	1,491[2]	944	1,267	188	27
1921	1,314	754	1,070	227	17
1922	1,216	812	1,071	132	13
1923	1,325	970	1,214	108	3
1924	1,439	1,072	1,340	94	5
1925	1,442	1,019	1,329	111	2
1926	1,225	798	1,033	183	9
1927	1,450	909	1,277	153	10
1928	1,437	865	1,283	144	9
1929	1,378	854	1,217	155	6
1930	1,421	1,090	1,320	89	10
1931	1,396[1]	1,100	1,315	74	7

[1] One sample not registered.
[2] Nine samples not registered.



No. 10500

JOHN DOE & COMPANY

of Lafayette, Ind.,

Guarantee this

Doe's High Grade Fertilizer

to contain not less than

4.0 per cent. of total nitrogen, (N).

24.0 per cent. of soluble and reverted phosphoric acid, (P_2O_5).

2.0 per cent. of insoluble phosphoric acid, (P_2O_5).

12.0 per cent. of potash (K_2O), soluble in water.

[The above is the manufacturers or dealers guarantee.]

HRKraybill

State Chemist

Purdue University Agricultural
Experiment Station, Lafayette, Ind.

LABELS

The only label recognized under the law is that bearing the facsimile signature of the State Chemist. (See reproduction). The label as issued is always printed and contains all the facts required by law; any alteration thereon constitutes a violation of the law.

Label No. 10500 guarantees that each 100 pounds of fertilizer will contain at least 4.0 pounds of total nitrogen (N), 24.0 pounds of soluble and reverted phosphoric acid (P_2O_5), and 2.0 pounds of insoluble phosphoric acid (P_2O_5), and 12.0 pounds of water soluble potash (K_2O).

We hope that it will not again be necessary to file affidavits against agents for distributing unlabeled fertilizer. There can be no excuse for shipping unlabeled fertilizer. Agents receiving same should protect themselves by refusing to accept the car. Wire the manufacturer for official labels and write the State Chemist fully concerning the unlabeled shipment.

TABLE 9. Fertilizer Tonnage and Estimated Retail Value, 1931

Class of Fertilizer	Spring 1931 tons	Fall 1931 tons	Total 1931 tons	Estimated 1931 Retail Value Dollars
1. Acid phosphate, 14% and less	281	438	719	$16,163.12
2. Acid phosphate, 16%	1,311	4,469	5,780	114,767.80
3. Acid phosphate, 18-20%	1,984	3,469	5,453	137,197.48
4. Acid phosphate above 20%	369	469	838	37,450.22
10. Acid phosphate and potash, 14-19 units	1,156	400	1,556	41,265.12
10a. Acid phosphate and potash above 20 units	20,181	3,525	23,706	732,278.34
11. Complete fertilizer (low)	250	500	750	19,860.00
12. Complete fertilizer (medium)	1,156	1,050	2,206	55,900.04
13. Complete fertilizer (high)	20,406	13,129	33,535	821,362.00
13a. Complete fertilizer above 20 units	63,075	20,275	83,350	3,069,770.50
14. Steamed bone	313	1,875	2,188	41,965 84
15. Raw bone	218	1,031	1,249	41,154.55
16. Tankage	63	31	94	3,854.00
19. Rock phosphate, nitrogen salts, and potash salts (A)	63	....	63	2,748.69
20. Rock phosphate and potash salts (B)	31	....	31	1,314.40
21. Rock phosphate	875	438	1,313	23,502.70
22. Nitrogen salts*	4,200	125	4,325	177,368.25
23. Potash salts*	2,100	....	2,100	92,757.00
31. Miscellaneous (peat, dried manure, dried blood, garbage tankage, etc.)	813	688	1,501	72,408.24
Total	118,845	51,277	170,777	$5,503,088.79

* Tonnage in these classes estimated on the 200-pound sack or 10 per ton. All other classes estimated on the 125-pound sack or 16 per ton.

(A) Mixture of rock phosphate, nitrogen, and potash salts.

(B) Mixture of rock phosphate and potash salts.

PRICES USED IN SECURING COMPARATIVE VALUE OF FERTILIZERS

These values are not for the purpose of fixing the commercial value of mixed fertilizers, but are for comparative purposes only. They are for use in comparing the value of inspection samples with manufacturers' guarantees, and can be used advantageously by fertilizer purchasers in calculating the relative values of various brands offered for sale by different manufacturers.

For use in determining the comparative values of fertilizer inspected in 1932 the following prices have been adopted:

	Per lb. cts.	Per unit or per cent, $
All fertilizers		
Nitrogen (N)	7.5	1.50
Potash (K_2O) Soluble in water	5.0	1.00
Soluble and reverted phosphoric acid (P_2O_5)	5.0	1.00
Mixed fertilizers containing nitrogen		
Insoluble phosphoric acid (P_2O_5)	1.5	0.30
Precipitated bone		
Available phosphoric acid (P_2O_5)	5.0	1.00
Insoluble phosphoric acid (P_2O_5)	1.5	0.30
Animal by-products, bone, tankage, etc.		
Total phosphoric acid (P_2O_5)	3.5	0.70
Basic slag		
Total phosphoric acid (P_2O_5)	4.5	0.90
Rock phosphate (floats) and low grade slag		
Total phosphoric acid (P_2O_5)	1.5	0.30
Mixed fertilizer, acid phosphate, etc., containing no nitrogen		
Insoluble phosphoric acid	.0	0.00

TABLE 10. Summary of Inspection on the Basis of Composition, Guaranteed, Found, and Retail Values

Class of Fertilizer.	Number of Samples	Nitrogen (N), average per cent.		Available phosphoric acid (P_2O_5), average per cent.		Insoluble phosphoric acid (P_2O_5), average per cent.		Total phosphoric acid (P_2O_5), average per cent.		Potash (K_2O), soluble in water average per cent.		Comparative value per ton, dollars		Retail price per ton, average, dollars	Comparison, retail price and found comparative value per ton, dollars	Range in retail price per ton, dollars
		Guaranteed	Found	Guaranteed	Found	Guaranteed	Found	Guaranteed	Found	Guaranteed	Found	Guaranteed	Found			
1. Acid phosphate, less than 16 per cent available phosphoric acid	3	.....	.....	13.7	14.2	.....	1.7	.....	.....	.....	.....	16.44	17.04	22.48	+5.44	18.95-26.55
2. Acid phosphate, 16 to 18 per cent available phosphoric acid	49	.....	.....	16.0	16.4	0.8	1.2	.....	.....	.....	.....	19.20	19.68	19.51	—0.17	16.55-23.00
3. Acid phosphate, 18 to 20 per cent available phosphoric acid	96	.....	.....	20.0	20.7	1.0	0.5	.....	.....	.....	.....	24.00	24.84	25.16	+0.32	20.00-31.55
4. Acid phosphate more than 20 per cent available phosphoric acid	13	.....	.....	38.8	39.5	1.1	1.0	.....	.....	.....	.....	46.56	47.40	44.69	—2.71	24.00-56.00
10. Acid phosphate and potash (High grade), 14 or more per cent available plant food	12	.....	.....	10.8	11.1	3.5	2.8	.....	.....	6.3	6.6	19.26	19.92	26.52	+6.70	21.00-36.60
10a. Acid phosphate and potash (High grade), 20 or more per cent available plant food	269	.....	.....	12.8	13.3	0.6	1.1	.....	.....	12.9	13.6	28.26	29.56	30.89	+1.33	23.00-65.00
11. Complete fertilizer (Low grade), less than 12 per cent available plant food	7	1.4	1.6	7.0	8.1	4.6	3.1	.....	.....	2.7	3.0	16.44	17.96	26.48	+8.52	23.50-29.30
12. Complete fertilizer (Medium grade), 12 to 14 per cent available plant food	34	1.4	1.6	8.1	8.8	2.1	1.8	.....	.....	3.0	3.2	16.06	17.27	25.34	+8.07	21.00-32.25
13. Complete fertilizer (High grade), 14 or more per cent available plant food	263	2.1	2.2	10.6	11.6	1.4	1.7	.....	.....	3.3	3.6	21.83	23.70	24.50	+0.80	18.60-50.30
13a. Complete fertilizer (High grade), 20 or more per cent available plant food	564	2.6	2.8	14.3	14.7	0.9	1.3	.....	.....	7.5	7.8	31.52	33.08	36.83	+3.75	24.85-77.80
14. Steamed bone	18	1.3	1.8	.....	.....	.....	.....	28.2	29.1	.....	.....	28.63	30.69	29.18	—1.48	17.50-40.00
15. Raw bone	13	3.1	3.2	.....	.....	.....	.....	22.3	24.7	.....	.....	27.82	30.23	32.95	+2.72	24.00-45.80
16. Tankage	1	4.9	4.4	.....	.....	.....	.....	12.0	10.2	.....	.....	23.05	20.18	41.00	+18.82	41.00-
19. Rock phosphate, nitrogen salts and potash salts	2	3.0	2.7	.....	.....	.....	.....	23.5	24.6	6.0	6.0	22.90	22.59	43.63	+21.04	41.35-45.90
20. Rock phosphate and potash salts	1	.....	.....	.....	.....	.....	.....	24.0	24.9	12.0	12.0	21.60	21.96	42.40	+20.44	42.40-
21. Rock phosphate	11	.....	.....	.....	.....	.....	.....	31.8	33.5	.....	.....	12.72	13.40	17.90	+4.50	9.50-22.00
22. Nitrogen salts	17	19.1	19.7	.....	.....	.....	.....	.....	.....	.....	.....	47.75	49.25	41.01	—8.24	19.00-52.00
23. Potash salts	16	.....	.....	.....	.....	.....	.....	.....	.....	47.0	48.9	47.00	48.90	44.17	—4.73	22.00-53.15
31. Miscellaneous (peat, peat and limestone, dried manure, dried blood, garbage tankage, etc.)	7	1.3	1.4	.....	.....	.....	.....	4.3	4.6	2.3	2.6	9.42	10.24	48.24	+38.00	25.00-88.00

TABLE 11. Standing of Manufacturers Determined by Inspection of 1931

Manufacturers	Number of samples reported	Number equal to guarantee in every particular	Number equal in value to guarantee	Number within 10 per cent of value of guarantee	Number not within 10 per cent of value of guarantee	Number with inferior nitrogen	Total number with nitrogen
American Agricultural Chemical Co., The, New York, N. Y.	69	61	68	1			52
Armour Fertilizer Works, Chicago, Ill.	159	137	158	1			105
Barrett Company, The, New York, N. Y.	2	2	2				2
Buhner Fertilizer Co., The, Seymour, Ind.	105	50	84	20	1		90
Clendenin & Company, Richmond, Ind.	7	1	6	1			5
Consolidated Chemical Co., Louisville, Ky.	12	11	12				4
Cory Orchards, Cory, Ind.	1	1	1				1
Darling & Co., Chicago, Ill.	36	29	33	2	1	1	21
Diamond Fertilizer Co., Sandusky, Ohio	15	7	9	6			11
Dockwiler & Kingsbury Co., Indianapolis, Ind.	20	12	18	2			11
Empire Guano Co., Albany, Ind.	1				1		1
Falls City Fertilizer Co., New Albany, Ind.	2	2	2				2
Farmers Fertilizer Co., Columbus, Ohio	3	3	3				
Farmers Fertilizer Co., Seymour, Ind.	1	1	1				1
Farmers Grain Dealers Ass'n, Indianapolis, Ind.	4	3	4				2
Federal Chemical Co., Inc., Louisville, Ky.	84	63	83	1			70
Ford Motor Co., Dearborn, Mich.	1	1	1				1
Globe Fertilizer Co., Louisville, Ky.	1	1	1				
Grace & Co., W. R., New York, N. Y.	1	1	1				1
Grasselli Chemical Co., Inc., The, Cleveland, Ohio	1	1	1				1
Greiner Chemical Corp., The, Fort Wayne, Ind.	6	6	6				5
Groves Chemical Co., Columbus, Ohio	8	6	8				5
Hopkins Fertilizer Co., New Albany, Ind.	51	46	51				49
Hutchins Bros. Mineral Works, Hillsboro, Ind.	1	1	1				1
Indiana Consumers Gas & By-products Co., Terre Haute, Ind.	1	1	1				
Indiana Farm Bureau Cooperative Ass'n, Inc., Indianapolis, Ind.	259	229	252	6	1		154
International Agricultural Corp., Cincinnati, Ohio	44	35	41	2	1		26
Jarecki Chemical Co. (Owned and Operated by Armour Fertilizer Works), Cincinnati, Ohio	7	6	7				3
Joslin-Schmidt Corp. (Groves Fertilizer Works), Cincinnati, Ohio	11	9	11				8
Kentucky Fertilizer Co., Louisville, Ky.	1	1	1				
Kingsbury & Co., Inc., Indianapolis, Ind.	47	23	38	9			36
Lewisburg Tobacco Co., The, Lewisburg, Ohio	1		1			1	1
Louisville Fertilizer Co. (Owned and Operated by Armour Fertilizer Works), Louisville, Ky.	13	12	13				5
McCarty Seed Co., J. A., Evansville, Ind.	15	8	11	4			7
Madison Glue Manufacturing Co., Madison, Ind.	1		1				1
Miami Fertilizer Co., Dayton, O.	4	3	4				3
Norris Fertilizer Co., Rushville, Ind.	12	6	8	4			9

TABLE 11. Standing of Manufacturers Determined by Inspection of 1931—Continued

Manufacturers	Number of samples reported	Number equal to guarantee in every particular	Number equal in value to guarantee	Number within 10 per cent of value of guarantee	Number not within 10 per cent of value of guarantee	Number with inferior nitrogen	Total number with nitrogen
North American Fertilizer Co., Louisville, Ky.	11	10	11	....	....	....	11
N. V. Potash Export My, New York, N. Y.	3	3	3	..	....	....	....
Pacific Manure & Fertilizer Co., San Francisco, Calif.	1	1	1	....	....	1*	1
Price Chemical Co., Louisville, Ky.	15	8	14	....	1	....	11
Pulverized Manure Co., The, Chicago, Ill.	3	3	3	....	....	3*	3
Rasin Monumental Co. (Sub. of Virginia-Carolina Chemical Corp., Cincinnati Division), Cincinnati, Ohio	1	1	1	....	....	....	1
Rauh & Sons Fertilizer Co., E., Indianapolis, Ind.	57	47	52	4	1	....	34
Read Phosphate Co., New Albany, Ind.	3	2	2	1	....	....	2
Royster Guano Co., The F. S., Toledo, Ohio	9	8	8	1	....	....	4
Ruhm Phosphate & Chemical Co., Mount Pleasant, Tenn.	9	8	9	....	....	....	....
Rynveld & Sons, F., New York, N. Y.	1	1	1	....	....	....	1
Slater, Otto K., Toledo, Ohio	1	†........	1	....	....	....	....
Smith Agricultural Chemical Co., Indianapolis, Ind.	78	61	73	5	....	....	44
Steinkamp, Hugo, Holland, Ind.	2	2	2	....	....	....	2
Swift & Co., Calumet City, Ill.	109	95	108	1	....	....	67
Synthetic Nitrogen Products Co., New York, N. Y.	1	1	1	....	....	....	1
Tennessee Coal, Iron & Railroad Co., Birmingham, Ala.	1	1	1	....	....	....	....
Tennessee Phosphate & Fertilizer Co., Cincinnati, Ohio	1	1	1	....	....	....	....
Thomson Phosphate Co., Chicago, Ill.	4	3	3	1	....	....	2
United States Guano Co., Baltimore, Md.	3	3	3	....	....	....	1
Virginia-Carolina Chemical Corp., Cincinnati Division, Cincinnati, Ohio	69	56	68	1	....	....	38
Welch Chemical Co., Columbus, Ohio	5	5	5	....	....	....	3
Wuichet Fertilizer Co., The, Dayton, Ohio	2	1	1	1	....	....	2
Totals	1,396	1,100	1,315	74	7	6	922

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* Sheep Manure Manufacturers not responsible for the quality of the nitrogen in Sheep Manure.

† Not registered.

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Circular No. 191 June, 1932

REPORT OF MOSES FELL ANNEX FARM

BEDFORD, INDIANA

JUNE 1932

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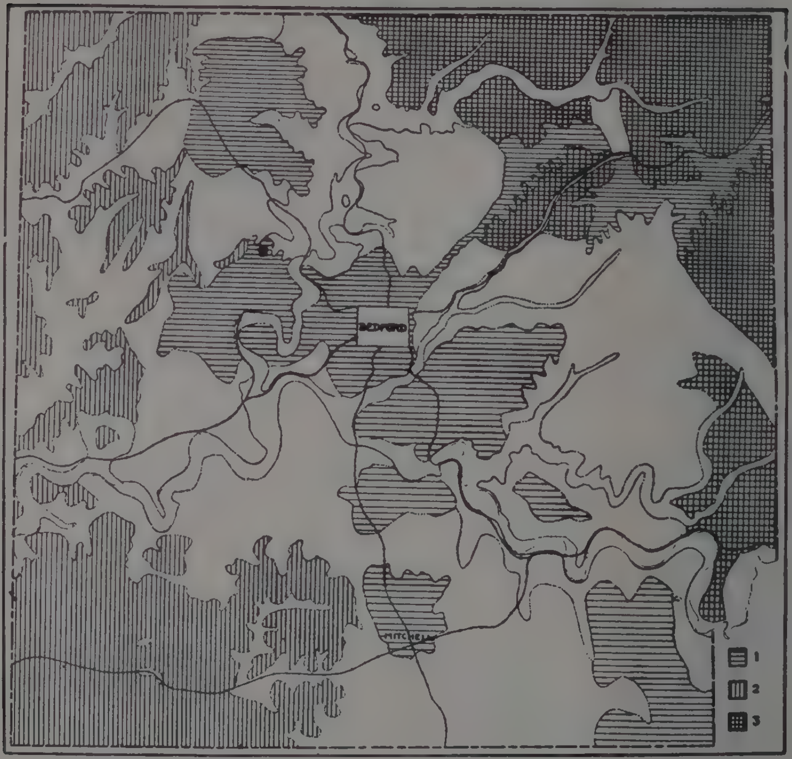
Map Showing Soil Types Similar to Experiment Field



Region	Principal Soil Characteristics
No. 1.	Yellowish limestone land like Bedford experimental field.
No. 2.	Yellowish "freestone" land.
No. 3.	Like No. 1 on ridge tops and like No. 2 on lower slopes.

The results of the Moses Fell Annex Farm can be applied to the greater part of Lawrence County and surrounding territory.

The soil survey made in this county in 1922 enabled the Department of Agronomy to classify the soils of this section and to indicate the types which can benefit most from the experimental work on this farm.

The results will apply to all similar land in the county, which is indicated by shading No. 1 on the map. They will also apply fully as well to the areas indicated by shading No. 2, and more or less fully to the areas indicated by shading No. 3 where the hilltops are like No. 1 and the lower slopes like No. 2.

Portions of the unshaded area would doubtless respond to similar treatments, but most of it does not need either lime or fertilizer to the same extent as the shaded areas.

Circular No. 191 June, 1932

REPORT OF MOSES FELL ANNEX FARM

June, 1932

H. J. Reed, Farm Director H. G. Hall, Superintendent

The object of the experimental and demonstration work on this farm is to determine the most profitable methods of crop production and utilization, and to adapt and demonstrate new truths and practices that can contribute to a more sufficient, profitable, permanent and satisfying agriculture in southern Indiana.

The farm is a large laboratory where many problems of production are tried in the crucibles of science and practice to get results that would be impossible without such facilities.

Numerous groups of interested farmers visit the experiment plots on this farm each year. The results from this work indicate the most profitable use of fertilizer for crops in this area.

It is important that the farmer shall know definitely what gives the best average returns over a long period of years. The most profitable results come from a system of farming that gives the best average returns. The weather conditions are different each year and these variations in moisture and temperature influence the yields that are obtained.

The soils and crops work carried out under the direction of the Department of Agronomy has been under way since 1915 and clearly demonstrates the value of various applications of plant food and the importance of choosing the best varieties for economical crop production.

The investigations being conducted under the Horticultural Department have demonstrated orchard renovation practice, the value and effectiveness of various spray schedules, orchard fertilization, cool storage management and costs, orchard sanitation, removal of arsenical residue from fruit, adaptation of peach and plum varieties, farm garden and many other phases of horticulture that have added to the knowledge of fruit production. The Entomology Department has rendered valuable service in combatting orchard insects and timing orchard sprays. The Agricultural Engineering Department has studied the use of electricity on the farm, both in the home and on the farm. The Department of Poultry Husbandry has assisted in developing an outstanding flock of Barred Plymouth Rock chickens which has not only contributed information on flock improvement but has demonstrated good housing, brooding methods, feeding and flock management.

The Department of Animal Husbandry is cooperating in a lamb production demonstration that is of interest to sheepmen. A cooperative project is under way to study the milking and beefing qualities of an imported strain of Scotch shorthorn cattle. This work will continue for a long period of years and will yield information on breeding practices that will be of value to breeders of both beef and dairy cattle. Pasture improvement is a matter of economic importance in southern Indiana. The work on this farm is showing that it is possible to improve the carrying capacity of the pasture land and in time a more complete project will be undertaken to coordinate the livestock and pasture work.

The Moses Fell Annex farm serves the farmers of southern Indiana in a very practical way at no cost to the taxpayers of the State. The Hon. Moses F. Dunn and Antoinette Fell gave the farm for this purpose and generously provided for its development so that a long-time constructive effort could be made to develop an agriculture that would improve the land, yield a profit and enrich the state.

GENERAL SOIL FERTILITY TEST

The soil fertility experiments carried on under the direction of A. T. Wiancko, Chief, and G. P. Walker, Associate, of the Agronomy Department are showing striking results that are of great value to the farmers of southern Indiana.

It will be noted, in comparing earlier reports and in examining the crops on the experiment field, that the spread between the good and poor treatments is becoming greater year by year, and that the better treatments are becoming more and more profitable. Without soil treatment, the average value of the crops per rotation of corn, soybeans, wheat, and clover is now $27.80 per acre. With lime, manure and phosphate, the value is $74.95, at an average cost of $7.12 for lime and sulphate.

The largest returns have been secured on the limed land, which has received an average of 6.8 tons of manure for corn and 450 pounds of fertilizer divided between the corn and wheat in the rotation of corn, soybeans, wheat and clover. (Plot 20.) The crop increases from this treatment have averaged $47.65 per acre per rotation as compared with the untreated land (plot 14), or a total of $178.70 in fourteen years. The cost of treatment outside of the manure, which was produced on the farm, has been $17.50 for three tons of ground limestone in 1917, two tons in 1931, and $4.32 every four years for fertilizer, or a total of $33.80 in the fourteen years.

Phosphorus is by far the most important plant food need of this soil. Applications of superphosphate have been highly profitable, either alone or in addition to manure. Without manure (plot 2) 225 pounds of 16 per cent superphosphate for corn and wheat in the four-year rotation has produced average crop increases of 16.5 bushels of corn, 6.3 bushels of soybeans, 8.0 bushels of wheat and 1,083 pounds of hay per acre, valued at $28.05 at a cost of $4.32 for the fertilizer. On land receiving an average of 6.8 tons of manure for corn, a similar use of superphosphate has further increased the crop yields by 9.9 bushels of corn, 6.2 bushels of soybeans, 7.5 bushels of wheat and 1,194 pounds of hay, worth $25.17 at a cost of $4.32 for the phosphate, showing that manure is not sufficient on this land. (Compare plots 16 and 18.)

Manure applied at an average rate of 5.2 tons per acre for the corn has produced average crop increases of 15.7 bushels of corn, 2.2 bushels of soybeans, 2.5 bushels of wheat and 434 pounds of mixed hay per acre, valued at $15.29, which amounts to an average return of $2.94 per ton of manure applied. (Compare plots 14 and 15.)

Ground limestone applied at the rate of three tons per acre in 1917 has so far produced average crop increases of 4.0 bushels of corn, 1.5 bushels of soybeans, 1.6 bushels of wheat, and 492 pounds of mixed hay per acre, valued at $28.14, up to the present time. (Compare plots 13 and 14.)

Lime and manure together have produced average increases of 20.4 bushels of corn, 4.0 bushels of soybeans, 3.7 bushels of wheat, and 739 pounds of mixed hay per acre, amounting to $22.48 for the rotation. (Compare plots 14 and 16.)

Applications of 300 pounds of 0-12-4 on corn and 300 pounds of 4-12-4 fertilizer on the wheat have produced average increases of 18.9 bushels of corn, 5.7 bushels of soybeans, 10.2 bushels of wheat, and 1,067 pounds of mixed hay per acre, amounting to $30.48 at a total cost of $7.38 for the fertilizer. (Compare plots 12 and 14.) The bulk of the increase, however, has been due to the phosphorus in the fertilizer, as is shown in the comparison of plots 2 and 8 with plots 3, 4, 6 and 7.

The field was laid out and tile drained in the spring of 1917. The original rotation was corn, wheat, clover and timothy, but this was changed in 1923 to corn, soybeans, wheat and clover, which is a more suitable rotation for this kind of land. All crops are removed except on plots 6, 7, 8, 10 and 11, where only the ear corn, wheat grain, soybean grain, and clover hay are removed, leaving all the roughage except the clover hay on the land in lieu of manure.

The treatments shown in the second column of the table are as follows: L = ground limestone; Res. = crop residue; O = no treatment; M = manure.

All limed plots received 3 tons of ground limestone per acre in the spring of 1917 and an additional 2 tons in 1931. The fertilizers indicated in the table have been applied at the rate of 200 pounds per acre in the row for corn and 400 pounds for wheat since 1929. To the end of 1928 the potash in the fertilizer was 4 per cent and the phosphorus and potash were equally divided between the corn and wheat, but the nitrogen was all applied for wheat, half in the fall and half in the spring.

The manure applications consisted of 6 tons per acre plowed under for corn in the first round of the rotation. Since then the rate of manuring has been equal to the amount of produce removed during the previous round of the rotation except the wheat grain.

The following table shows the results of different soil treatments begun in 1917:

RESULTS OF GENERAL FERTILITY TEST

Average Yields Per Acre and Financial Statement Per Rotation[1]

Plot No.	Treatment	Average Yields Per Acre				Total value four crops	Value of increase due to fertilizer	Cost of fertilizer	Gain over cost of fertilizer
		Corn bus. 1917-1931	Soy-beans bus. 1923-1931	Wheat bus. 1918-1931	Hay lbs. 1917-1931				
1	L	24.0	9.0	4.6	1357	$35.50	....	....	....
2	L 0-12-0	41.0	15.4	12.7	2453	64.06	$28.05	$4.32	$23.73
3	L 0-12-6	45.4	14.7	13.3	2470	66.31	29.79	6.48	23.31
4	L 2-12-6	44.3	14.9	15.3	2466	67.52	30.48	7.38	23.10
5	L	25.9	9.3	5.3	1410	37.55	....	....	....
6	L 2-12-6 Res.	47.1	16.5	16.6	2631	65.65	29.98	7.38	22.60
7	L 0-12-6 Res.	47.4	16.8	14.9	2682	65.08	29.32	6.48	22.84
8	L 0-12-0 Res.	47.6	17.4	13.7	2552	64.23	28.38	4.32	24.06
9	L	26.8	9.2	5.6	1366	37.91	....	....	....
10	L Res.	28.3	9.9	5.5	1430	35.32	....	....	....
11	— Res.	24.4	9.6	4.7	1281	31.72	6.28[2]	....	....
12	— 2-12-6	39.9	12.1	13.4	2164	58.93	30.59	7.38	23.21
13	L	24.4	8.9	4.9	1326	35.42	28.86[3]	17.50[3]	11.36[3]
14	O	20.8	7.3	3.3	822	27.80	....	....	....
15	— M	36.9	9.4	5.9	1243	43.17	15.29[4]	5.2 tons	2.94[5]
16	LM	42.0	11.2	7.2	1534	50.44	14.78[6]	5.5 tons	2.43[5]
17	L	26.0	8.6	5.1	1272	35.74	....	....	....
18	LM 0-12-0	51.8	17.1	14.6	2683	74.95	25.17	4.32	20.85
19	LM 0-12-6	52.7	16.6	15.4	2584	75.08	26.05	6.48	19.15
20	LM 2-12-6	50.0	16.1	16.2	2599	73.91	25.62	7.38	18.24
21	L	23.9	7.9	4.5	1154	32.77	....	....	....
	Ave. L checks	25.2	8.8	5.0	1315	35.81	....	....	....

[1] The crop rotation was changed in 1923 from corn, wheat, clover and timothy to corn, soybeans, wheat, clover.
[2] Value of grain and hay increase due to residues alone.
[3] Value of increase, cost and net for liming to date.
[4] Value of increase due to manure used alone.
[5] Value of increase per ton of manure.
[6] Value of increase due to manure over lime.

NOTE.—In computing the financial results, corn has been valued at 50c, wheat at 75c and soybeans at $1.00 per bushel; stover at $2.50, wheat straw at $2.00, soybean straw at $3.00 and hay at $10.00 per ton. Nitrogen has been charged at 7½c, phosphoric acid at 6c and potash at 6c per pound. Ground limestone has been charged at $3.50 per ton.

These crop prices are based on the average Dec. 1st Indiana prices of the last three years (1929, 1930, 1931) but reduced to convenient round numbers. The actual averages were: corn, 54c; wheat, 76c; soybeans, $1.03; hay, $10.50. The fertilizer prices used are the 1932 spring cash prices.

Comparison of Different Phosphates

The object of this experiment is to determine the relative values of superphosphate, rock phosphate, bone meal, and basic slag as phosphatic fertilizers. Superphosphate and rock phosphate are also compared in several different proportions with and without lime, manure, nitrogen and potash fertilizers. The table following shows the results to date of treatments begun in 1916.

The largest returns have been secured from the combination of ground limestone, manure and medium to heavy applications of superphosphate (plots 5 and 26). The heavy treatment (plot 26) has produced average increases of 26.8 bushels of corn, 10.7 bushels of wheat, and 1,603 pounds of mixed hay per acre, valued at $39.64 per rotation or a total of about $211.51 per acre since 1916, when the treatments were begun, at a total cost of $44.05 for lime and phosphate. Twenty-one dollars of this cost was charged for 4 tons of limestone, applied when the experiment was begun, and 2 tons applied in 1931. (Compare plot 26 with 33.)

In combination with lime and manure, superphosphate has been the most profitable source of phosphorus, the returns per acre per rotation, above the cost of materials, from the lime and different phosphates averaging as follows: superphosphate, $14.77; basic slag, $13.77; steamed bone meal, $11.78; and rock phosphate, $10.48. (Compare plots 5, 3, 2 and 6.) In this comparison, superphosphate, basic slag and steamed bone meal have been applied at the rate of 48 pounds and rock phosphate at 192 pounds of phosphoric acid per acre with manure for each corn crop.

On limed land, superphosphate has been more efficient than rock phosphate in all cases, whether used in large or small amounts, and with or without manure or nitrogen and potash (compare plots 5, 11, 17, 23, 26 and 29 with plots 6, 12, 18, 24, 27 and 30).

On manured land without lime, rock phosphate has been slightly more profitable than superphosphate (compare plots 8 and 9).

Without manure, rock phosphate alone has produced larger returns than the combination of lime and superphosphate. In both cases the crop yields have been too low to be profitable.

This field was laid out and tile drained in the summer of 1915. The crop rotation is corn, wheat, and clover with all produce removed except second growth clover.

The treatments shown in the second column of the table are as follows: L = ground limestone; M = manure; St. B. = steamed bone meal; BS = basic slag; SP = superphosphate; RP = rock phosphate; N = 12 pounds nitrogen; K = 50 pounds potash.

Ground limestone was applied at the rate of 4 tons per acre in 1915 and an additional 2 tons in 1931.

Manure was applied at the rate of 6 tons per acre for corn in the first round of the rotation and since then in amounts equal to the produce removed except wheat grain. The phosphates are applied at the rates shown in the third column in the accompanying table. The rock phosphate is plowed under for corn and the other phosphates, and the nitrogen and potash, are broadcast and harrowed in before planting.

RESULTS OF PHOSPHATE EXPERIMENT

Average Yields Per Acre and Financial Statement Per Rotation

Plot No.	Treatment	Lbs. phos. acid per acre	Average Yields Per Acre			Total value of three crops	Value of increase due to fertilizer and lime	Cost of lime and fertilizer treatment	Gain over cost of lime and fertilizer
			Corn bus. 1916-1931	Wheat bus. 1917-1931	Hay lbs. 1918-1931				
0	O		23.4	4.6	1243	$24.11			
1	LM		37.5	8.7	1643	37.29			
2	LM St. B.	48	44.4	12.9	2485	48.75	$18.60	$6.82	$11.78
3	LM BS	48	47.6	14.1	2451	51.25	20.59	6.82	13.77
4	LM		39.3	9.1	1719	38.82			
5	LM SP	48	49.1	14.6	2622	53.57	21.59	6.82	14.77
6	LM RP	192	48.6	13.2	2425	51.01	18.22	7.74	10.48
7	LM		41.1	9.5	1931	41.25			
8	—M SP	48	47.2	13.3	2505	50.55	17.05	2.88	14.17
9	—M RP	192	47.7	13.6	2812	52.57	19.16	3.80	15.36
10	LM		40.7	9.6	1899	40.96			
11	L— SP	48	32.1	10.3	2114	37.61	11.12	6.82	4.34
12	L— RP	192	29.8	8.4	1919	33.89	7.69	7.74	—0.05
13	L[5]		24.5	5.4	1386	25.91			
14	—SP	48	32.9	8.4	1778	34.80	12.01	2.88	8.89
15	—RP	192	36.5	10.4	2245	40.87	18.37	3.80	14.26
16	LM		38.8	9.3	1790	39.20			
17	L— NK SP	48	42.4	12.3	2229	46.01	20.27	10.60	9.67
18	L— NK RP	192	36.4	10.1	2173	40.55	14.10	11.52	2.58
19	LM		40.4	10.1	1885	41.33			
20	—NK SP	48	42.2	11.5	1972	43.77	20.03	6.66	14.27
21	—NK RP	192	41.9	12.0	2505	46.91	23.77	7.58	17.09
22	LM		39.1	8.9	1870	39.53			
23	LM SP	24	48.3	13.8	2402	51.58	17.92	5.38	12.54
24	LM RP	96	45.9	12.7	2370	49.01	13.57	5.84	7.73
25	LM		42.9	11.7	2048	44.87			
26	LM SP	72	51.8	17.2	2995	59.38	22.65	8.26	14.39
27	LM RP	288	49.0	14.6	2749	54.35	18.12	9.64	8.48
28	LM		41.7	11.0	1987	43.38			
29	LM SP	160[6]	49.9	15.8	2760	55.90	114.61[7]	40.20[7]	74.41[7]
30	LM RP	600[6]	48.5	13.5	2618	52.34	102.67[7]	51.00[7]	51.67[7]
31	LM		40.7	8.7	1701	39.42	7.65[1]		
32	—M		33.4	7.1	1135	31.01	9.34[2]	4 tons	2.33[3]
33	—		20.7	4.4	943	20.91			
34	LM		36.9	9.6	1518	37.14	16.99[4]		
	Ave. LM checks		39.9	9.7	1817	40.30			

(Plots 17, 18, 20 and 21 received 12 pounds of nitrogen and 50 pounds of potash per acre per rotation, all on the corn.)

[1] Value of increase due to lime over manure.

[2] Value of increase due to manure.

[3] Value of increase per ton of manure.

[4] Value of increase due to lime and manure.

[5] Manured on Series B in 1916 and Series C in 1917.

[6] Applied in 1916 and again in 1925.

[7] Total value of increase, cost, and net returns to date.

NOTE.—In computing the financial results, corn has been valued at 50c and wheat at 75c per bushel; stover at $2.50 wheat straw at $2.00, and hay at $10.00 per ton. Nitrogen has been charged at 7½c, phosphoric acid at 6c and potash at 6c per pound. Rock phosphate (30%) has been charged at $15.00, and ground limestone at $3.50 per ton.

These crop prices are based on the average Dec. 1st Indiana prices of the last three years (1929, 1930, 1931) but reduced to convenient round numbers. The actual averages were: corn, 54c; wheat, 76c; soybeans, $1.03; hay, $10.50. The fertilizer prices used are the 1932 spring cash prices.

Variety Tests of Farm Crops

The selection of hardy, high-yielding varieties of the crops grown in any section is very important. To determine those best adapted for this part of the state, the most promising varieties of several crops have been compared each year for a number of years. Each variety has been harvested separately and the yields determined by weight. The land on which the variety tests are carried has been kept in a good state of fertility by uniform applications of fertilizer on wheat, and manure on each corn crop.

RESULTS OF CROP VARIETY TESTS, 1922-1931

Varieties	Bushels per acre	
	Average 1929-31	Average 1922-25
Winter Wheat		
Purkof	27.7	21.9
Selection 21-2-11	24.9	....
Michigan Amber	26.3	19.5
Fulhio	25.8	....
Fultz	26.9	19.1
Poole	....	17.5
Rudy	....	17.4
Red Rock	....	17.2
Red Chaff	....	18.2
Red Cross	25.4	....
Trumbull	27.4	....
Winter Rye		
Mammoth Winter	25.4	21.2
Wisconsin Pedigree	....	18.9
Rosen	....	19.0
Winter Barley		
Purdue 21	37.4	20.7
Tennessee Winter	....	19.0

Varieties	Bushels per acre	
	Average 1926-30	Average 1922-25
Oats		
Minota	35.2	37.2
Swedish Select	30.4	33.9
Iowa 103	33.7	33.4
Fairfield	....	32.7
Big Four	....	29.2
Burt	....	29.0
Victory	....	27.8
Iowar	36.3	....
Fulghum	33.0	....
Cornellian	31.5	....
Spring Barley	11.2	10.4
Spring Wheat	5.8	8.3
Spring Rye	9.9	13.7
	Hay pounds per acre	
Soybeans	Average 1927-31	Average 1922-26
Dunfield	4683	5035
Manchu	4527	4966
Lexington	....	4635
Midwest	5206	4012
Wilson	4772	....
Virginia	4565	....
Mansoy	3510	....
Cowpeas	....	3278

Pasture Experiments

The improvement of pasture land has a very definite place in the agricultural program for southern Indiana. Large areas of this section are better adapted to pasture purposes than to its present use. There is a considerable area of pasture land that is not producing in a satisfactory way. The development of better pastures will make possible the expansion of the livestock industry from both the beef cattle and the dairy cattle point of view.

Several years ago a series of pasture plots was laid out in one section of the old pasture, and the results of soil treatments are given in the following table.

Grass mixtures including timothy, red top, Kentucky blue grass, orchard grass, alsike clover, sweet clover, alfalfa and lespedeza were seeded on the plots in April, 1924. The first 2 years' growth was largely alsike clover, timothy and red top with scattered clumps of orchard grass, sweet clover and alfalfa.

After 8 years blue grass and red top persist along with some timothy on the fertilized plots. Blue grass is much better on the limed and phosphated areas than on the unlimed. Most of the lespedeza, both Korean and common, seems to have disappeared in the extreme drouth of 1930. Hop clover, a member of the clover family, gradually came into the mixtures. This early growing legume seems to have some real worth for rolling pasture land of this type.

For new pasture seedings a mixture of timothy, red top, blue grass, alsike clover and common lespedeza is recommended for rolling limestone land. On sour thin land, a mixture of lespedeza and red top seems best.

RESULTS OF PASTURE EXPERIMENT, 1924-1931

Plot No.	Treatment per Acre*	Green forage pounds per acre 1924	Green forage increase over untreated	1925	Cured pounds per acre average 1926-31	Cured forage increase over untreated
1	Manure................	5445	1512	Due to dry weather growth was small in 1925 and nothing was harvested	1326	+ 553
2	500 lb. 2-12-6...........	16940	13007		1954	+1181
3	500 lb. 0-12-6...........	13613	9680		1489	+ 716
4	500 lb. 0-12-0...........	13310	9377		1352	+ 579
5	Untreated.............	3933	....		773	....
6	Limestone 2 tons.......	6363	2430		1215	+ 442
7	Lime, 500 lb. 0-12-0.....	13613	9680		1432	+ 659
8	Lime, 500 lb. 0-12-6.....	18150	14217		1575	+ 802
9	Lime, 500 lb. 2-12-6.....	16940	13007		2217	+1444
10	Lime, manure..........	13613	9860		1487	+ 714

*Treatments applied at seeding time in April, 1923, and fertilizer repeated in fall of 1929. Plots 2 and 9 receive top dressings of 100 pounds of nitrate of soda per acre each spring.

All this experimental work, including some crop rotation experiments and the test of nitrogen top dressing of wheat will be seen on the fields.

HORTICULTURAL WORK

The Horticultural Department, Professor L. Greene, Chief and Professor C. L. Burkholder, Assistant Chief, is carrying on numerous projects of interest to fruit growers of the State.

Most of the apple trees in the present planting were set when the farm was given to the University by Mr. Dunn. A few blocks of young trees have been planted and as the old trees die out replants have been put in. The replants have been grown by means of a heavy straw mulch around each tree.

At present there are about 80 acres of apples, 3 acres of plums and prunes, 4 acres of peaches and 1 acre of plums on the farm.

Peach Plantings

The peach orchard is on the south side of the orchard. The first 17 rows are Elberta and are now 15 years old. In the spring of 1932 practically all the fruit buds were killed and the trees have been heavily cut back. The south side of the orchard was not cut back until the week of May 22.

The peach trees were cut back severely after it was evident that the crop had been lost. New wood will be produced for a crop next season.

The Rochester and Champion still have a prospect for a light crop and have not been cut back. Four year old South Haven also came through the adverse weather conditions very nicely for a time but finally dropped nearly all of their fruit.

Plum and Prune Orchard

About 25 varieties are being tested. Most of the trees are four years old. The cold temperatures of early March killed fruit buds and injured the trees of several varieties and these have been removed and replaced with other more promising sorts. This spring a number of the varieties had considerable bloom and set some fruit. Among these are Hall, Robert's Prune, President, French Damson, Stanley and Pacific. These varieties not only show an early bearing tendency but came through the March freeze and spring frosts without injury. Where fruit growers are interested in local sales, good canning varieties of plums will prove popular as well as furnishing a very welcome income many years when peaches are a failure.

Pears

The planting of pears is for the purpose of trying out some of the new blight resistant varieties along with new methods of blight control by means of spraying and the use of resistant stocks.

Portable vs. Stationary Spraying

In 1930 about 45 acres of the apple orchard was equipped for stationary spraying. The 35 acre block on the south side of the orchard is still being sprayed with the best portable equipment. So far very little difference has been noted in insect and disease control between these two blocks. In 1931 there was some evidence of a heavier codling moth infestation in the stationary sprayed area.

Some idea of the speed and cost of spraying these two areas may be had from the following figures. On the average the cost of spray application per 1,000 gallons has been about twice as much on the portable block as compared to the stationary method of spraying. The saving in labor and power on the pink and calyx sprays in 1932 has amounted to $55.93.

Comparison of Cost of Pink and Calyx Spray Application in Portable and Stationary Blocks, 1932.

Pink Spray—Portable Block

No. gallons spray applied	5550
Labor, 3 men for 29 hours at 25c	21.75
Tractor rental at 75c per hour	21.75
Oil and gas for sprayer engine	1.80
Total cost, labor and power	45.30
Cost of application per 1000 gallons	$8.20

Pink Spray—Stationary Block

Total gallons spray applied	4050
Labor, 13 hours for 4 men at 25c	13.00
73 K.W.H. of electricity at 5c	3.65
Total cost of labor and power	16.65
Cost per 1000 gallons spray applied	$4.06

Calyx Spray—Portable Block

No. gallons spray applied	6750
Labor, 3 men, 28 hours at 25c	21.75
Tractor rental, 28 hours at 75c	21.75
Gas and oil for sprayer engine	2.00
Total cost labor and power	44.00
Cost of application per 1000 gallons	$6.56

Calyx Spray—Stationary Block

No. gallons spray applied	6700
Labor, 12 hours for 4 men at 25c	12.00
52 K.W.H. power at 5c	2.60
Total cost labor and power	14.60
Cost of application per 1000 gallons	$2.16

Icing Experiment in Apple Storage

Experiments in icing a common storage were continued at Moses Fell Annex during the season of 1931-32, using cracked ice and salt in a new type of ice bunker. The season was the warmest on record for many years but a prevailing temperature several degrees lower than that obtained with the type of ice bunker used in previous years was secured. Pressure test records showed that the fruit in the iced room ripened much slower than that in the ventilated room. Grimes and Jonathan in the iced room remained in saleable condition four to six weeks longer than fruit of the same quality and variety in the ventilated room. Because of the extreme heat and long season over which it was necessary to use ice, the cost of this item was higher than in previous years. Based on an average season, however, the cost would likely be less as the cooling capacity of the ice is used more effectively. Where Grimes and Jonathan are being held for local or truck trade fifteen to twenty-five cents per bushel can profitably be invested in some method of supplementing the use of cool air at night. This is especially true during the months of September and October.

Spraying and Residue Experiments

A number of different spray schedules have been tried in the M. F. A. orchard during the past few years. Codling moth have been a serious menace in this area since 1925. The United States tolerance for arsenic has been gradually reduced and new spray combinations have been tried in an effort to obtain satisfactory codling moth control without objectionable residue.

Careful examination is given to the fruit from experiment plots to determine the value of various treatments for disease and insect control.

In 1931 three applications of arsenate of lead combined with a fish oil sticker were used in all of the apple orchard against first brood codling moth. Beginning with the second brood sprays a part of the orchard was sprayed with summer oil and summer oil and nicotine in place of arsenate of lead. Under these conditions the residue was as high on the oil sprayed varieties as on the same varieties given two or three arsenate of lead and lime sprays beginning July 1st.

Apple Washer

An apple washer was installed in 1931 as part of the packing house equipment at M. F. A. Fifteen thousand nine hundred and forty-eight bushels of apples were put through the washer at the rate of 75 to 85 bushels per hour. In 1931 the cost of power as used in the packing shed was only three cents per kilowatt. At that rate the power cost for washing the entire crop averaged 1-20 cent per bushel. The total cost of washing per bushel including 15 per cent of cost of washer was 1.05 cents per bushel. Washed and unwashed samples of each variety were held in storage for observation. No injury from the chemicals used could be detected as late as February 1, 1932.

Tests with Various Washing Materials and Methods of Washing

1. The average arsenical removal secured amounted to 2-3 of the amount of arsenic present before washing.
2. Increasing the strength of acid from 1½ to 3% by volume failed to increase the efficiency of arsenical removal.
3. Cold sodium metasilicate was slightly less efficient than cold 2 or 3 per cent hydrochloric acid (by volume).
4. The addition of an emulsifier to the sodium metasilicate slightly increased its efficiency.
5. A heating plant was installed for the cleaning solution in the washer but the results in 1931 (with hot 2 per cent by volume hydrochloric acid) did not show any increase in the percentage of removal on most varieties and where there was an increase it was very small. There seems to be more promise in some of the newer cleaning materials and methods than there is in using hot cleaning solution. The results in the Pacific Northwest show a definite increase in arsenical removal with hot acid but they have used a much higher strength acid than was used in this work.
6. The average arsenical load on twelve varieties from the M. F. A. orchard in 1931 was .0213 grain per pound before washing and the highest sample .0286. The average arsenical load after washing was .007 grain of arsenious trioxide per pound.

The Department of Entomology has Mr. G. E. Marshall stationed at Bedford to carry on a series of experiments for the control of the codling moth and oriental peach worm. A laboratory for this work is provided on the Moses Fell Annex Farm. Observations are made for the timing of sprays in southern Indiana so that full advantage may be taken by the growers of existing methods of control. New spray materials are being tested out, sanitation methods are practiced and the life history of the orchard pests and their parasites are studied.

Demonstration Farm Garden

During the season of 1931 a farm demonstration garden was laid out on the Moses Fell Farm under the direction of Professor F. C. Gaylord in order to demonstrate the cash value of a real garden, in addition to that of having a ready supply of wholesome fresh vegetables for the entire family. The first garden produced vegetables valued at $109.75 (market value) that were used on the farm. In addition a considerable supply was left. The following recommendations are suggestions and may be changed to meet individual farm needs. The plan outlined was one successfully used on farm garden demonstrations.

Amounts Harvested and Used Only

Cash Value—(Based on Market Prices) $109.75

Radishes	45 doz.	Tomatoes	450 lbs.
Onions	12 doz.—20 lb. dry	Peppers	13 doz.
Kale	6½ lbs.	Cucumbers	65 doz.
Spinach	1½ lbs.	Carrots, 35 doz. bunch	6 doz.
Lettuce	4 lbs.	Parsley	¼ doz.
Turnips	15 lbs.	Cantaloupes	70
Peas	64 lbs.	Eggplant	2
Beets	78 lbs.	Sweet Potatoes	342 doz.
Beans	318 lbs.	Watermelons	13 doz.
Cabbage	80 lbs.	Swiss Chard	3 doz.
Potatoes	23 lbs.	Lima Beans	10 doz.
Salsify	2 lbs.		

Suggestions for Laying Out the Farm Garden

1. Lay out necessary half acre of best adapted garden soil available. This tract to be as near the farm residence as possible.
2. Apply at least ten loads of stable manure (cow manure preferable) on this plot before breaking.
3. Plow as early as ground can be worked. (Soil should be plowed 8 to 10 inches deep if possible.)
4. Thoroughly prepare soil entire depth broken just before planting, then apply broadcast, 500 pounds of 3-18-9, or its equivalent, working it into top three inches of soil.
5. Practice level, shallow cultivation and give good culture throughout the season, to control pests and conserve moisture.
6. Keep records of crops and amounts harvested so you may change plans to meet your own needs.

PLANTS AND SEED REQUIREMENTS

Early Cabbage Plants:	Golden Acre	4 dozen
	Copenhagen Market	4 dozen
Tomato Plants:	Early—Break O'Day	2½ dozen
	Pritchard	2½ dozen
	Late—Indiana Baltimore	2½ dozen
Peppers:	Sweet—Giant or Baltimore	2½ dozen
Eggplant:	Black Beauty	3 dozen
Asparagus:	Washington	12 dozen
Rhubarb:	Victoria	1½ dozen
Sweet Potato Plants:		200

SEED REQUIREMENTS

For Spring and Summer Plantings

Vegetable	**Variety**	**Amount**
Leafy Lettuce	Grand Rapids	½ ounce
Early Radish	Red-Scarlet Globe	½ ounce
	White—White Icicle	½ ounce
Onion Sets	Yellow	4 quarts
E. Turnips	Purple Top Strap Leaf	½ ounce
Peas	Alaska	3 pounds
	Onward	3 pounds
	Thos. Laxton	3 pounds
Parsnips	Hollow Crown	½ ounce
Beets	Early Wonder	1 ounce
	Detroit Dark Red	1 ounce
Onion Seed	Yellow Globe or Valencia	1 ounce
Salsify	Mammoth Sandwich Island	1 ounce
String Beans	Stringless Green Pod	5 pounds
Kale	Dwarf Curled Scotch	½ ounce
Parsley	Extra Double Curled	1 packet
Chard	Lucullus	1 packet
Bush Lima Beans	Henderson Bush Lima	2 pounds
Sweet Corn	Golden Bantam	3 pounds
	Bantam Evergreen	2 pounds
Pole String Beans	Kentucky Wonder	2 pounds
Carrots	Early Scarlet Horn	½ ounce
	Chantenay	½ ounce
Cantaloupe	Honey Rock	2 ounces
	Bender's Surprise	2 ounces
Watermelon	Kleckley Sweet	2 ounces
Cucumbers	Early Fortune	1 ounce
	Snows Pickling	1 ounce
Winter Squash	Table Queen	1 ounce
	Improved Hubbard	1 ounce
Summer Squash	New Jersey White Bush	1 ounce

LIVESTOCK

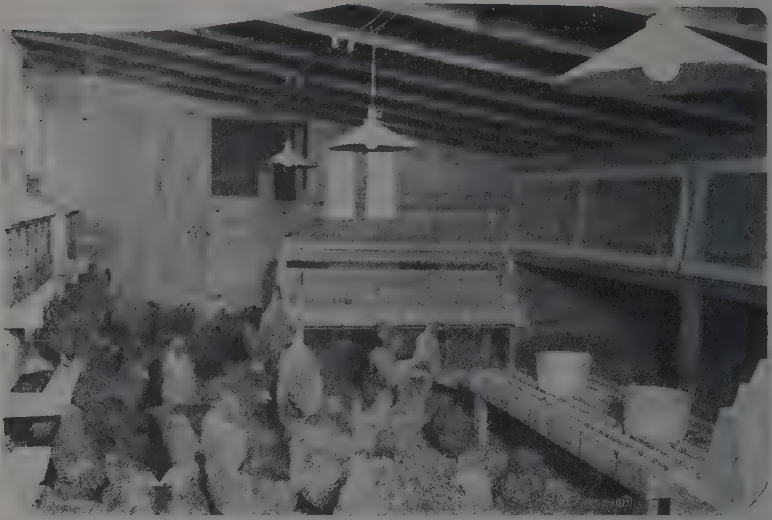
The livestock work on the farm has been continued on the same basis as last year, with the cooperation of Professor F. G. King, Chief, and Professor Claude Harper, Assistant Chief of the Department of Animal Husbandry. The lamb production test has been carried on using a lot of type C merino ewes headed by a merino buck, and the following lots each headed by a southdown buck—merino ewes; western ewes and native ewes. Records are being kept of the feed consumption so that costs, gains, profits and effect on wool production can be determined. The sheepmen of southern Indiana will find much information of value to them in this test. If the farmers of southern Indiana are going to realize the maximum returns from their flocks of sheep it is important that the accurate information should be available regarding the performance of the best adapted breeds of sheep.

The lamb production test compares lambs from merino, native and western ewes. Accurate records are kept of feed used in each lot and the wool produced by each group of ewes.

The herd of young cattle is developing nicely. These animals will be the basis for studying the milking and beefing qualities of this strain of shorthorn cattle. A survey conducted by the United States Department of Agriculture brought out the fact that a majority of the general farmers of the corn belt were interested in a type of cattle that would produce milk for home and steers for the feed lot. This project is carried on in cooperation with the Bureau of Animal Industry, U. S. Department of Agriculture, and it is hoped that much valuable data will be obtained which will be of interest to all cattle breeders. Records and observations will be made regularly on these animals so that the dual qualities of the progeny may be accurately measured.

Poultry

The flock of Plymouth Rock chickens continues to improve. Fifty of last year's pullets completed records satisfying the Record of Performance requirements and the breeding pen for this year was made up entirely of birds that had R. O. P. certificates. The improvement of the flock may be noted in the fact that fifty of the best pullets in the house at this time had an average production of 161 eggs per bird on April 30th.



Good practical equipment is provided for the flock of chickens. A steady improvement has been made in the average production of the flock.

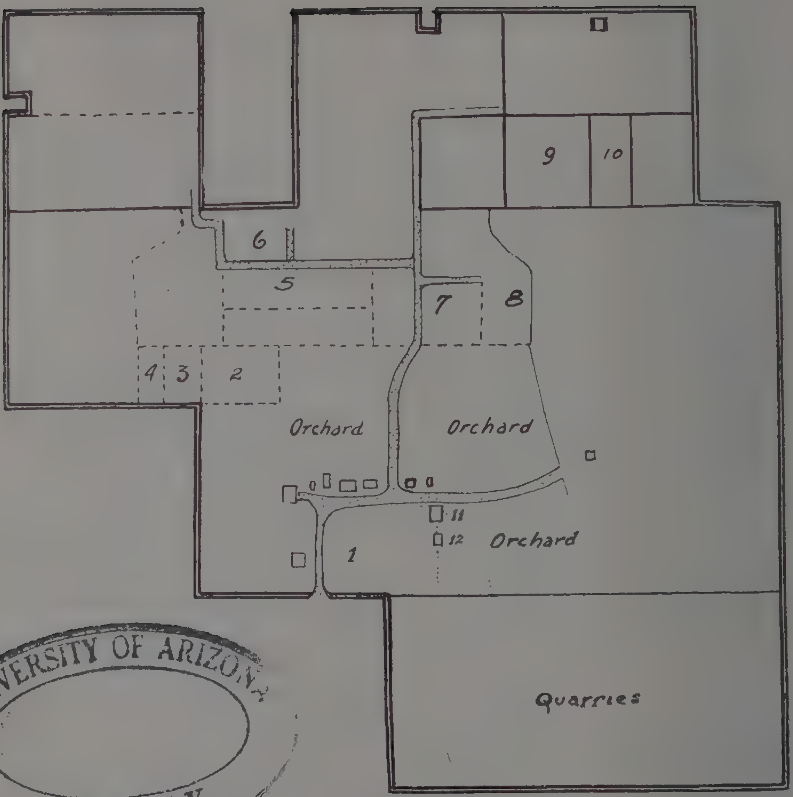
Mr. S. M. Walford of the Department of Poultry Husbandry advises regarding the management of the flock and plans the breeding program for the development of the flock. Some chicks from an outstanding flock have been added this season to provide additional breeding stock for outcrossing.

The flock is blood tested three or four times a year to eliminate and prevent disease.

Tobacco Experiments

The preliminary tests with tobacco have been continued to study the responses of this crop to fertilizer. In contrast with the results of the previous season, plant food had a tremendous effect upon the yield per acre.

Plot No.	Fertilizer per Acre	Yield per acre pounds	Graded as follows			
			Red	Lugs	Trash	Tips
1	1000 lbs. 3-14-5	1796	448	220	880	320
2	500 lbs. 3-14-5	1548	576	92	616	264
3	250 lbs. 3-14-5	1592	624	184	592	192
4	None	840	284	80	340	136
5	500 lbs. 6-15-9	1824	632	216	696	280
6	200 lbs. sulfate of potash	1572	572	320	452	228
7	400 lbs. sulfate of ammonia—2 applications	1584	496	336	472	280
8	500 lbs. 24% phosphate	1736	664	472	400	201



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POINTS OF INTEREST

1. Picnic and meeting grounds.
2. Orchard Experiments.
3. Elberta Peach Orchard.
4. Peach Variety Orchard.
5. Soils Experiments, General Fertility Series.
6. Soils Experiments, Phosphate Series.
7. Crop Variety Tests.
8. Alfalfa Field.
9. Pasture being improved.
10. Pasture Experiments.
11. Apple Packing and Storage Building.
12. Sheep Barn.

Visit these places and feel at liberty to ask questions. Representatives of the various departments will be present to answer and discuss your problems with you.

CIRCULAR No. 192 SEPTEMBER, 1932

INSPECTION OF AGRICULTURAL SEEDS

Buckhorn plants, a troublesome perennial, the seeds of which are often found in improperly cleaned clover, timothy and lawn grass seed.

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Agricultural Experiment Station
Purdue University
Lafayette, Indiana

Reuben Oscar Bitler, Deputy in the State Chemist Department, after twenty-one years of service, died April 22, 1932. The fertilizer, feed and seed industries as well as the agricultural interests of Indiana have suffered a distinct loss through the death of Mr. Bitler.

* * *

This circular is a report of the agricultural seed inspection work for the year ending June 30, 1932. The inspectors visited seed dealers in all sections of the State and collected 1,177 official seed samples. In addition to these 2,628 free test samples of seed were tested during the year.

In accordance with the ruling of the State Seed Commissioner, wholesale seedsmen are required to attach at least one state label to each package of seed delivered to the retail seedsmen, who is then required to attach sufficient additional labels to cover the net weight of the package.

Since it is impossible to test all seed promptly during the rush season directions are given for making germination tests at home.

Shipments of seed seriously misbranded were withdrawn from sale until dealers relabeled such seed correctly.

Proper use of this publication will enable purchasers to discriminate between seedsmen who handle good seed and those who handle poor seed. Before buying seed farmers are urged to examine Table 7 "Summary of Seed Inspection."

Due to lack of funds the table giving the analyses of individual samples is omitted from the report this year. It is the intention to resume publication of this table in future reports as soon as funds are available.

INSPECTION OF AGRICULTURAL SEEDS

H. R. Kraybill, State Seed Commissioner

O. S. Roberts R. O. Bitler[1] P. B. Curtis
Regina B. Schulte* Edith M. Patt Pauline Balbach

The Indiana Seed Law is essentially a correct labeling law. The law does not prevent the sale of poor seed. It merely requires that definite information be placed on the label in order that the purchaser may decide for himself whether he wishes to use good seed or poor seed. In order that the necessary information may be available the law requires that the seed be labeled with official Indiana State Labels showing the minimum percentage of purity and of germination and the maximum number of each of the noxious weed seeds per pound. The purpose of the law is to give the purchaser sufficient information to enable him to buy good seed and also to protect the honest and reliable seed dealer and farmer from the practices of the unscrupulous, dishonest and careless seedsman.

This circular contains the results of the inspection of agricultural seeds for the period from July 1, 1931, to June 30, 1932. The inspectors visited the seed dealers in all sections of the state and collected 1,177 official samples of seed. Complete analyses of these samples were made and reports were sent to the retail dealers as well as to the distributors of the seed. In addition 2,628 free test samples and 39 Custom House samples were analyzed. The testing of these samples entailed the making of 2,784 purity tests, 14,496 germination tests, 26 examinations, and 135 identifications.

RESPONSIBILITIES OF THE WHOLESALE SEEDSMAN

The wholesale seedsman is required to attach at least one Indiana State Label to each package of seed delivered to the retail seedsman.

RESPONSIBILITIES OF THE RETAIL SEEDSMAN

The retail seedsman is required to attach sufficient state labels properly filled out to each package of seed to cover the total weight of the seed before the seed is offered or exposed for sale. These labels can be chosen of such denominations of weight so that they may be removed and attached to a portion of the seed which may be sold from the original package. It should be remembered that every package of seed of one pound or more when sold for seeding purposes must have attached to it sufficient state labels properly filled out to cover the total weight of the package. It should also be remembered that it is just as much a violation of the state law to offer or expose seed for sale for seeding purposes without tagging to full weight as it is to sell the same without tagging.

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* In cooperation with the Seed Laboratory, Bureau of Plant Industry, U. S. D. A.

[1] Deceased April 22, 1932.

RESPONSIBILITIES OF THE PURCHASER

The purchaser should examine the official label carefully before purchasing seed and ascertain whether the seed is of the quality he desires. He should insist that all seed which he purchases be tagged properly with official state labels. Attention should be paid to the date of germination on the seed tag. If the germination test was made more than six months before, in many cases it will be well to insist upon a more recent germination test. Table 7 gives the standing of the distributors as determined by the 1931 inspection. A study of this table will enable you to determine whether or not the seed which they sold met their guarantee. The seed law is designed to offer you protection but it will not give you that protection unless you make use of the opportunity which the law provides for you.

FARMERS' EXEMPTION

A farmer is exempt from the provisions of the seed law when the seed is grown, sold, and delivered by that farmer on his own premises to the purchaser himself. If, however, the seed is advertised for sale by the public press, circular or catalogue, or if the seed is delivered by a common carrier, the farmer is considered as a vendor and must comply with the provisions of the act. Seed taken to community sales for sale must be labeled in accordance with the law.

FREE TESTING OF SEEDS

During the past year 2,628 samples of seed were tested free of charge for farmers and seedsmen. The privilege of having these tests made is one of much value to the farmer and the smaller seed dealers who do not have facilities for testing seeds. Not all of the tests requested can be made promptly during the busy season from January to March. For that reason it is important that you send your samples in as early as possible, preferably from September to December.

Satisfactory tests may be made of the larger field seeds at home, leaving the laboratory facilities of the Experiment Station available for the grasses and clovers which are more difficult to analyze.

DIRECTIONS FOR MAKING YOUR OWN GERMINATION TESTS

The seed to be germinated should be mixed thoroughly and the required number of seeds (100 seeds of grains and 200 of clovers and other small seeds) counted out just as they come.

The plate germinator is satisfactory and very simple to operate. Place the seeds to be germinated between two thicknesses of folded blotting paper or cloth (heavy grade of muslin or canton flannel). This should be moistened and placed between ordinary tin or porcelain plates and kept in a warm room where the range in temperature is from approximately 85 degrees during the day to 65 degrees at night. Select a place for the test not too near a window, stove or register.

The time required for germination tests differs with different kinds of seed. Under favorable conditions grass and clover seeds begin to sprout in three or four days. Continue your tests ten days or two weeks.

Examine your tests every two days, making a record of the number of seeds that have sprouted. Also keep the blotting paper or cloth sufficiently moist. The number of seeds which germinate out of the 100 seeds will give the percentage of germination.

DIRECTIONS FOR TAKING OF SAMPLES

1. The minimum weight of seed forwarded for test should be approximately:
    - (a) Two ounces (cupful) of grass seed of any kind or of white and alsike clover;
    - (b) Five ounces (cupful) of red and crimson clover, alfalfa, millet, flax or seed of like size;
    - (c) One pound (pint) of cereals or seed of like size.
2. They may be drawn:
    - (a) With seed triers;
    - (b) With long stickers;
    - (c) By hand, taking approximately equal parts of the sample from at least three different places in the sack, including the top and opposite sides as near the bottom as practicable.

3. Samples should be drawn from each bag when there are not more than five bags in the lot, from every fifth bag when there are more than five bags, but never from less than five bags. Each sample so drawn is combined into one composite sample.

TOLERANCE

Under the most perfect and approved conditions of testing seeds variations will occur in purity and germination tests. For this reason the Association of Official Seed Analysts has adopted tolerances or allowances for purity and germination tests. Samples of seed with a guarantee within the tolerances are not considered to be seriously misbranded under the provisions of the Indiana Seed Law, but seed dealers will be expected to change the guarantee on the unsold portions to correspond to the analysis found by the Seed Commissioner.

TABLE OF TOLERANCES FOR GERMINATION TESTS

Percentage of Germination	Percentage of Allowable Variation
90 or over	6
80 or over and less than 90	7
70 or over and less than 80	8
60 or over and less than 70	9
50 or over and less than 60	10
40 or over and less than 50	10
30 or over and less than 40	9
20 or over and less than 30	8
10 or over and less than 20	7
0 or over and less than 10	6

TOLERANCE FOR PURITY TEST

In determining the tolerance for purity the sample shall be considered as being made up of two parts: (1) pure seed and (2) everything not pure seed. The tolerance allowed shall be two-tenths of 1 per cent plus 20 per cent of the lesser part. Example: Seed marked 98 per cent pure, the lesser part is 100 minus 98, or 2. Twenty per cent of 2 equals 0.4. Therefore, the tolerance allowed would be 0.2 plus 0.4, or 0.6.

VIOLATION OF THE LAW

It is a violation of the State Seed Law to offer, expose for sale or sell seed without having it tagged to full weight with official labels or to misbrand the seed. During the past year four cases of non-tagging of seed and nine cases of misbranding were called to the attention of prosecuting attorneys. Of the thirteen cases six resulted in convictions while seven of them have not been reported by the prosecuting attorneys to date.

FILLING OUT OFFICIAL LABEL

Purity

The minimum purity means the percentage of pure seed of the kind and variety given on the official label. Statements of purity, as 97 per cent, including 2 per cent crop seeds, or 95 per cent and 2 per cent crop seeds, will not be permitted. In cases where the seed contains two or more kinds of agricultural seed, each present in excess of 5 per cent, the seed should be labeled with the green colored mixture labels, Style C.

The percentage of purity on the large seeds such as soy beans, corn, wheat, vegetable seeds, etc., must be given on the official label the same as on any other seed.

The filling out of the column "per cent of seed" on the mixture labels can be best explained by an example. For instance, if a mixture is composed of 60 per cent Kentucky Blue Grass with a purity of 80 per cent and 40 per cent of Red Top with a purity of 90 per cent, the per cent of Blue Grass should be given as 48 per cent, obtained by taking 80 per cent of 60. The Red Top should be given as 36 per cent, obtained by taking 90 per cent of 40.

Germination

There still appears to be some misunderstanding as to the method of stating the percentage of germination on the official label. The term minimum germination means the percentage of sprouts obtained in the prescribed time for the test. If the seed contains hard seeds this percentage should be stated after the term "hard seed" on the official label. In no case should the sum of the percentage of sprouts and of hard seeds be given as percentage of minimum germination.

Distributors should not ship seed until the germination test is completed. The statement "In Test" on the official label does not meet the provisions of the seed law. Further, if there is a demand for the seed the dealer may be tempted to sell the seed before he receives a report on the germination, thus placing himself liable to prosecution.

Noxious Weed Seeds

The number per pound of each of the noxious weed seeds present must be listed on the reverse side of the tag irrespective of the number present. The term "trace" is not permissible. The statement of the noxious weed seeds in terms of per cent or in terms of proportion will not be permitted.

Place Where Grown

The official tag must give the name of the state, territory or foreign country where the seed was grown. Terms such as Domestic, U. S. A., Northwestern, and Central States do not meet the requirements of the law, and seed found so labeled will be immediately removed from sale until the tags have been corrected.

CERTIFIED, VERIFIED AND AFFIDAVIT SEED

Certified seed is seed whose purity, germination, and variety is certified to by some state certifying agency or an agency closely associated with some state office or department. The seed is shipped in sealed sacks with a certified seed tag attached. During the growing season the fields are inspected to ascertain trueness to variety of crop, and after the harvest the seed is tested to determine whether it meets the prescribed standards of the certifying agency. In Indiana the Indiana Corn Growers' Association certifies corn, wheat, lespedeza, and soy beans. The other most commonly certified seed found in the state is Grimm Alfalfa.

Verified-Origin seed is seed whose origin is attested to by certain government approved seed dealers. Seed verification service deals with origin only, meaning Place Where Grown, and gives no guarantee as to the variety, purity or viability of the seed. At the present time red clover and alfalfa are the only seeds verified as to origin. Verified seed is tagged with tags bearing the official verification emblem.

Affidavit Grimm is alfalfa seed for which the grower has made affidavit as to its being Grimm Alfalfa. This affidavit seed is not regulated by either State or Federal Government.

BARGAIN SEED

A considerable quantity of unclean, weedy, so-called pasture mixtures of low viability has been shipped into the state by certain mail order seedhouses. By means of extensive advertising in leading farm papers many unsuspecting buyers have been influenced in purchasing these dangerous and, in many cases, worthless lots of seed. These mixtures appear to consist of screenings, tailings, and low grade seed mixed together in order to disguise their real quality. The low price attracts the buyers who forget that good seed is not sold below the prevailing market price and that good seed is the cheapest in the end. Most of these cheap seeds lead to poor stands and infestation of the soil with many troublesome weeds.

SUMMARY OF 1932 INSPECTION

Most of the official samples examined during 1932 met their guarantee very closely. However, examination of Table 4 shows clearly that the quality of much of the seed could be improved by more thorough cleaning.

With the exception of a few the seedsmen are showing an increased interest in a desire to cooperate with the department in the enforcement of the seed law. Table 1 shows that there has been a marked improvement in the correct labeling of seeds in the last three years. In 1925, 36.4 per cent of the samples were seriously misbranded, while in 1932 only 17 per cent were seriously misbranded. Tables 5 and 6 show the percentage of official samples of red clover, alfalfa, sweet clover, alsike clover and timothy having various noxious weed seeds. Compared with 1923 and 1931 there is an increase in the percentage of samples of red clover containing dodder. A lower percentage of the alfalfa samples contained dodder than in 1931 and in 1923.

TABLE 1.—PROGRESS IN SEED INSPECTION

YEAR	Number of Samples Examined	Number Seriously Misbranded	Percent Seriously Misbranded
1925	745	271	36.4
1928	969	289	29.6
1929	1,230	403	32.7
1930	1,044	184	17.6
1931	1,122	201	17.9
1932	926	157	17.0

TABLE 2.—AVERAGE ANALYSIS OF SAMPLES IN 1922 SEED INSPECTION

	Number of Samples	Purity per cent	Inert Matter per cent	Germ. per cent	Hard Seeds per cent	Number Weed Seeds per Pound	No. Noxious Weed Seeds per Pound
Alfalfa	33	99.19	0.33	81.42	10.44	1,228	128
Blue Grass	20	66.35	28.51	58.50	....	33,001	2,566
Alsike Clover	70	94.27	1.05	78.97	12.94	4,757	2,214
Red Clover	195	98.05	0.54	88.00	6.72	7,358	1,722
Sweet Clover	27	96.40	2.63	66.91	11.87	2,370	387
White Clover	7	95.28	0.62	79.30	14.68	15,650	10,843
Cowpeas	17	97.86	1.88	70.94	....	38	3
Millet	12	98.03	1.55	75.54	....	2,211	15
Oats	47	97.62	1.52	85.97	....	213	51
Orchard Grass	13	82.36	15.83	74.33	....	32,308	28,847
Rape	11	99.59	0.31	83.23	....	263	16
Red Top	19	83.69	12.56	81.37	....	75,163	3,810
Soy Beans	12	97.55	2.24	84.04	2.20	37	1
Sudan Grass	8	95.21	2.38	72.50	....	974	....
Timothy	85	98.90	0.55	86.72	....	2,792	1,278
Mixtures	11	76.79	11.97	57.55	11.19	81,833	26,825
Garden Seed	35	98.08	....	71 65	....	....	....
Miscellaneous	13	96.08	2.46	65.15	3.20	3,368	845

TABLE 3.—AVERAGE ANALYSIS OF SAMPLES IN 1931 SEED INSPECTION

	Number of Samples	Purity per cent	Inert Matter per cent	Germ. per cent	Hard Seeds per cent	Number Weed Seeds per Pound	Number Noxious Weed Seeds per Pound	Range in Number Noxious Weed Seeds per Pound
Alfalfa	97	99.14	0.33	78.14	14.45	715	44	0– 2,430
Blue Grass	27	80.98	18.19	70.98	....	1,573	922	0– 8,550
Alsike Clover	111	97.30	0.64	87.32	8.16	3,328	1,372	0–22,500
Japan Clover	23	95.19	2.16	82.17	5.04	13,103	401	0– 2,250
Red Clover	277	99.00	0.33	88.73	6.83	2,004	937	0–33,210
Sweet Clover	180	99.37	0.26	77.92	7.89	815	35	0– 486
White Clover	3	97.28	0.34	86.08	5.75	3,537	2,337	36– 4,725
Corn	25	99.73	0.22	85 92	....	....	....	....
Cowpeas	3	99.23	0.74	87.33	....	....	....	....
Millet	6	99.28	0.51	91.92	....	1,046	15	0– 90
Oats	8	97.23	2.01	93.62	....	127	75	0– 198
Orchard Grass	8	82.52	16.27	83.75	....	6,676	2,711	0–11,925
Rape	4	99.90	0.08	84.25	....	56	....	....
Red Top	42	90.24	8.49	90.63	....	45,469	2,771	0–19,350
Soybeans	49	97.81	2.08	87.89	0.37	16	....	....
Sudan Grass	4	98.36	1.51	84.13	....	131	....	....
Timothy	170	99.21	0.31	97.06	....	1,610	501	0–11,475
Mixtures	44	89.98	6.63	75.84	12.62	14,027	3,472	0–18,450
Garden Seed	32	99.94	0.51	88.28	....	15	5	0– 45
Miscellaneous	9	97.20	1.97	81.78	5.11	1,243	43	0– 120

TABLE 4.—AVERAGE ANALYSIS OF SAMPLES IN 1932 SEED INSPECTION

	Number of Samples	Purity per cent	Inert Matter per cent	Germ. per cent	Hard Seeds per cent	Number Weed Seeds per Pound	Number Noxious Weed Seeds per Pound	Range in Number Noxious Weed Seeds per Pound
Alfalfa	130	99.52	0.21	80.33	12.22	563	9	0– 90
Blue Grass	48	82.93	16.57	74.61	....	6,887	858	0– 4,500
Alsike Clover	70	97.42	0.63	81.47	13.46	2,729	1,746	0–33,975
Japan Clover	53	97.19	1.37	79.88	7.05	6,158	399	0– 4,680
Red Clover	214	98.01	0.52	87.21	6.90	2,927	1,129	0–20,610
Sweet Clover	140	99.46	0,29	79.68	5,35	613	38	0– 396
White Clover	7	96.29	0.84	71.89	16.46	11,821	2,308	0– 6,300
Cowpeas	4	98.97	0.97	88.75	....	42	....	....
Orchard Grass	7	81.87	16.28	79.71	....	7,542	5,120	0–15,525
Rape	3	99.63	0.20	82.67	....	420	300	0– 900
Red Top	48	91.49	5.48	87.95	....	116,209	859	0–10,800
Soybeans	27	98.78	0.98	86.67	0.11	39	....	0– 4
Timothy	123	99.53	0.32	92.27	....	988	426	0–12,006
Mixtures	38	82.49	12.98	77.93	15.48	28,897	2,769	0–10,800
Miscellaneous	14	97.08	2.48	77.11	....	2,919	7	0– 45

TABLE 5.—PERCENTAGE OF SAMPLES SHOWING THE PRESENCE OF EACH OF THE NOXIOUS WEED SEEDS

NOXIOUS WEED SEEDS	Red Clover			Alfalfa			Sweet Clover		
	1923 per cent	1931 per cent*	1932 per cent	1923 per cent	1931 per cent*	1932 per cent	1923 per cent	1931 per cent*	1932 per cent
Bracted plantain	17.98	13.75	14.49	1.58	1.03	1.54	0.00	1.11	1.43
Buckhorn	68.70	53.43	65.89	11.11	3.09	5.38	15.78	2.77	8.57
Canada thistle	2.51	0.75	2.34	0.00	1.03	0.00	13.15	12.77	5.00
Chicory	1.79	1.44	1.87	1.58	0.00	0.00	0.00	0.00	0.00
Common plantain	71.22	41.51	40.19	0.00	6.18	0.00	2.63	3.33	4.29
Corn cockle	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Curled dock	49.28	74.37	57.48	30.15	23.74	17.69	13,15	21.11	11.43
Dodder	18.70	25.27	34.58	47.61	19.59	17.69	0.00	0.55	0.00
Horse nettle	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mustard	3.23	3.24	3.27	0.00	4.12	0.77	18.40	49.44	53.57
Oxeye daisy	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Prickly lettuce	5.75	1.44	4.21	1.58	2.06	0.00	0.00	0.00	0.00
Quack grass	0.00	0.68	0.00	0.00	1.03	0.00	0.00	5.00	0.71
Red sorrel	15.82	28.88	29.44	7.93	1.03	1.54	0.00	3.33	2.14
White top	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Wild carrot	18.34	12.27	14.48	0.00	0.00	1.54	2.63	0.00	0.71
Wild garlic or onion	0.00	0.00	0.47	0.00	0.00	0.00	0.00	0.00	0.00
Yellow trefoil	5.75	12.27	25.70	4.76	2.06	2.31	7.89	2.22	2.14

*Erroneously reported in Circular No. 186, 1931.

TABLE 6.—PERCENTAGE OF SAMPLES SHOWING THE PRESENCE OF EACH OF THE NOXIOUS WEED SEEDS

NOXIOUS WEED SEEDS	Alsike Clover			Timothy		
	1923 per cent	1931 per cent*	1932 per cent	1923 per cent	1931 per cent*	1932 per cent
Bracted plantain	2 46	0.90	5.71	1.29	9.41	13.01
Buckhorn	13 58	18.91	37.14	11.03	45.88	38 21
Canada thistle	3 70	5.40	4.29	0.64	0.58	1.63
Chicory	0 00	0 00	0.00	0 00	0.00	0 00
Common plantain	22.22	33.33	27.14	43.50	86.45	41 46
Corn cockle	0.00	0.00	0.00	0.00	0 00	0 00
Curled dock	59.25	40.54	54.29	22.00	22.35	25.20
Dodder	0.00	0.90	0 00	0 00	0.00	0 00
Horse nettle	0.00	0.00	0.00	0.00	0.00	0.00
Mustard	0.00	6.30	4.29	0 00	1.17	0.81
Oxeye daisy	1.23	0.90	4.29	1.94	2 94	6.50
Prickly lettuce	0.00	0.00	1.43	0.00	0.58	4.07
Quack grass	0.00	0.00	0.00	0.00	0.58	0.00
Red sorrel	34.56	51.35	54.29	28.57	45.88	44.72
White top	0.00	0 00	0.00	0.00	0.00	0.00
Wild carrot	0 00	1.81	5.71	0.64	2 35	2 44
Wild garlic or onion	0.00	0.00	0.00	0.00	0.00	0.00
Yellow trefoil	19.75	61.26	55.72	0.00	0.00	1.63

*Erroneously reported in Circular No. 186, 1931.

TABLE 7.—SUMMARY OF SEED INSPECTION, JULY 1, 1931 TO JUNE 30, 1932

NAME AND ADDRESS OF CERTIFIER	Number of Samples Examined	Number of Samples Passed	Number Technically Misbranded	Number Seriously Misbranded	Number Unlabeled
Ackerman Co., The, Lima, Ohio	1	1			
Alexander, Alvey, Fountain City, Ind	2				2
American Seed Co., Detroit, Mich	1			1	
Armstrong-Landon Co., Kokomo, Ind	7	5		2	
Ayres Seed Co., Cambridge City, Ind	10		4	4	2
Barrett, Henry P., Henderson, Ky	2	2			
Bash Seed Store, Indianapolis, Ind	1			1	1
Bash Seed Co., S. D., Indianapolis, Ind	4	2		1	1
Berne Equity Exchange, Berne, Ind	4		1	3	
Berry Seed Co., Clarinda, Ia	2			2	2
Bolles Hardware Co., Brownstown, Ind	1		1		
Bollinger, George, Henryville, Ind	1	1			
Boone Grove Grain Co., Boone Grove, Ind	1			1	
Branch Grain & Seed Co., Martinsville, Ind	1	1			
Brown Seed Co., Alfred J., Grand Rapids, Mich	2			2	
Brown Twp. Farm Bureau, Browns Valley, Ind	1				1
Burk Elevator Co., Decatur, Ind	2			2	
Busenbark Grain Co., Crawfordsville, Ind	3		2	1	
Byers Seed Co., Franklin, Ind	2	1	1		
Central Grohoma Seed Co., West Frankfort, Ill	1	1			
Chambers Seed Co., Louisville, Ky	22	12	6	4	2
Chance Bros., Connersville, Ind	1	1			
Chavis Seed Co., Fowler, Ind	1		1		
Cloverdale Hardware & Lumber Co., Cloverdale, Ind	3	1		2	1
Cochran, William, R. R. 1, Rising Sun, Ind	1				1
Condon Bros., Rockford, Ill	1		1		
Consolidated Seed Co., Chicago, Ill	1		1		
Cornelli Seed Co., St. Louis, Mo	4				4
Crabbs Reynolds Taylor Co., Crawfordsville, Ind	42	29	7	6	
Crabbs Reynolds Taylor Co., Lafayette, Ind	3	1	2		
Crawfordsville Seed Co., Crawfordsville, Ind	27	26	1		
Culver & Sons, T. E., Morganfield, Ky	2			2	
Davis, Inc., Geo. A., Chicago, Ill	1			1	
Dickinson Co., The Albert, Chicago, Ill	49	43	4	1	5
Dubois Co. Farm Bureau, Huntingburg, Ind	1		1		
Early & Daniels Co., Cincinnati, Ohio	1	1			1
Eikenberry Bros. Co., Hamilton, Ohio	1	1			
Everitt Seed Store, Indianapolis, Ind	1	1			
Fagan Seed Store, Indianapolis, Ind	1	1			

TABLE 7—Continued

Name and Address of Certifier	Number of Samples Examined	Number of Samples Passed	Number Technically Misbranded	Number Seriously Misbranded	Number Unlabeled
Farmers Coop. Co., Centerville, Ind	2	1	1	......	......
Farmers Coop. Elevator Co., Clay City, Ind	2	1	1	......	1
Farmers Equity Exchange, Van Buren, Ind	3	......	3	......	1
Farmers Grain Co., Liberty Center, Ind	1	......	1	......	......
Fayette Co. Farm Bureau, Connersville, Ind	1	......	1	......	......
Fortville Grain Co., Fortville, Ind	3	......	1	2	......
Foster-Kendall Co., Carmel, Ind	32	26	4	2	......
Furry, V. H., Greenfield, Ind	1	1	......	......	......
Galveston Farmers Elevator Co., Galveston, Ind	1	1	......	......	......
Gelzleichter & Son, J., Huntington, Ind	3	3	......	......	......
Geneva Milling & Grain Co., Geneva, Ind	2	1	......	1	......
Gienger & Co., John, Jeffersonville, Ind	2	1	1	......	......
Goldblatt Bros., Inc., Hammond, Ind	4	2	......	1	1
Goodrich Bros. Co., Eaton, Ind	2	......	......	2	......
Goodrich Bros. Co., Gadsden, Ind	2	......	1	1	2
Goodrich Bros. Co., Rosston, Ind	3	2	......	1	......
Goodrich Bros. Co., Westfield, Ind	4	1	1	2	......
Goodrich Bros. Co., Winchester, Ind	25	16	9	......	......
Goodrich Bros. Hay & Grain Co., Winchester, Ind	2	2	......	......	......
Gotto-Mathias Co., Michigan City, Ind	6	4	2	......	......
Graft, C. V., Winchester, Ind	1	1	......	......	......
Grant Co. Farm Bureau Coop. Ass'n, Marion, Ind	2	1	1	......	......
Haldeman-Baum Co., Akron, Ind	4	2	1	1	......
Hall Seed Co., Louisville, Ky	1	......	1	......	......
Hanna, Frank, Swayzee, Ind	1	......	1	......	......
Hardin & Lewman, Louisville, Ky	12	2	5	5	......
Hartman & Dotterer, Bluffton, Ind	7	3	2	2	......
Hazelrigg, J. S., Cambridge City, Ind	3	......	1	2	......
Heldt Co., The, Evansville, Ind	20	7	8	4	1
Heldt & Voelker Co., Evansville, Ind	1	......	1	......	1
Hibbert, Spencer, Bartlett Co., Chicago, Ill	1	......	......	......	1
Hillisburg Grain Co., Hillisburg, Ind	1	......	......	......	1
Hirsch & Sons, Henry, Toledo, Ohio	4	4	......	......	......
Hoosier Grain & Supply Co., Bluffton, Ind	3	1	2	......	......
Hooton-Davis Seed Co., Lebanon, Ind	30	29	1	......	......
Huber, James, Bowling Green, Ind	1	......	......	......	1
Hunger, C. G., Madison, Ind	1	1	......	......	......
Indiana Farm Bureau Coop. Ass'n, Inc., Indianapolis, Ind.	45	29	14	2	1
Indiana Seed Co., Indianapolis, Ind	26	18	5	3	......
James Seed Co., Jeffersonville, Ind	4	2	......	2	......
Jansen-Overman Co., Indianapolis, Ind	2	......	......	2	......
Johnson, Inc., J. Oliver, Chicago, Ill	3	......	......	2	1
Kiefer Feed & Supply Co., Elwood, Ind	1	......	......	1	......
King & Sons, Inc., H. C., Battle Creek, Mich	7	5	2	......	......
Koschnick & Co., Indianapolis, Ind	2	1	1	......	......
Kozubik, John, North Judson, Ind	1	......	......	......	1
Kraus, Sam, Ft. Wayne, Ind	3	......	2	1	......
Kraus & Apfelbaum, Argos, Ind	2	1	1	......	......
Kraus & Apfelbaum, Ft. Wayne, Ind	23	7	4	12	2
K. and A. Seed Co., Inc., Ft. Wayne, Ind	13	7	3	3	1
Lafayette Coop. Elevator Co., Lafayette, Ind	3	3	......	......	......
Lawrence Co. Farm Bureau, Bedford, Ind	5	4	1	......	4
Louisville Seed Co., Louisville, Ky	9	7	1	1	......
McCarty Seed Co., J. A., Evansville, Ind	9	7	1	1	......
McCarty, Jesse R., Ft. Branch, Ind	2	2	......	......	......
McCullough Seed Co., J. Chas., Cincinnati, Ohio	33	24	2	7	......
McMahan Seed Co., Valparaiso, Ind	6	......	4	2	......
McVey & Goodrich Bros. Co., Jolietville, Ind	3	2	1	......	......
Mahan Co., The, Winchester, Ky	1	......	1	......	......
Mangelsdorf & Bro., Ed. F., St. Louis, Mo	1	1	......	......	......
Manthey's Seed Store, Cincinnati, Ohio	3	1	2	......	......
Market Gardener Seed Co., Cincinnati, Ohio	34	7	11	16	2
Martinsville Milling Co., Martinsville, Ind	3	......	......	......	3
Masters, Chas. L., Brookville, Ind	1	......	......	1	......
Mayer Grain Co., South Whitley, Ind	7	6	1	......	......
Mazur Seed Co., Indianapolis, Ind	1	......	......	1	......
Meek, Jethro, Greensburg, Ind	1	......	......	......	1
Miller Grain Co., Bainbridge, Ind	2	1	1	......	......
Miller Grain Co., Roachdale, Ind	1	1	......	......	......
Morganfield Hardware Co., Morganfield, Ky	1	1	......	......	......
Morris Grain & Seed Co., Morris, Ill	3	......	2	1	......
Mount Jackson Feed & Seed Store, Indianapolis, Ind	1	......	1	......	1
Myers, W. C. and Ted, Plainville, Ind	1	1	......	......	......
Nading Grain Co., Greensburg, Ind	1	......	1	......	......

TABLE 7—Continued

Name and Address of Certifier	Number of Samples Examined	Number of Samples Passed	Number Technically Misbranded	Number Seriously Misbranded	Number Unlabeled
North American Seed Co., Milwaukee, Wis.	3	1	2	....	....
Ohio Valley Seed Co., Evansville, Ind.	12	10	1	1	....
Ostberg Seed Co., Chicago, Ill.	2	....	....	1	1
Owen Co. Farm Bureau, Spencer, Ind.	2	....	....	....	2
Penman Bros., Brazil, Ind.	1	1	....	....	....
Pentecost & Craft, Terre Haute, Ind.	1	1	....	....	....
Posey Seed & Feed Co., Mount Vernon, Ind.	4	1	....	1	2
Powell Grain Co., Losantville, Ind.	1	....	....	....	1
Pritchard & Rafert, Pendleton, Ind.	1	1	....	....	....
Purcell Seed Co., Evansville, Ind.	21	15	5	1	....
Quinlan Seed Store, Terre Haute, Ind.	8	5	1	1	1
Raber Coop. Co., Columbia City, Ind.	1	....	1	....	....
Richard Bros., Morganfield, Ky.	1	....	....	1	....
Rogers & Link, Westville, Ind.	1	....	1	....	....
Roller, W. M., Greens Fork, Ind.	1	....	1	....	....
Roper & Brown, Hobart, Ind.	1	1	....	....	....
Ross Seed Co., Louisville, Ky.	19	11	6	2	....
Salina Seed Co., Salina, Kan.	1	....	....	1	....
Schettler, Jacob W., Stewartville, Ind.	1	....	1	....	....
Schultheis, A. M., Haubstadt, Ind.	1	1	....	....	....
Schultz, J. M., Dieterich, Ill.	7	3	2	2	....
Scott & Sons Co., O. M., Marysville, Ohio	5	2	3	....	....
Scott Seed Co., New Albany, Ind.	48	32	8	8	....
Seberger Seed Co., Crown Point, Ind.	1	1	....	....	....
Sedgwick Alfalfa Mills, The, Sedgwick, Kan.	2	1	1	.....	1
Sellars Grain Co., Russiaville, Ind.	2	....	2	....	....
Shanklin Hardware Co., Frankfort, Ind.	1	1	....	....	....
Sholes & Co., H. A., Chicago, Ill.	1	1	....	....	1
Shultz Seed Co., Olney, Ill.	2	....	2	....	....
Sourbeer, Harry, R. R. 2, Cambridge City, Ind.	1	....	....	....	1
Sowash, E. K., Crown Point, Ind.	3	2	1	....	....
Spain, W. W., Rockport, Ind.	1	....	....	....	1
Spurgin, Archie B., Columbus, Ind.	1	....	....	1	....
Stowers, Ross, Kirklin, Ind.	3	....	....	1	2
Sunfield Seed Service, Chicago, Ill.	18	7	7	4	....
Sunshine Feed Store, Fort Wayne, Ind.	1	....	1	....	....
Syler & Syler, Plymouth, Ind.	2	1	....	1	....
Teweles Seed Co., L., Milwaukee, Wis.	22	16	4	2	2
Tipton Milling Co., Tipton, Ind.	1	....	1	....	....
Troyer Seed Co., Goshen, Ind.	5	2	2	1	....
Truitt & Richards, Morganfield, Ky.	1	....	....	1	....
Turley Feed Store, Ross, Orleans, Ind.	1	1	....	....	1
Urmston Elevator, Inc., Camden, Ind.	1	1	....	....	1
Vaughn Seed Store, Chicago, Ill.	1	....	....	....	1
Viant Co., Z. D., South Bend, Ind.	1	....	....	....	1
Victoria Mill & Elevator Co., Jasper, Ind.	1	....	....	1	....
Warren Seed Co., Indianapolis, Ind.	3	....	2	1	....
Watts & Son, John R., Louisville, Ky.	1	1	....	....	....
Weer Hardware Co., F. W., Anderson, Ind.	1	1	....	....	....
Weist & Co., Peter, Brookville, Ind.	1	1	....	....	....
Wertheimer & Sons, N., Ligonier, Ind.	11	6	3	2	....
Western Seed Marketing Co., Salt Lake City, Utah	2	....	1	1	....
Whelan Feed & Seed Co., Richmond, Ind.	1	1	....	....	....
Whitney-Eckstein Seed Co., Buffalo, New York	2	2	....	....	....
Wilson, John, Roachdale, Ind.	1	....	....	1	....
Wirth, Vic, Oakland City, Ind.	1	....	....	....	1
Wolf Seed Co., Fort Wayne, Ind.	9	6	3	....	....
Woodruff & Sons, F. H., Milford, Conn.	1	1	....	....	....
Woods & Pritsch, Sheridan, Ind.	1	1	....	....	....
Wright, Paul, R. R. 4, Spencer, Ind.	1	....	....	....	1
Wyatt Seed & Feed Store, Petersburg, Ind.	4	1	2	1	....

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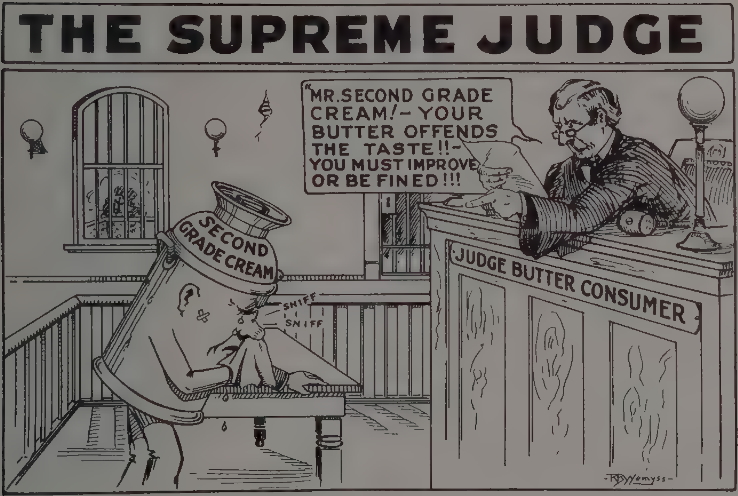
Circular No. 193 March, 1932

CREAM GRADING ON THE FOUR DAY DELIVERY PLAN IN INDIANA


THE SUPREME JUDGE
"MR. SECOND GRADE CREAM! – YOUR BUTTER OFFENDS THE TASTE!! – YOU MUST IMPROVE OR BE FINED!!!
SECOND GRADE CREAM
SNIFF
SNIFF
JUDGE BUTTER CONSUMER

The age of cream is the foremost factor causing second grade cream and poor quality butter. Marketing cream from the farm on the basis of the Four Day Delivery Plan will improve the quality and make possible the manufacture of butter of a quality satisfactory to the consumer demand.

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CREAM GRADING ON THE FOUR DAY DELIVERY PLAN IN INDIANA

V. C. MANHART
Dairy Department

Grading cream on the Four Day Delivery Plan has effected an improvement in the marketing of cream for buttermaking of great consequence to the butter industry of southern Indiana. Introduced in its present form during the spring of 1927, the plan has since operated continuously and with splendid results. Prior to four day grading, it was the common practice of cream producers to sell their cream but once a week although many accumulated their product for a period of ten days or more before marketing it. Less than 20% of the cream was marketed at intervals of four days or less. The introduction of four day grading immediately produced a radical change as evidenced by the results of the first month of grading when 53.9% of the cream was marketed at intervals of four days or less. This percentage has gradually increased to the point where 75.6% was so marketed in the corresponding period of the year, 1932. The benefit to the industry of this change in cream marketing practice is certainly not over-estimated by the most enthusiastic advocate of four day grading.

The Four Day Plan has exerted a stabilizing influence upon the butter industry in southern Indiana that has benefited all agencies connected with the industry. Cream producers who produce a quality product are rewarded with a premium. Over a third of a million dollars has been paid in premiums to farmers of eighteen Indiana counties during the past five years as a result of four day grading. The Four Day Plan has established a uniform system of buying cream on a grade basis with a tangible standard, the four day limit, that cannot be misconstrued by the buyer nor misunderstood by the producer. The quality of cream is improved, thereby making possible the manufacture of a good grade of butter that satisfies the general requirements of the present day consumer demand, and enables the creamerymen to pay the producer a higher price for butterfat. Thus the benefits of four day grading are distributed among all agencies interested in the butter industry; particularly the cream producer, butter manufacturer, and the cream buyer.

The responsibility of cream quality improvement rests upon the aforementioned agencies among which there must be whole-hearted cooperation if a quality program is to be satisfactorily completed. In order that the Four Day Delivery Plan function properly and produce the maximum benefits to all, it is necessary that these agencies be familiar with—and abide by—the principles of the plan, its rules and regulations.

FOUR DAY GRADING SOUND IN PRINCIPLE

Cream grading on the Four Day Delivery Plan is sound in principle. The requirement, that premium cream be delivered at intervals not to exceed four days, is based on the results of experiments conducted by the Dairy Department of the Purdue University Agricultural Experiment Station.[1] These experiments showed that the depreciation in the quality of cream, held under ordinary farm conditions, progressed more rapidly after the fourth day of accumulation than at any stage prior to the fourth day.

Subsequent investigations have been conducted in the Indiana grading territory where cream for investigational purposes was secured through the regular channels of procurement employed by the creameries operating in the territory.[2] These experiments consisted of churnings made from two grades of cream purchased by ten cream buying stations located in the Southern Indiana Four Day Grading Territory. The grade of cream was determined by the age, no consideration being given to flavor or odor except that cream containing onion or garlic flavor was rejected for experimental purposes. The two grades were designated as Premium and Regular cream. The Premium grade being cream sold at intervals of four days or less, while the Regular grade was cream sold at intervals of more than four days.

The cream station operators shipped the cream in the usual manner to the creamery for which they purchased the cream. Each of the two grades as purchased by the individual stations was churned separately at the creamery without further grading. The resulting butter was shipped to a Chicago butter firm where it was scored by one of their inspectors and by the Federal Butter Inspector.

The results of these investigations showed an appreciable difference in quality, the butter made from Premium cream scoring about 1¼ points higher than that made from Regular cream. These data show conclusively the justification of a maximum limit of four days in the frequency of delivery of Premium cream by the producer.

GRADES OF CREAM ACCORDING TO FOUR DAY PLAN

There are four grades of cream under the Four Day Plan. These grades are as follows:

Premium cream that which is sold at intervals of not more than four days and is free from undesirable flavors and odors at the time of delivery.

Regular cream that which is sold at intervals of more than four days; and cream sold at intervals of four days or less that contains undesirable flavors and odors, but is not of such quality as to warrant placing it in the onion or rejected grade.

Onion cream that which has an onion or garlic flavor.

Rejected cream that which is rancid, moldy, dirty, oily, or otherwise unwholesome. Cream of this grade will not be accepted or purchased under any condition by creameries.

---

[1] Gregory, H. W., and Manhart, V. C.: Cream cooling experiments. Purdue Univ. Agr. Exp. Sta., 36th Annual Rpt., p. 25 (1923): 37th Annual Rpt., p. 21 (1924).

Manhart, V. C.: Cooling cream on the farm for buttermaking. Purdue Univ. Agr. Exp. Sta., Bul. No. 290 (1925).

[2] Canan, R. D., and Manhart, V. C.: Dairy marketing investigations. Purdue Univ. Agr. Exp. Sta., 42d Annual Rpt., pp. 32-33 (1929).

Manhart, V. C., and Horrall, B. E.: Dairy marketing investigations. Purdue Univ. Agr. Exp. Sta., 43d Annual Rpt., pp. 30-31 (1930).

BASIS OF PAYMENT FOR DIFFERENT GRADES OF CREAM

The quotations of prices on the different grades of cream by individual creameries are applied as follows:

The **premium cream price** quoted by individual creameries to their cream buyers and patrons shall be paid only for the Premium grade of cream as defined by the four day cream grades. Furthermore, each patron to whom the premium price is paid must have a four day record tag properly filled out and attached to his cream container. In case the cream is purchased by a cream station, the operator must detach this tag from the patron's cream container, fill in the final record on it, and send the completed tag with his buying report to the creamery for which the cream is purchased. All buyers of cream must follow this procedure in order to receive full reimbursement from the creamery for their Premium cream purchases.

The **regular cream price** quoted by individual creameries to their cream buyers and patrons shall be paid only for Regular grade cream as defined by the four day cream grades. Creameries allow no exception to this rule for their cream buyers, and the cream buyer will be reimbursed by the creamery for cream purchases of Regular grade only on the basis of the regular cream price as quoted by the creamery.

The **onion cream price** quoted by individual creameries to their cream buyers and patrons shall be paid only for the Onion grade of cream as defined by the four day cream grades. In case a buyer for a creamery should pay more than the onion cream price quoted by the creamery for cream that is found at the creamery to contain an onion or garlic flavor, the creamery will not reimburse the buyer for the excess payment.

No quotation is made for cream that comes under the classification of Rejected cream as defined by the four day cream grades. The creameries will not accept cream of this grade and cream buyers should not purchase such cream at any price since it is unwholesome and not suitable for human consumption.

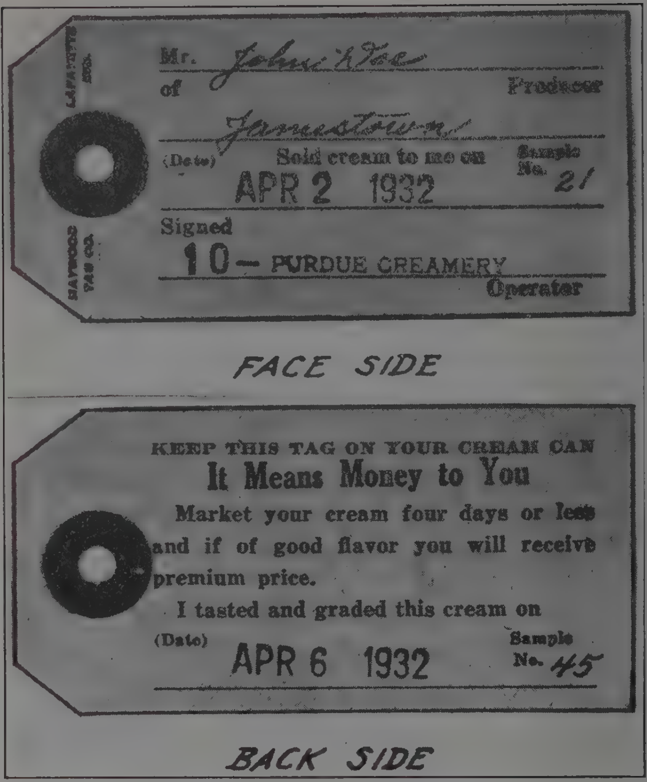
GRADING SUPPLIES REQUIRED FOR BUYING CREAM ON THE FOUR DAY PLAN

All creameries and their cream buyers should be equipped with the standard four day grading supplies used in the territory. Cream buyers are furnished these supplies by the creamery for whom they purchase the cream. The proper use of these supplies will insure efficient handling of the cream at the time of purchase without undue trouble on part of the buyer and will prevent confusion of the grades of cream while in the buyer's hands and when it arrives at the creamery.

Four day supplies required by cream stations. The standard supplies that are essential to proper grading on the Four Day Plan at cream buying stations are as follows:

1. Four day tags, to be attached to the cream container of the producer as a means of ascertaining the date of the last cream delivery made by him. The form of this tag is illustrated by figure 2 which shows both sides of the tag properly filled in.

2. A dater stamp with pad, which is used to stamp the dates on the four day tags.



LAFAYETTE IND.

Mr. John Doe

of Producer

Jamestown

(Date) Sold cream to me on Sample No. 21

APR 2 1932

Signed

10 — PURDUE CREAMERY

Operator

HAYWOOD TAG CO.

FACE SIDE

KEEP THIS TAG ON YOUR CREAM CAN

It Means Money to You

Market your cream four days or less and if of good flavor you will receive premium price.

I tasted and graded this cream on

(Date) Sample No. 45

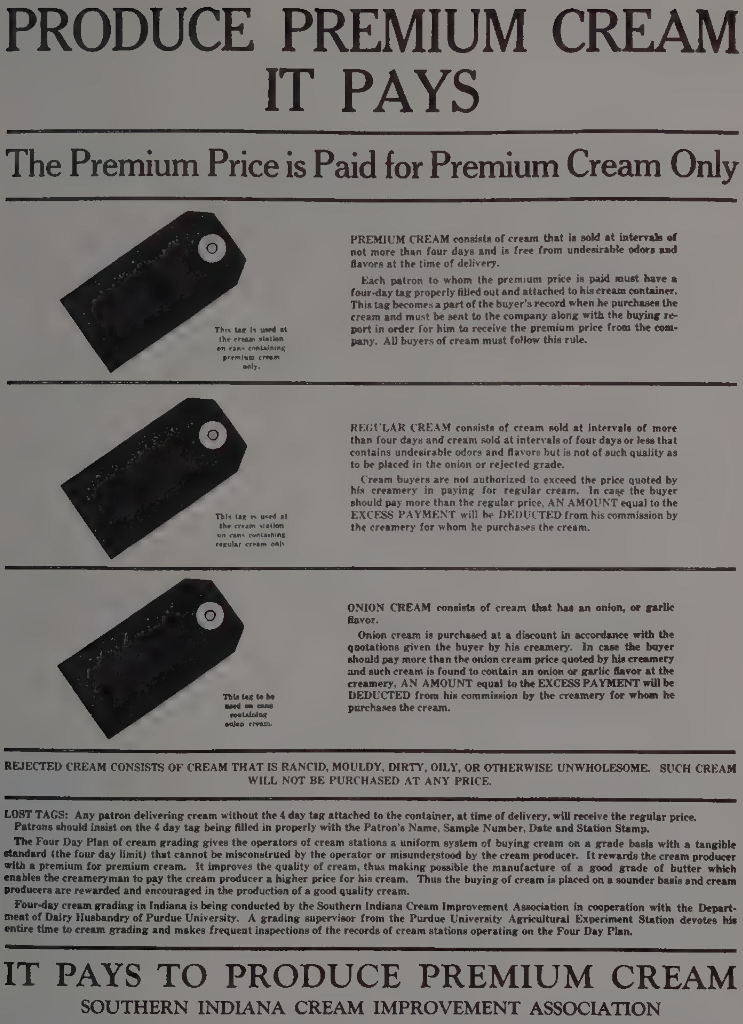
APR 6 1932

BACK SIDE

Fig. 2. The Four Day Tag is attached to the producer's cream container as a means of ascertaining the date of the last sale of cream, thereby making possible the determination of the age of the cream by the purchaser. The illustration shows both sides of the tag properly filled in.

3. A company stamp, used by the cream station operator to facilitate the identification of his purchases when they arrive at the creamery. It contains the number of the cream station and the name of the creamery for which the cream is bought. The cream station number is fixed by the creamery. Each station being given a different number as a means of identifying the buyer of the cream rather than depend upon the station operator's signature which may be illegible.

4. Signal tags, of three different colors, namely: blue, red, and yellow. These tags are used by the cream buyer to identify the different grades of cream. The blue colored tags are attached to the creamery shipping cans containing the premium grade of cream, the red tags are used on cans containing regular grade cream, and the yellow tags are used on cans containing onion cream. The proper tag should be attached by the station operator, to the shipping can as soon as it is put into use at the station, so as to avoid any confusion among different grades of cream.



PRODUCE PREMIUM CREAM IT PAYS

The Premium Price is Paid for Premium Cream Only

This tag is used at the cream station on cans containing premium cream only.

PREMIUM CREAM consists of cream that is sold at intervals of not more than four days and is free from undesirable odors and flavors at the time of delivery.

Each patron to whom the premium price is paid must have a four-day tag properly filled out and attached to his cream container. This tag becomes a part of the buyer's record when he purchases the cream and must be sent to the company along with the buying report in order for him to receive the premium price from the company. All buyers of cream must follow this rule.

This tag is used at the cream station on cans containing regular cream only.

REGULAR CREAM consists of cream sold at intervals of more than four days and cream sold at intervals of four days or less that contains undesirable odors and flavors but is not of such quality as to be placed in the onion or rejected grade.

Cream buyers are not authorized to exceed the price quoted by his creamery in paying for regular cream. In case the buyer should pay more than the regular price, AN AMOUNT equal to the EXCESS PAYMENT will be DEDUCTED from his commission by the creamery for whom he purchases the cream.

This tag to be used on cans containing onion cream.

ONION CREAM consists of cream that has an onion, or garlic flavor.

Onion cream is purchased at a discount in accordance with the quotations given the buyer by his creamery. In case the buyer should pay more than the onion cream price quoted by his creamery and such cream is found to contain an onion or garlic flavor at the creamery, AN AMOUNT equal to the EXCESS PAYMENT will be DEDUCTED from his commission by the creamery for whom he purchases the cream.

REJECTED CREAM CONSISTS OF CREAM THAT IS RANCID, MOULDY, DIRTY, OILY, OR OTHERWISE UNWHOLESOME. SUCH CREAM WILL NOT BE PURCHASED AT ANY PRICE.

LOST TAGS: Any patron delivering cream without the 4 day tag attached to the container, at time of delivery, will receive the regular price. Patrons should insist on the 4 day tag being filled in properly with the Patron's Name, Sample Number, Date and Station Stamp.

The Four Day Plan of cream grading gives the operators of cream stations a uniform system of buying cream on a grade basis with a tangible standard (the four day limit) that cannot be misconstrued by the operator or misunderstood by the cream producer. It rewards the cream producer with a premium for premium cream. It improves the quality of cream, thus making possible the manufacture of a good grade of butter which enables the creameryman to pay the cream producer a higher price for his cream. Thus the buying of cream is placed on a sounder basis and cream producers are rewarded and encouraged in the production of a good quality cream.

Four-day cream grading in Indiana is being conducted by the Southern Indiana Cream Improvement Association in cooperation with the Department of Dairy Husbandry of Purdue University. A grading supervisor from the Purdue University Agricultural Experiment Station devotes his entire time to cream grading and makes frequent inspections of the records of cream stations operating on the Four Day Plan.

IT PAYS TO PRODUCE PREMIUM CREAM

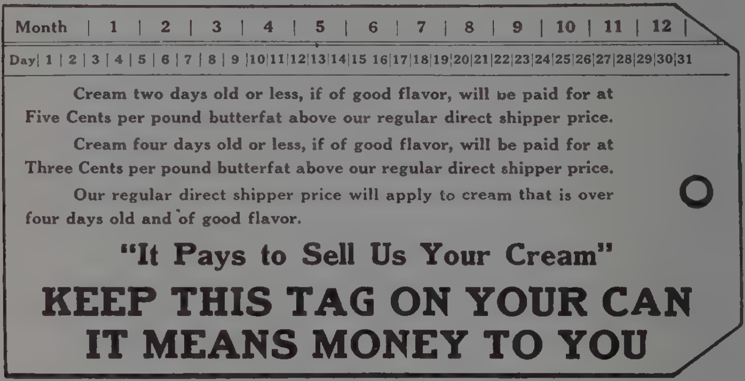
SOUTHERN INDIANA CREAM IMPROVEMENT ASSOCIATION

Fig. 3. A poster explaining the Four Day Delivery Plan of grading cream to the producer should be posted at the buying station. The poster illustrated presents the grading plan to the producer so that there will be no misunderstanding concerning the grading of his cream.

5. The poster entitled, "Produce Premium Cream—It Pays." This poster, illustrated by figure 3, explains the Four Day Delivery Plan of grading cream to the producer. It should be posted on the wall of the cream station in a conspicuous place where the producer may read it. This poster presents the grading plan to the producer so that there will be no misunderstanding concerning the grading of his cream. It largely relieves the station operator of the responsibility for not making concessions by classifying cream as a higher grade than it actually merits.

Direct shipper, local delivery, and route cream. Cream shipped direct to the creamery by the producer, delivered by the producer to the creamery, or gathered by truck routes may be purchased on the Four Day Plan as readily as station cream. The same supplies required at buying stations are needed by the creamery for grading cream procured through these different channels.

A special shipping tag may be used in place of the regular four day tag for cream shipped direct to the creamery by the producer. This tag must provide a means of ascertaining the date of the last sale of cream by the shipper. A form that serves this purpose very satisfactorily is illustrated by figure 4. One side of the tag is printed according to the common form used for direct shipper tags. The other side of the tag provides for a record of the date the cream was purchased by the creamery. The date of the cream purchase is indicated by punching the proper month and date listed at the top of the tag. The tag is then attached to the empty can just prior to shipping it back to the producer. The tag is returned with the can by the producer when he makes his next cream shipment. Thus the creamery purchasing the cream is able to determine the age of the cream.



Month | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |

Day | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31

Cream two days old or less, if of good flavor, will be paid for at Five Cents per pound butterfat above our regular direct shipper price.

Cream four days old or less, if of good flavor, will be paid for at Three Cents per pound butterfat above our regular direct shipper price.

Our regular direct shipper price will apply to cream that is over four days old and of good flavor.

"It Pays to Sell Us Your Cream"

KEEP THIS TAG ON YOUR CAN
IT MEANS MONEY TO YOU

Fig. 4. A special shipping tag that may be used in place of the four day tag when cream is shipped direct to the creamery by the producer. The side of the tag shown in the illustration provides for a record of the date the cream was purchased by the creamery. The other side of the tag is printed according to the common form used for direct shipper tags.

The regular four day tag is accepted by the creamery as proof of the date of the last cream sale by the producer in case he has no direct shipper tag, as may occur when the cream has been marketed through some other channel on the previous occasion.

USE OF THE FOUR DAY TAGS

The success of the Four Day Plan is largely dependent upon the proper use of the four day tag. The use of the tag avoids any misunderstanding between the cream buyer and his patron concerning the interval of delivery. It enables the cream producer to sell his cream to any creamery or cream buyer, operating on the Four Day Plan, and secure the premium price since the date of the previous delivery is recorded on the tag which is attached to his cream container. By means of the four day tag and the cream buyer's record of cream purchases, the creamery and cream grading supervisor can check on the interval of delivery and thus prevent buyers from paying the premium price to producers who are not entitled to it from the standpoint of the frequency of delivery. Thus all cream buyers are placed on the same basis for buying cream and one buyer cannot readily take advantage of another by favoring certain cream producers.

Instructions for filling in four day tags. It is recommended that the dater and creamery stamps, previously described, be used in filling in the four day record tags. These stamps effect a considerable saving of time for the buyer, since they leave only the name and address of the producer and the sample number of his cream test to be filled in by pen or pencil. Errors are also avoided by the use of the stamps, and the date and the identification of the buyer's agency are more likely to be legible than when filled in by pencil.

A four day tag properly filled out on both sides is illustrated by figure 2. The tag is first filled in by the station operator on the face side as shown in figure 2 and then attached to the empty cream container of the producer. The producer must leave the tag, thus filled in, on his container until his next sale of cream. The cream buyer will detach the tag from the container at that time.

Suppose the next sale of cream by this particular producer was on April 6, 1932. The buyer to whom he sells the cream will detach the four day tag from the container and note as illustrated in figure 2 that the producer, "John Doe" of "Jamestown" last sold cream on "April 2, 1932," to station number "10" of the "Purdue Creamery" and that his cream sample number was "21" on the operator's buying report. The present buyer of the cream will then turn the tag over and stamp the date "April 6, 1932," and write the cream sample number "45" on the back side of the tag as illustrated. (This date and sample number must agree with the date and sample number on the operator's buying report which is sent to the creamery.) The record on the tag will then be complete and the buyer can tell from it whether or not the cream has been sold at an interval of four days or less. In this case the interval is four days and John Doe is entitled to the premium price, if his cream is free from undesirable flavors and odors. The buyer must send the completed tag with his daily buying report to the creamery for which he purchases the cream. Thus the creamery has a complete record of the transaction between the cream buyer and the producer. A new tag is filled in on the face side and attached to the producer's cream container by the station operator in place of the old tag that he removes.

Miscellaneous rules concerning four day tags. In further explanation of the use of four day tags the following rules of the Southern Indiana Cream Improvement Association are quoted.

1. A cream patron in order to receive the premium price must have a four day tag properly filled out and attached to his cream container. If the interval since his previous delivery of cream as shown on the tag does not exceed four days and the cream is free from undesirable flavors and odors, the patron is entitled to the premium price.

2. Whenever a patron delivers a container of cream to which there is no four day tag attached, the cream buyer must pay the regular price. When the producer, whose container is without a tag, has delivered cream to the same

buyer within a period of four days the buyer shall notify the creamery of such facts giving dates of both deliveries and if the creamery company finds that according to its records the patron is entitled to the premium, the creamery will instruct the buyer to make adjustment on the amount due.

3. The cream buyer must attach a four day tag to the patron's container for each entry on his buying report or record.

4. At the time the four day tag is attached to the patron's empty cream container, the patron's name, residence, and cream sample number must be placed on the tag by the cream buyer, also the date, the cream station number, and the name of the creamery. When the tag is detached from the patron's cream container at the time of his next sale of cream, the date of the sale and the patron's cream sample must be filled in on the opposite side of the tag by the buyer; and the completed tag must be sent to the creamery along with the operator's buying report.

5. The dates on all cream station daily buying reports must agree with the dates on the checks and on the four day tags, and such dates must be the actual date that the cream is received at the cream station. In case more than one buying day is listed on a single sheet of the buying report the operator must write in the date above the name of the first patron on each buying day.

6. Cream delivered to a cream station after the station has closed for the day must be entered on the buying report for the following day and the four day tags dated accordingly. Thus cream delivered on the fourth day to a cream station that has closed for the day will not appear on the station's buying report until the following day which will make the interval of delivery five days, consequently the premium price cannot be paid for the cream.

USE OF THE COLORED SIGNAL TAGS

The colored signal tags are used for the identification of shipping cans containing the different grades of cream, the blue tag indicating Premium cream, the red tag Regular cream, and the yellow tag Onion cream. These tags are attached by the cream buyer to the shipping cans at the cream station at the time the cream is purchased. Premium cream purchases are then poured from the producer's container into a shipping can bearing a blue signal tag, Regular cream purchases into a shipping can bearing a red signal tag, and Onion cream into a shipping can bearing a yellow tag. The different grades of cream must not be mixed under any circumstances, and the signal tags must be left on the shipping cans when the cream is shipped to the creamery.

Ruling concerning use of colored signal tags. The proper use of signal tags at the cream station lessens the possibility of the operator mixing different grades of cream by mistake, also they demonstrate to the producer that different grades of cream are kept separate. Signal tags are therefore an important adjunct of the Four Day Plan and the following ruling is used to enforce the use of the tags and emphasize their importance.

1. In the case of cream contained in cans which are not designated with the proper signal tags indicating the grade of the cream, or cans without signal tags, deductions will be made from the station operator's wages or buying commission according to one of the two following methods:

Option (a)—An amount equal to the differential between the Premium and Regular cream price will be deducted from the station operator's wages or buying commission for each pound of butterfat contained in cans that are not designated with the proper signal tag of its grade, or are without signal tags.

Option (b)—No buying commission will be allowed the cream buyer on purchases of cream contained in cans which are not designated with the proper signal tags or are without signal tags.

GRADING CREAM IN ACCORDANCE WITH THE QUALITY REQUIREMENTS OF THE FOUR DAY PLAN

In grading cream on the Four Day Plan there are two requirements that must be fulfilled before cream can be rightfully purchased as Premium grade, namely: (1) the cream must be marketed at intervals of four days or less, (2) the cream must be free of undesirable flavors and odors at the time of purchase. Too many cream buyers are prone to neglect this latter requirement and depend entirely upon the age limit in their grading. This practice materially reduces the benefits of Four Day grading since not all cream delivered at intervals of four days or less is of premium quality. Such cream may contain flavors that prohibit its use in the manufacture of a good quality butter. In view of this fact, cream containing pronounced off-flavors must be graded as Regular, Onion, or Rejected according to the nature and degree of the flavor defect even though the cream may have been delivered at intervals of four days or less. The economic loss resulting from mixing an occasional purchase of under-grade cream with purchases of good cream provides sufficient grounds for condemnation of the practice of grading entirely on an age basis. One can of kerosene or onion flavor cream will spoil an entire churning at the factory. Likewise, one small purchase of off-flavor cream mixed with good cream at the buying station will spoil the entire contents of a ten gallon shipping can. For this reason each individual cream purchase must be tasted and graded on the basis of its flavor before it is mixed with other purchases. This precaution will serve as a safeguard against the spoilage of premium quality cream by the addition to it of cream of inferior quality.

The detection of off-flavors can be accomplished only by tasting the cream. True, some individuals have keener senses of taste and smell than others. Consequently, they are more adept at detecting undesirable flavors in cream than others. Nevertheless the average individual can become a satisfactory grader of cream by acquainting himself with the fundamentals of grading and exercising due care.

Cream grades at the butter factory are primarily based upon the quality of butter that can be made from the cream of a particular grade. For example it is recognized that the manufacturer of butter of the best quality, known on the market as Extras, requires the use of sweet cream. Thus the highest grade of cream is generally designated as Sweet cream. The grade of butter next below Extras is Firsts, consequently the grade of cream next below Sweet is First. Likewise we have a Second grade cream corresponding to butter of the quality known as Seconds, and an Under or Third grade corresponding to butter of the quality known as Thirds. Third grade cream is the poorest quality that is acceptable for butter making. Cream that is inferior to Third grade is commonly recognized as being unwholesome and is not used in the manufacture of butter. Such cream is termed Reject.

The cream grades enumerated have definite requirements to be met before cream can be placed in a specified grade. Not all cream that is sweet to taste will grade as Sweet cream. In addition to being sweet it must be fresh, clean to taste, and free of all undesirable flavors. The reason for these qualifications is that if sweet cream is not fresh, clean to taste, and free from undesirable flavors it will not make butter of the quality known as Extras. Thus in grading cream we must know the requirements for each grade and then depend upon the keenness of our senses of taste and smell to determine whether the cream will qualify according to the requirements of a specific grade. These minimum grade requirements are as follows:

Sweet cream. (Extra Premium quality) cream must be sweet, fresh, clean to taste, and free of all undesirable flavors.

First grade cream. (Premium quality) moderately sour cream that is free of objectionable flavors, and clean to taste; or sweet cream that contains traces of such objectionable flavors as cowy, barny, and feed or weed flavors other than onion and garlic.

Second grade cream. (Regular quality) sour cream that is musty, yeasty, stale, bitter, greasy, or a trifle metallic to taste; or contains objectionable flavors such as cowy, barny, feed or weed flavors other than onion and garlic. Sweet cream that is musty, yeasty, stale, bitter, or greasy to taste; or contains any objectionable flavor to a degree that disqualifies it from a higher rating.

Third, or Under grade cream. (Onion quality) cream that is tallowy, cheesy, exceedingly stale, sour, or metallic; and cream that contains garlic, onion, or other off and foreign flavors to a degree that disqualifies it from a higher rating.

Reject cream. Cream that is very old, rancid, moldy, dirty, and cream that is contaminated with gasoline, kerosene, lubricating oil, or is otherwise unwholesome, is not acceptable to creameries for buttermaking; consequently cream buyers will not purchase cream of this nature.

Items other than flavor to be considered in grading cream. The grade requirements for cream given above are based entirely on flavor. Although flavor is by far the most important item affecting the quality of cream, there are other items to be considered in grading cream, namely: body, acid content, butterfat content, and cleanliness.

The body of cream is judged by observing the physical condition. Cream with a good body is smooth, free from lumps, and of uniform consistency. Cream that is mealy, slightly lumpy or curdy is objectionable. When these defects are pronounced, or if the cream is partly churned, the quality of the cream is generally that of Second grade and the cream should be so graded. Cream that is wheyed off, or is otherwise abnormal in body should be rejected since the quality of such cream generally will not warrant its purchase. Body defects such as curdy, lumpy, or partly churned, in addition to affecting the quality of the cream, are also detrimental to the determination of the butterfat content. It is quite difficult, and often impossible, to obtain a correct test on such cream since the abnormal condition prevents accurate sampling of the cream.

The acid content of cream is considered when judging the flavor. Sweet cream contains not more than 0.2 per cent acid. The maximum acidity limit commonly accepted on First grade cream is 0.6 per cent. Cream containing more than 0.6 per cent acid is generally graded Second or Third according to the degree of acidity and the flavors associated with high acid. The acid content of cream is an important factor affecting the desirability of cream for buttermaking. Other than the fact that high acid is generally associated with cream of poor quality as a whole, high acid also complicates the processing of cream for buttermaking, tends to promote the development of flavor defects in butter, and adversely affects the keeping quality of butter.

Richness or fat content of cream is another item that must be considered in the judging of the desirability of cream for buttermaking. Cream testing from 33 to 35 per cent is most desirable for churning under present day conditions. Low testing cream is disfavored since it generally deteriorates in quality more rapidly than high testing cream, also it takes skimmilk away from the farm and increases the cost of transportation per pound butterfat from the farm to the factory. On the other hand when cream is unduly rich in fat, the mechanical loss in handling is increased since more cream adheres to the utensils. Such cream also makes accurate sampling for the fat test difficult, particularly in cold weather when the cream may become so thick that it is impossible to mix it thoroughly by stirring without previously warming the entire contents of the can. Thus the fat test on cream of high fat content is often inaccurate.

Cleanliness in the production and handling of cream is a requirement that should need no explanation. The condition of both the cream and container should indicate unmistakable cleanliness, and cream so lacking in cleanliness, or contaminated with foreign matter, as to be unwholesome is not acceptable by creameries and should not be purchased by cream buyers.

Technic of cream grading. Most cream buying stations and many creameries are not adequately equipped to grade cream in accordance with the standards applicable to the handling of food products. The practice of removing the remnants of cream from the stirrer by drawing the rod through the hand and then tasting the cream by dipping the fingers or hand into the cream is obnoxious and intolerable from the standpoint of sanitation and ordinary decency. Too often the creamery management is to blame for such practices because of failure to provide its graders and buyers with the proper equipment to grade cream.

The first step in grading cream is to stir it thoroughly. It is recommended that the stirring be done with a stirrer having a perforated disc at the lower end so as to facilitate the drainage of the cream from the stirrer back into the can. In addition to the perforated disc the stirrer should have a slide, with handle attached, for the purpose of removing the remnants of cream from the rod of the stirrer. This slide is held by its handle at the top of the stirrer rod while the cream is being stirred. Upon completion of the stirring, the slide is moved down over the rod by means of the hand and thus removing the cream remaining on the rod and permitting it to drain from the perforated disc back into the can. The odor of the cream may be noted at the time the lid is removed from the cream container and again immediately after stirring. The cream sample for the butterfat test may also be taken immediately after stirring and thus make one stirring serve for both the grading and fat test samples.

A glass rod about six inches in length and three-eighths inch in diameter is quite satisfactory for obtaining a small amount of the cream for the purpose of tasting it at the time of grading. Such a rod when dipped into the cream and withdrawn will retain about the right amount of cream for tasting. The rod should be rinsed in hot water after tasting each can of cream and before proceeding to the next can. Rinsing of the rod between samples is a sanitary measure that should be observed; furthermore it is important, from the standpoint of accurate grading, to so rinse the rod since the possibility of carrying objectionable flavors from one can of cream to another is lessened. To simplify the rinsing of the glass rod it is advisable to have two or more rods in a vessel of hot water and use them in rotation, thus providing a clean rod for each can of cream to be graded.

The cream should be held in the mouth, when tasting it, long enough to obtain all flavors that it may possess. Then expectorate the cream after tasting into a dental spittoon or a vessel containing saw-dust or other suitable material. The vessel should be emptied at frequent intervals, at least daily, cleaned and the saw-dust replaced with fresh. A dental spittoon is recommended particularly for the receiving rooms of butter factories because of the large quantity of cream graded daily therein. The spittoon should be portable and equipped with a warm water cup so fitted that clean warm water will circulate through the cup and then pass from the cup to the bowl of the spittoon, flow over its inner surface and out of the bottom to a drain in the floor.

Cream graders who follow the technic recommended and are equipped with the grading apparatus mentioned in the foregoing paragraphs will usually prove more effective in their grading than will be the case when little or no facilities for proper grading are provided. Furthermore, the satisfaction of having placed the grading of cream on a sanitary basis and the consequent effect upon the cream producer will more than repay for the slight cost and extra effort expended.

Ruling concerning quality requirements of cream. Due to the fact that many buyers of cream on the Four Day Plan tend to slight the grading of cream on the basis of the senses of taste and smell, it has been found necessary by some creameries to resort to the following ruling in order to prompt their cream buying agents to give more attention to that phase of cream grading.

1. In the case of cream purchased as Premium at a buying station and grading Second at the butter factory, a deduction will be made from the station operator's wages or buying commission according to one of the two following methods:

Option (a)—An amount equal to the differential between the Premium and Regular cream price will be deducted from the station operator's wages or buying commission for each pound of butterfat purchased as Premium that graded Second at the butter factory.

Option (b)—No buying commission will be allowed a station operator on cream purchased as Premium at the buying station and grading Second at the butter factory.

THE CREAM IMPROVEMENT ASSOCIATION

Prior to introducing the Four Day Plan in a locality an organization of creameries should be formed for the purpose of providing for such administrative, educational, and supervisory services necessary for the successful operation of the plan. An organization of this nature is essential. Without the cooperation of a majority of the creameries operating in the grading territory, and adequate educational work and supervision, there is but little chance for successful operation of the plan.

A cream improvement association formed for the purpose of promoting quality improvement by means of Four Day grading should be a voluntary organization with its membership open to all concerns buying cream in the grading area. The functions of the association should be in accordance with the policies and methods of some public agency concerned with dairying such as the State Agricultural College or the Office of the State Dairy Commissioner. This necessitates close contact with the activities of the association by the public agency. The relations of the public agency to the affairs of the association, however, should be of an advisory nature. A written agreement stating the functions of both the association and the public agency is desirable. The following form of an agreement is used by the Indiana cream improvement associations.

MEMORANDUM OF AGREEMENT
between the
NORTHWESTERN INDIANA CREAM IMPROVEMENT ASSOCIATION
and the
PURDUE UNIVERSITY AGRICULTURAL EXPERIMENT STATION

MEMORANDUM OF AGREEMENT, made this......................day of the month of ...., of the year.............; between the NORTHWESTERN INDIANA CREAM IMPROVEMENT ASSOCIATION with seat of business in the city of ...., in the county of..................................., and the state of Indiana; and the PURDUE UNIVERSITY AGRICULTURAL EXPERIMENT STATION with seat of business in the city of West Lafayette, in the county of Tippecanoe, and the state of Indiana.

The Northwestern Indiana Cream Improvement Association, hereafter termed "The Association" is represented herein as a voluntary organization formed for the expressed purpose of improving the quality of cream marketed in northwestern Indiana, and consisting of the following concerns:

(Names of Members of the Association)

THE ASSOCIATION AGREES:

(1) To furnish a fund of sufficient amount to properly conduct such administrative, educational, and supervisory services necessary for the improvement of the quality of cream produced for buttermaking in the northwestern section of the state of Indiana for a period of one year.

(2) To pay the Purdue University Agricultural Experiment Station...................... dollars from the aforesaid fund for the purpose of paying the salary of a man to be engaged by the Agricultural Experiment Station to conduct cream improvement work in the northwestern section of the state of Indiana, said...............................dollars to be paid as follows: ....dollars on or before the...........day of the month of..........................., of the year..........., and......................... dollars on or before the tenth day of each month thereafter until the total sum of............ ....dollars has been paid the Agricultural Experiment Station.

(3) That the remainder of the fund provided for under item (1) will be in the possession of an agent of The Association and that said agent will use such remainder of the fund to pay all expenses, other than salaries, in connection with the cream improvement work.

(4) That the policies and methods of The Association will be in accordance with the policies and methods of the Purdue University Agricultural Experiment Station and under the supervision of the Department of Dairy Husbandry of the Purdue University Agricultural Experiment Station.

THE PURDUE UNIVERSITY AGRICULTURAL EXPERIMENT STATION AGREES:

(1) To select and employ a man for the purpose of promoting cream improvement in the northwestern section of the state of Indiana for a period of twelve months. The salary of said person shall be..................................dollars per annum, which sum will be furnished as heretofore provided for by The Association.

(2) To supervise the policies and methods of The Association through the Department of Dairy Husbandry of the Purdue University Agricultural Experiment Station as provided for under item (4) of the agreement on the part of The Association.

SIGNED:

Northwestern Indiana Cream Improvement Association,
(Signatures of the individual members of the Association)
Purdue University Agricultural Experiment Station,
....

The signing of the foregoing agreement by a majority of the creameries operating in the proposed grading area and the public agency chosen to assist in the cream quality improvement program is usually the first step in the organization of the cream improvement association. A chairman and secretary-treasurer may then be elected by members of the association and plans be made for the actual introduction of the Four Day Plan.

The fund to be furnished by the association for the purpose of conducting the administrative, educational, and supervisory services in connection with the Four Day Plan is raised by an assessment based upon the butterfat purchases in the proposed grading area. The rate of assessment per pound butterfat is determined by the size of the fund necessary and the volume of butterfat purchased in the grading territory. A fund of about $5,000 per year has been required to conduct the grading work in the southern Indiana grading territory consisting of eighteen counties. Present price levels and salaries however will materially lower this cost. The average rate of assessment for the Southern Indiana Association has been less than one-fourth cent per pound butterfat. The fund so raised is used to provide for the salary of a grading supervisor, pay his traveling expenses, the administrative expenses involved in transacting the business of the association, and conduct educational work relative to cream quality improvement.

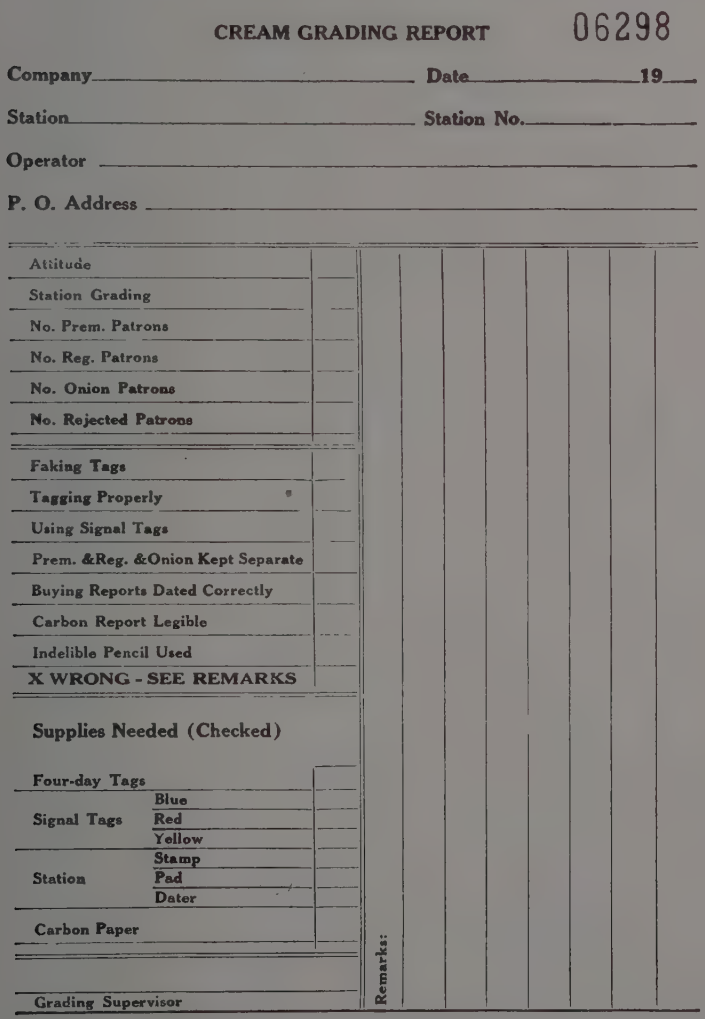
Regular monthly meetings of the association have proven of great value as a means of keeping the grading work operating smoothly. The grading supervisor makes his reports at these meetings. Thus grading difficulties may be disposed of and violations of the grading rules and regulations brought to the attention of the offender. The cooperation of the members of the association and their regular attendance at the association meetings are important factors pertaining to the effectiveness of the grading supervisor's work and successful operation of the Four Day Plan.

THE CREAM GRADING SUPERVISOR

One of the foremost requisites for successful grading of cream on the Four Day Plan is the services of a capable grading supervisor. The work of the supervisor is conducted mostly in the field. His duties are varied. He must be well versed in the dairy industry and should be preferably a four year graduate in dairying from the State Agricultural College. Diplomacy, sincerity, technical knowledge, tact, personality, and taciturnity with respect to the businesses of the members of the association are special traits to be considered in selecting a supervisor. The supervisor should be employed by a public agency cooperating with the association on the cream improvement program, and should work under the joint direction of the public agency and the chairman of the association. Being so employed and directed enables the supervisor to more readily gain the confidence of both creameries and cream producers since his status is that of an unbiased party.

The duties of the supervisor may be grouped into four general classes, namely: (1) to check all sources of cream procurement within the grading territory to see that cream is being purchased strictly in accordance with the rules and regulations of the Four Day Plan, (2) to ascertain if all creameries cooperating in the grading work are checking the purchases of their buyers with respect to Four Day grading and otherwise observing the rules and regulations pertaining to grading, (3) to explain the principles of the grading plan to producers and buyers and keep county agricultural agents and other public agencies in touch with the grading work, and (4) to report the results of his work at regular intervals and keep the public agency, employing him, and the chairman of the association informed as to his activity.

A large part of the supervisor's time should be devoted to inspectional work among cream buyers throughout the grading territory. He should first



CREAM GRADING REPORT 06298

Company__________ **Date**__________**19**__

Station__________ **Station No.**__________

Operator __________

P. O. Address __________

Attitude	
Station Grading	
No. Prem. Patrons	
No. Reg. Patrons	
No. Onion Patrons	
No. Rejected Patrons	
Faking Tags	
Tagging Properly	
Using Signal Tags	
Prem. &Reg. &Onion Kept Separate	
Buying Reports Dated Correctly	
Carbon Report Legible	
Indelible Pencil Used	
X WRONG - SEE REMARKS	

Supplies Needed (Checked)

Four-day Tags		
Signal Tags	Blue	
	Red	
	Yellow	
Station	Stamp	
	Pad	
	Dater	
Carbon Paper		

Grading Supervisor

Remarks:

Fig. 5. Form of report used by the cream grading supervisor in reporting inspections at buying stations and creameries. Copies of the report are given to the creamery for which the cream is purchased, the chairman of the association, and the public agency employing the supervisor.

ascertain that all buyers fully understand the Four Day Plan and how it operates. Subsequent inspections should be made frequently in order to ascertain whether the buyers are operating in accordance with the rules and regulations of the grading plan. Such inspections are facilitated by a report blank which the supervisor is required to fill in at the time of each inspection. Copies of the report are given to the creamery for which the cream is purchased, the chairman of the cream improvement association, and the public agency employing the supervisor. The form of the supervisor's report blank is illustrated by figure 5. These reports keep the association and public agency in close touch with the work of the supervisor and inform them of the conditions throughout the grading territory.

The supervisor should be careful not to exceed the limitations of his duties when cases of irregularities in grading are discovered. His task is to discover such irregularities and report them to the proper persons. The responsibility of correcting the situation rests with the creamery for which the cream is purchased. Should the creamery fail to accept this responsibility, the supervisor should report in detail the facts of the case to the chairman of the cream improvement association and the public agency cooperating with the association in the cream improvement work. Thus the supervisor is not an enforcement agent. However, when grading irregularities on part of a cream buyer are discovered, the supervisor should keep in close contact with both the creamery and the buyer until the situation is settled.

It is well for the supervisor to call at the offices of the creameries at regular intervals to ascertain if the Premium cream purchases of the buyers are being checked. This work is generally assigned to the clerical help of the creamery. Frequently, the regular work of the office leaves little time for the checking of the four day tags sent in by the cream buyers. Under such circumstances the checking may be neglected. The result is that irregularities in the grading of buyers are not discovered until the supervisor makes his inspection. Some buyers may consequently became lax in their grading under such conditions. Cream that is over four days old may be purchased as Premium, and four day tags may be faked by the buyers or other methods employed to evade the grading plan so as to pay the premium price for Regular grade cream. For these reasons, the supervisor should endeavor to have the tags checked systematically at the creamery by some person who can be depended upon to do this work conscientiously. He should also call frequently at the creamery office and discuss the grading work with the person doing the checking so as to stimulate interest in the grading work.

One phase of the supervisor's work that is often neglected, yet of much importance, is that of selling the grading plan to producers, cream buyers, county agricultural agents, and other public agencies. The introduction of the grading plan in a territory without proper educational work preceding and accompanying it will generally lead to criticism, regardless of its merits. Farmers may regard it as a selfish move on the part of creameries at the expense of the producer. Agricultural agents if not acquainted with the principles of the plan and its purpose will be indifferent and not in a position to discuss it with the farmers. Cream buyers, who are chiefly concerned with volume since they usually work on a commission basis, may oppose grading for fear that it will curtail their purchases and give competitors an advantage.

On the other hand, if the producers and agricultural agencies are informed and kept in touch with the cream improvement program the support of the progressive minded producers may be obtained. Although the supervisor may find that other duties make a heavy demand upon his time, he should so plan his work that sufficient opportunity is left for the advancement of the grading work by educational methods. Producers should be interviewed and informed of the necessity for cream grading and the merits of the Four Day Plan. Inspections of buyers' purchases should be made in a manner that will tend to create cooperation between the buyer and the supervisor. Care should be taken that the cream buyer is not given the impression that the supervisor is solely an inspector searching for something that is wrong. The inspector should be sympathetic with the buyer's difficulties and endeavor to aid him in solving his problems. Proper attention to the advancement of the Four Day Plan by educational methods will do much towards establishing the plan on a sound basis and lessen irregularities in the grading of cream.

The supervisor is largely relied upon by the public agency and the association for information relative to the progress of the grading work in the territory. To best supply this information the supervisor should take care that his reports of inspections are made clear and legible. His personal observations of irregularities should be written in the space left on the report blank for remarks. All observations should be substantiated by facts acquired by the supervisor. If such facts are not to be had, yet comment is made upon certain irregularities, the supervisor should qualify his remarks accordingly. Special investigations requested by individual creameries should be given attention at the earliest possible date and the results promptly reported to the creamery requesting the investigation and to the chairman of the association. The supervisor should attend all regular meetings of the cream improvement association and be prepared to make a brief report on conditions prevailing in the grading territory. This report should be prepared in advance. Notes should be made on the conditions to be reported at the meeting with the idea of economizing time, yet not omitting any item that should be reported. Attention to the foregoing points relative to reporting on his work should be of material aid to the supervisor in keeping the association and his employers informed relative to the grading work.

THE CREAMERY'S RESPONSIBILITY

A smooth functioning cream improvement association is fundamental for the successful application of a cream quality improvement program embracing the Four Day Plan of cream grading. An organization of that nature is dependent upon the cooperative efforts of its members and their sincerity relative to quality improvement. The readiness of the individual creameries to support the Four Day Plan and, if necessary, to make sacrifices in its interests, will determine the degree of success attained by the program. Cooperation of this nature will not be attained however, unless the creamery management has sufficient foresight to realize that revolutionary achievements will not follow immediately upon the introduction of the grading program.

There are certain preparatory steps to be taken by the creamery prior to the adoption of the Four Day Plan. These preparatory steps are as follows:

LIBRARY

1. Acquaint all employees, buyers, and producers with the nature of the plan, its application, and the reason for its adoption.

2. Supply all cream buyers with four day tags and other accessories, at least a week or ten days prior to the date set for the plan to go into effect, and instruct the buyers relative to their use.

3. Instruct buyers to commence tagging the producers' cream containers a week or ten days previous to the date set for the plan to become effective.

4. Give definite instructions to cream buyers relative to the date they are to commence buying on the grade basis, and emphasize the fact that such instructions are to be followed without exceptions.

5. Place the responsibility of four-day grading at buying stations on the creamery fieldmen and instruct fieldmen to see that the station buyers observe all rules and regulations of the Four Day Plan.

Attention to the foregoing items by the creamery will do much to insure smooth operation of the grading plan from the start and will prevent confusion among the buyers and producers relative to the grading work.

After the Four Day Plan has been introduced in a territory, the creamery must keep a close check on four-day cream purchases and require that such purchases be strictly in accordance with the plan. This checking may be done effectively and with little disturbance to the customary duties of employees if the following suggestions are observed:

1. Creamery fieldmen should be assigned to do the checking of four day cream purchases at the buying stations as a part of their regular duties.

2. One or more members of the creamery clerical staff should be made responsible for the checking of four day tags (sent in by the buyers) against the buying reports, to see that the price paid for the cream was in agreement with its grade.

3. The cream buyer must be held accountable for cream payments that are not in accordance with the prices quoted by the creamery for the different grades of cream. Corrections for such payments should be made by the creamery immediately after the irregularity is discovered. In cases where payments are made in excess of the quoted price for a particular grade of cream, the amount of the over-payment should be deducted from the buyer's commission or wage.

4. The four day tags collected by the buyers, together with the buying reports, should be preserved by the creamery for at least a week after their receipt in order to permit checking at the creamery by the grading supervisor.

5. The creamery manager, or a representative of the creamery with proper authority, should attend all regular meetings of the cream improvement association.

6. Reports on cream purchases in the four day territory should be sent to the cooperative public agency as requested.

Observance by creameries of the foregoing suggestions will do much towards the establishment of the Four Day Plan on a sound basis. It will tend to build confidence among competitors and make possible closer cooperation with respect to cream quality improvement. Such cooperation is essential to the welfare of the butter industry, and will do much toward stabilizing the cream procurement business thereby benefiting cream producers, butter manufacturers, and cream buyers.

Circular No. 194 June, 1932

EIGHTEENTH ANNUAL REPORT

of the

CREAMERY LICENSE DIVISION

For the Year Ending March 31, 1932

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Purdue University
Agricultural Experiment Station
Lafayette, Indiana

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MILK HANDLED BY LICENSED PLANTS AND TOTAL ESTIMATED MILK PRODUCTION 1920-1931

YEAR	Number of Licensed Plants	Pounds of Milk or its Equivalent Handled by Licensed Plants	*Number of Milk Cows	Total Milk Production
1920	183	1,227,971,123	659,000	3,086,007,190
1921	198	1,350,320,469	653,000	3,035,325,150
1922	234	1,471,978,897	659,000	3,093,440,591
1923	220	1,439,266,503	652,000	3,133,036,289
1924	234	1,698,110,981	659,000	3,200,137,516
1925	243	1,758,946,467	679,000	3,280,146,910
1926	272	1,830,970,397	678,000	3,447,213,947
1927	307	2,132,280,140	680,000	3,669,804,287
1928	334	2,444,867,845	686,000	3,792,498,038
1929	344	2,434,039,990	693,000	3,842,440,026
1930	369	2,552,288,533	702,000	3,924,405,203
1931	372	2,912,519,251	722,000	3,965,671,198
1932	....	....	751,000	....

* Indiana Crops and Livestock, 1932. Department of Agricultural Statistics.

EIGHTEENTH ANNUAL REPORT OF THE CREAMERY LICENSE DIVISION

T. H. Binney

Indiana Dairy Statistics

Indiana continues to be one of the leading states in the manufacture of dairy products. A report of the United States Department of Agriculture, Bureau of Agricultural Economics, for 1930, which is the last report available, shows that this state ranks 11th or above in the manufacture of all dairy products, excepting Dry Skim milk. Indiana's rank among the states for 1930 is as follows:

Product	Rank
Butter	10th
Ice Cream	11th
Condensed and Evaporated Milk	7th
Pressed Cheese	4th
Soft Types of Cheese	8th
Concentrated Skim Milk	4th
Condensed Buttermilk	4th
Dry Buttermilk	11th
Dry Skim Milk	18th

Licensed creameries, milk plants, cheese factories, condenseries, etc., report to the Creamery License Division the amount of butter, milk or other dairy products made or sold during the past calendar year, at the time of making application for their new licenses. With this information, together with figures supplied by the United States Department of Agriculture, Bureau of Agricultural Economics, it is possible to compile reliable statistics concerning the total production of licensed manufacturing plants. The following table is a summary of the reports received from licensed plants for the years indicated:

OUTPUT OF LICENSED PLANTS IN INDIANA FOR 1916, 1920, 1924, 1930 AND 1931

	1916	1920	1924	1930	1931
Pounds of Butter	33,026,796	42,577,180	53,462,104	63,248,581	67,991,081
Pounds of Milk	55,059,940	155,950,136	257,417,090	613,005,756	502,079,739
Pounds of Cream	5,799,663	12,224,488	25,219,252	29,892,859	70,230,197
Gallons of Ice Cream	2,111,701	4,132,318	4,865,465	4,664,131	3,932,034
Pounds of Cheese	82,667	233,806	574,686	11,956,315	14,703,669
Pounds of Sweetened Condensed Milk	1,619,880	6,920,592	8,735,498	2,557,973	1,418,904
Pounds of Evaporated Milk	13,657,248	10,265,791	23,912,054	50,602,364	38,521,763
Pounds of Bulk Evaporated Milk	2,774,880	5,977,716	19,065,245	43,054,573	32,886,766

By comparing the figures for 1931 with those for 1930 in the above table, it will be noted that most of the manufactured products show a decrease. The increase in the amount of butter made is 4,742,500 pounds, or 7.6 per cent. A total of 502,079,739 pounds of milk and 70,230,197 pounds of sweet cream were sold in licensed plants during the past year. This represents a decrease of 18.0 per cent of milk and an increase of 134.9 per cent of cream in 1931 as compared with 1930. The amount of ice cream manufactured during the past year shows a decrease of 732,097 gallons or 15.6 per cent. Cheese production increased 2,747,354 pounds or 22.9 per cent. Sweetened condensed milk decreased 1,139,069 pounds or 44.1 per cent, evaporated milk (case goods) decreased 12,080,601 pounds or 23.8 per cent and bulk evaporated milk decreased 10,167,807 pounds or 23.6 per cent.

In addition to the above products, dairy plants of the state manufactured 14,313,817 pounds of condensed skim milk; 1,651,875 pounds of evaporated skim milk; 9,620,248 pounds of concentrated skim milk (for animal feed); 4,307,068 pounds of condensed or evaporated buttermilk; 4,090,784 pounds of dried or powdered skim milk and 1,986,422 pounds of dried or powdered buttermilk.

An estimate of the total amount of dairy products manufactured in the state may be secured by using the above statistics and estimating the amount of dairy products manufactured and sold in the plants which are not licensed. A large number of ice cream plants and market milk plants buy milk on a gallon or weight basis rather than on a butterfat basis and do not come under the jurisdiction of the Creamery License Division.

AMOUNT OF BUTTER, MILK, ICE CREAM, CONDENSED MILK AND CHEESE

Estimated as Produced in Indiana During 1931

Pounds of Creamery Butter	67,991,081
Pounds of Dairy Butter	10,122,844
Pounds of Milk Consumed	1,583,592,571
Gallons of Ice Cream	8,722,358
Pounds of Condensed and Evaporated Milk	72,827,433
Pounds of Cheese	14,703,669
Pounds of Cottage Cheese	3,716,261

By taking the amount of milk used in the manufacture of each of the various dairy products the total milk production of the state may be calculated. In making this calculation, it has been necessary to estimate the amount of milk and cream consumed direct, the amount of dairy butter made, the amount of milk fed to calves, and the amount of milk lost on farms and in factories.

TOTAL (ESTIMATED) MILK PRODUCTION

Creamery butter used	1,427,812,701	pounds
Dairy butter used	212,579,724	pounds
Milk consumed direct	1,583,592,571	pounds
Ice cream used	119,932,424	pounds
Cheese used	147,036,690	pounds
Condensed milk used	182,068,582	pounds
Milk fed to calves	106,424,200	pounds
Milk shipped out of state	272,627,314	pounds
Losses on farms and in factories	121,562,226	pounds
Total	4,173,636,432	pounds
Milk shipped in	207,965,234	pounds
Total milk production in Indiana	3,965,671,198	pounds

Creamery Licenses

Creamery licenses must be secured by all firms buying and paying for milk or cream on a butterfat basis. Licenses are valid for a period of one year unless revoked for a violation of the Creamery and Testers' License Law or the Rules and Regulations of the Purdue University Agricultural Experiment Station.

During the past year 1,829 creamery licenses were issued. This is a decrease of 64 from the previous year's total of 1,893. Plant licenses show a gain of 3 in number while the number of station licenses show a decrease of sixty-seven.

The following table is a summary of the number and kinds of plants issued creamery licenses during the year ending March 31, 1932, and for previous years as indicated.

CREAMERY LICENSES ISSUED FROM 1925-1931, INCLUSIVE

PLANTS AND STATIONS	NUMBER AND YEAR						
	1925	1926	1927	1928	1929	1930	1931
Butter	51	64	58	56	58	56	58
Milk	78	91	108	129	141	162	147
Ice Cream	14	17	15	11	16	18	16
Cheese	3	3	9	18	17	18	19
Condensed Milk	4	7	8	8	9	8	10
Butter and Milk	31	33	43	39	33	36	46
Butter and Ice Cream	16	12	14	17	13	10	13
Butter and Condensed Milk	1	1	1	0	0	0	0
Butter and Cheese	0	0	0	3	2	1	2
Butter, Milk, and Ice Cream	16	13	16	13	15	20	17
Butter, Milk and Condensed Milk	4	4	4	5	5	7	6
Butter, Milk, Ice Cream and Condensed Milk	6	4	6	7	7	6	6
Butter, Milk, Ice Cream and Cheese	0	0	0	0	0	0	1
Butter, Milk, Cheese and Condensed Milk	0	0	0	0	1	0	0
Milk and Ice Cream	13	19	20	24	18	19	26
Milk and Condensed Milk	4	3	3	2	5	4	5
Milk, Ice Cream and Condensed Milk	2	1	2	2	3	2	0
Milk, Ice Cream and Cheese	0	0	0	0	1	1	0
Total number of Plants	243	272	307	334	344	369	372
Stations	1,618	1,631	1,653	1,614	1,588	1,524	1,457
Total Licensed Issued	1,861	1,903	1,960	1,948	1,932	1,893	1,829

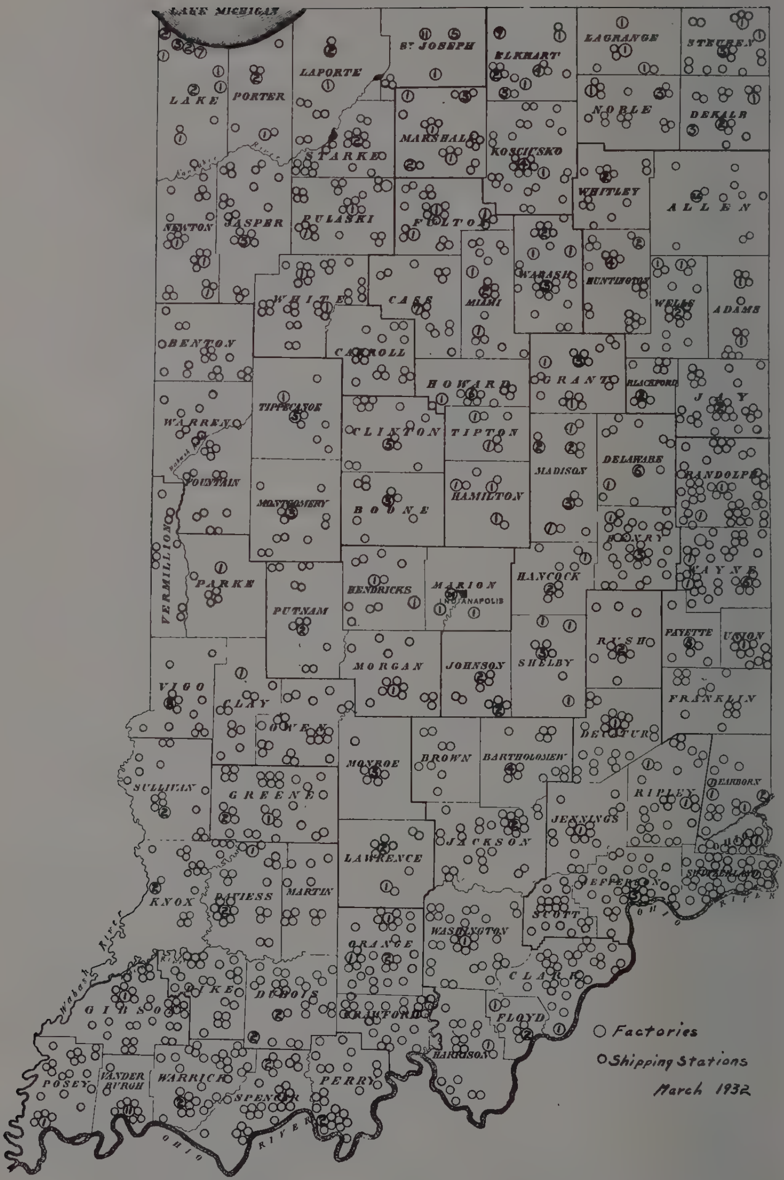
The following table shows the number of plants which reported each of the five major products handled in licensed plants for the years indicated:

PRODUCT	NUMBER OF PLANTS REPORTING						
	1925	1926	1927	1928	1929	1930	1931
Butter	125	131	142	140	134	136	149
Milk	154	168	202	221	229	257	254
Ice Cream	67	66	73	74	73	76	79
Cheese	3	3	9	21	21	20	22
Condensed Milk	21	20	24	24	30	28	31

The accompanying map shows the distribution of plants and stations in the state. The larger circle containing a number is the number of licensed plants operating in each town, while each small circle represents a cream station.

Testers' Licenses and Examinations

In order to secure a license to test a candidate must satisfactorily answer twenty questions on testing in writing, and demonstrate his ability to sample, test and make correct readings of butterfat percentages of both milk and cream. The questions asked a candidate pertain to the testing of milk and cream. All answers are to be found in Circular 41 issued by the Purdue University Agricultural Experiment Station which is sent to the candidate to study before appearing for the examination.


LAKE MICHIGAN
LAKE
PORTER
LAPORTE
ST. JOSEPH
ELKHART
LAGRANGE
STEUBEN
NOBLE
DEKALB
STARKE
MARSHALL
KOSCIUSKO
WHITLEY
ALLEN
NEWTON
JASPER
PULASKI
FULTON
WABASH
HUNTINGTON
WELLS
ADAMS
WHITE
CASS
MIAMI
BENTON
CARROLL
HOWARD
GRANT
BLACKFORD
JAY
WARREN
TIPPECANOE
CLINTON
TIPTON
MADISON
DELAWARE
RANDOLPH
FOUNTAIN
MONTGOMERY
BOONE
HAMILTON
HENRY
WAYNE
VERMILLION
PARKE
HENDRICKS
MARION
INDIANAPOLIS
HANCOCK
PUTNAM
RUSH
FAYETTE
UNION
VIGO
CLAY
MORGAN
JOHNSON
SHELBY
FRANKLIN
OWEN
MONROE
BROWN
BARTHOLOMEW
DECATUR
SULLIVAN
GREENE
RIPLEY
DEARBORN
JENNINGS
JACKSON
LAWRENCE
OHIO
SWITZERLAND
KNOX
DAVIESS
MARTIN
JEFFERSON
SCOTT
WASHINGTON
ORANGE
CLARK
GIBSON
PIKE
DUBOIS
CRAWFORD
FLOYD
HARRISON
POSEY
VANDERBURGH
WARRICK
SPENCER
PERRY
OHIO RIVER
Wabash River
○ Factories
○ Shipping Stations
March 1932

Location of Licensed Plants and Stations for Year Ending March 31, 1932.

Five hundred and one candidates appeared for the testers' examination during the past year. This is the smallest number of candidates to take the examination in any year since 1916. The average grade of all candidates was 83%, which is considerably higher than any previous average. This, in addition to the fact that the percentage of failures was much less than for any previous year, would indicate that candidates are better prepared when they appear for an examination.

Twenty-three hundred and fifteen testers' licenses were issued during the past year; a decrease of 80 from the previous year's total of twenty-three hundred and ninety-five.

The following table shows the number of candidates examined and testers' licenses issued for the year indicated:

NUMBER OF CANDIDATES EXAMINED AND TESTERS' LICENSES ISSUED FOR THE YEARS ENDING MARCH 31, 1920, 1924, 1928, 1931 AND 1932

	1920	1924	1928	1931	1932
Number of Individual Examinations	1,339	850	904	518	501
Number of Failures	226	125	290	79	33
Number of Persons Passing Examination	1,113	725	614	439	468
Number of Testers' Licenses Issued	2,371	2,518	2,661	2,395	2,315

The results of the seventy examinations which were held at the nine examination points in the state are given in the following table:

RESULTS OF TESTERS' EXAMINATIONS 1931-1932

PLACE OF EXAMINATION	Number of Examinations	Number of Candidates	AVERAGE GRADES (PER CENT)		
			All Candidates	Candidates Passed	Candidates Failed
Lafayette	15	144	82.6	84.2	60.6
Muncie	6	65	82.2	83.1	69.5
Fort Wayne	9	95	84.0	84.6	70.0
New Albany	4	22	79.2	83.2	53.7
Evansville	8	51	82.6	83.4	69.7
Terre Haute	8	30	85.1	87.1	67.0
Indianapolis	8	39	83.0	83.9	50.0
North Vernon	6	55	84.5	85.5	74.8
Totals	64	501	83.0	84.3	65.4

Glassware Inspection

All glassware used in Indiana, with the exception of cream pipettes, must conform to the Indiana Standard as described in Sections 7 and 12, Chapter 340, Indiana Statute, Acts of 1913. (See circular 41.) To insure the accuracy of testing glassware, all pieces must be inspected by the glassware inspector of the Purdue University Agricultural Experiment Station before being used in the state. All pieces found to be correct are marked "S.G.P.," (Standard Glassware Purdue); all pieces found to be incorrect are destroyed.

During the past fiscal year 39,297 pieces of Babcock testing glassware were examined by the Glassware Inspector of the Agricultural Experiment Station. In addition 24 nine-gram weights were inspected and all found to be correct. This is 4,357 pieces of glassware more and 180 nine-gram weights less than were inspected last year.

The following table gives the amount of each kind of glassware inspected, and the number of pieces found to be incorrect:

GLASSWARE INSPECTION

KINDS OF GLASSWARE	Total Number of Pieces	Number Incorrect	Per Cent Incorrect
Cream Test bottles	24,948	46	.188
Milk test bottles	12,396	0	.000
Milk Pipettes	1,953	0	.000
Summary	39,297	46	.116

The per cent of incorrect glassware received during the past year was less than for any year since 1918. This is quite an improvement over the glassware received the previous year, which shows that the percentage of incorrect glassware was greater than for any year since 1921.

Licenses Revoked and Prosecutions

Representatives of the Creamery License Division inspect cream and milk stations and all licensed plants to determine the accuracy of testing and records pertaining to the purchase of milk or cream. Whenever a tester is found doing incorrect testing or manipulating records, whether intentionally or unintentionally, he is first warned that the Creamery and Testers' License Law is being violated and a continuation of such practices may result in the revocation of his testers' license. If the operator continues to violate the law, evidence is presented to the State Creamery Examining Board for their consideration. The Board recommends to the Purdue Agricultural Experiment Station what action should be taken.

During the past year nine testers were summoned before the Board and in each instance the Board recommended that their Testers' License be revoked.

Mrs. Mattie D. Trotter, Hope, Bartholomew County, Indiana; tester for Columbus Creamery Company, Columbus, Indiana.

Mr. Marshall G. Harman, Warsaw, Kosciusko County, Indiana; tester for George Freese's Sons, Nappanee, Indiana.

Mrs. Leora A. Gray, Ewing, Jackson County, Indiana; tester for Fairmont Creamery Company, Columbus, Ohio.

Mrs. Evelyn Wooley, Columbus, Bartholomew County, Indiana; tester for Farmers Marketing Company, Columbus, Indiana.

Mrs. Genevieve Brooks, Scottsburg, Scott County, Indiana; tester for an Independent Station operated by Tyra Brooks.

Mrs. Fern Reeve, Connersville, Fayette County, Indiana; tester for The Wadley Company, Indianapolis, Indiana.

Mrs. Mary A. Nichols, Freedom, Owen County, Indiana; tester for Johnson Creamery Company, Bloomington, Indiana.

Mrs. Ida Moore, Liberty, Union County, Indiana; tester for Sherman White and Company, Fort Wayne, Indiana.

Miss Mary Robinson, Decatur, Adams County, Indiana; tester for White Mountain Dairy Company, New Bremen, Ohio.

Only one prosecution was made during the year. The company prosecuted paid a fine of $25.00 and $12.15 costs.

Licensed Manufacturing Plants in Indiana

1931

E. C. Adams Products Company	Fairmount	Butter, Milk, Ice Cream
Adler Milk Company	Fort Wayne	Milk
Oscar Adler Dairy	Fort Wayne	Milk
Ahles Edgewood Dairy	Evansville	Milk
Alexandria Pure Milk Company	Alexandria	Milk
Alspaugh Ice Cream Company	Newcastle	Ice Cream
American Dairy Company	Evansville	Butter, Milk
Angola Co-operative Dairy Products Co	Angola	Butter, Ice Cream
Anthony Dairy	Fort Wayne	Milk
Armour Creameries	Rochester	Butter
Associated Dairies Company	Fort Wayne	Milk
Auburn Dairy	Auburn	Milk
Babybrand Dairy Company	Fort Wayne	Milk
Chas. C. Baker	Muncie	Butter
Ballard Ice Cream Company	Danville	Milk
Ballard Ice Cream Company	Indianapolis	Milk, Ice Cream
Banner Farms Dairy	Indianapolis	Milk
Banquet Ice Cream and Milk Company	Indianapolis	Milk, Ice Cream
Barnett Bros. Sunlight Creamery	Logansport	Butter, Milk
Bartz Bros. Dairy	Valparaiso	Milk
Bass Lake Cheese Company	Knox, R. R. 1	Cheese
Beatrice Creamery Company	Muncie	Butter, Ice Cream
Beauty Brand Dairy	Fort Wayne	Milk
Beaver Ridge Dairy Company	South Bend	Milk
Bedford Dairy Company	Bedford	Milk, Ice Cream
Belcher-Hinkle Dairy	Bloomington	Milk
Bettenbrock Dairy	Terre Haute	Milk, Butter
Betty Lou Farms	Kokomo	Milk
Blosser Dairy	Nappanee	Butter, Milk
Blue Bell Creamery	Mishawaka	Butter
Blue Bell Milk & Ice Cream Company	Vincennes	Milk, Ice Cream
Blue Ribbon Dairy	Gary	Milk
Blue Valley Creamery Company	Indianapolis	Butter
Boonville Pure Milk Company	Boonville	Butter, Milk, Ice Cream
Bordens Farm Prod. Co. of Illinois	Akron	Milk
Bordens Farm Prod. Co. of Illinois	Crown Point	Milk
Bordens Farm Prod. Co. of Illinois	Lowell	Milk
Bosstick Pure Milk and Ice Cream Co.	Sullivan	Milk, Ice Cream
Bowman Dairy Company	Francesville	Milk
Bowman Dairy Company	Kouts	Milk
Breyer Ice Cream Company	Kendallville	Condensed
Browder Ice Cream Company	Indianapolis	Milk, Ice Cream
Bunker Hill Creamery Company	Bunker Hill	Butter
Calvert's Dairy	Edinburg	Milk
Cambridge Ice and Dairy Company	Cambridge City	Milk

Capitol Dairies, Inc.	Indianapolis	Milk
Carey and Sons	Indianapolis	Milk
Center Lake Dairy	Angola	Milk
Central Dairy	Ossian	Milk
Chamberlin Ice Cream Company	Lafayette	Milk, Ice Cream
Chapman and Son	Frankfort	Milk
Cicero Country Butter Company	Cicero	Butter
City Dairy Company	Connersville	Milk, Butter
City Dairy Company	Kendallville	Milk
City Dairy Company	South Bend	Milk, Butter
Clover Farms	Fishers	Milk
Cloverleaf Creameries, Inc.	Decatur	Butter, Ice Cream
Cloverleaf Creameries, Inc.	Huntingotn	Butter, Ice Cream
Cloverleaf Dairy	Culver	Milk, Butter
Cloverleaf Dairy	Elkhart	Milk
Cloverleaf Dairy	Gary	Milk, Butter
Collier Bros.	Martinsville	Butter, Milk, Ice Cream
Columbus Creamery Company	Columbus	Butter, Ice Cream
Columbia Dairy	Columbia City	Milk
Compton Dairy	Edinburg	Milk
Cook Bros. Dairy	Elkhart	Milk
County Line Cheese Factory	Auburn	Cheese
Covalt Dairy Company	Muncie, R. R.	Milk
Crescent Creamery	Fort Wayne	Milk
Crescent Dairy Company	Kokomo	Milk, Butter
Crystal Dairy	Warsaw	Milk
Daisy Dairy Prod. Company	Gary	Milk
Dale Creamery Association	Dale	Butter
Daum Dairies	Connersville	Milk, Ice Cream, Condensed
Walter M. Denehie	Terre Haute	Milk
O. V. Dimmit Dairy	West Middletown	Milk
Dixie Dairy	Gary	Milk
Douglas-Skidmore Milk Company	Frankfort	Milk
East Chicago Dairy Company	East Chicago	Milk
East Hammond Dairy Company	Hammond	Milk
East Side Jersey Dairy	Anderson	Milk, Butter
Economy Creamery Company	Economy	Butter
Eel River Creamery Company	North Manchester	Butter
Elkhart Dairy	Elkhart	Milk
Ellsworth Ice Cream Company	Huntingburg	Milk, Butter, Ice Cream
Elmore's Creamery	Elwood	Milk, Ice Cream
Elwood Creamery Company	Elwood	Ice Cream
Eskay Dairy	Fort Wayne	Milk, Butter
Excelsior Dairy	Wabash	Milk
Fairview Dairy Company	Anderson	Milk
Farm Bureau Creamery	Portland	Butter
Farmers Dairy	Carlos	Butter

Farmers Marketing Association	Columbus	Butter
Farmers Produce Association	Crawfordsville	Butter
Fertig Dairy	Franklin	Ice Cream
Fertile Acres Dairy	Lakeville	Milk
Paul B. Forgey	Logansport	Milk
Fort Wayne Milk Producers Corp	Fort Wayne	Milk
Fort Wayne Milk Producers Corp	Garrett	Milk and Condensed
Franklin Pure Milk Company	Franklin	Milk, Butter, Ice Cream
Fraziers Dairy	Frankfort	Milk
Geo. Freese's Sons	Nappanee	Butter, Ice Cream
French Lick Hotel Company	French Lick	Butter
R. W. Furnas Ice Cream Company	Fort Wayne	Ice Cream
R. W. Furnas Ice Cream Company	Indianapolis	Milk, Ice Cream
R. W. Furnas Ice Cream Company	Morristown	Condensed
R. W. Furnas Ice Cream Company	South Bend	Ice Cream
F. H. George and Company	Fort Wyane	Butter
Frederick Glass	Madison	Milk, Ice Cream
Glen Echo Dairy Company	Evansville	Milk
Glen Park Dairy Company	Gary	Milk
Gnau Bros. Dairy	Tell City	Milk
Gold Medal Dairy Company	Evansville	Milk
Golden Guernsey Dairy	Frankfort	Milk
Golden Rule Creamery Company	Monticello	Milk, Butter
Gordon Baking Company	Lagrange	Condensed
Goshen Milk Condensing Company	Goshen	Butter, Milk, Condensed
E. S. Grady Milk Depot	Elkhart	Milk
Graham Farms	Elnora	Cheese
Graham Farms	Washington	Cheese, Butter
Greek Candy Kitchen	Jasper	Ice Cream
Greencastle Sanitary Dairy	Greencastle	Milk
Greendale Ice Cream Company	Lawrenceburg	Ice Cream
Greenfield Creamery Company	Greenfield	Milk
Green and Son	Shelbyville	Milk
Greensburg Creamery Company	Greensburg	Milk
Grocers Dairy Products Company	Kokomo	Milk, Butter, Ice Cream, Condensed
Guernsey Milk and Ice Cream Company	Lebanon	Milk, Ice Cream
Hagerstown Dairy	Hagerstown	Milk
Hall Dairy	Bloomington	Milk
H. V. Hamilton	Terre Haute	Milk
Handy's Dairy	Greencastle	Milk, Butter
Harrison Hill Dairy	Fort Wayne	Milk
Hartley's Dairy	Portland	Milk
Haxson Dairy Company	Gary	Milk
Haxton Pure Milk Company	Hobart	Milk
Haynes Dairy	Garrett	Milk
Hedges Dairy Prod. Inc.	Terre Haute	Milk, Butter
Highland Creamery Company	Terre Haute	Butter

Hill's Dairy	Winchester, R.R. 4	Milk
Himes Bros. Dairy	Richmond	Milk
Holland Creamery Association	Holland	Butter
Holland Custard and Ice Cream Co.	Holland	Ice Cream
Fred Holle and Sons	Fort Wayne	Milk
Home Creamery Company	Morocco	Butter
Homestead Farm Creamery Company	Milan	Butter
Hoosier Condensed Milk Company	Bluffton	Condensed
Hoosier Dairy Products Company	Noblesville	Ice Cream
Hoosier Dairy Products Company	Rushville	Milk, Ice Cream
Hoosier State Creamery	Rensselaer	Butter
Hoovens Dairy	Goshen	Milk
Hornaday Milk Company	Indianapolis	Milk, Butter
R. B. Hough Dairy	Richmond	Milk
Huff's Creamery	Bremen	Butter
Hunding Dairy Company	Wellsboro	Milk
Huntington Pure Milk Company	Huntington	Milk, Butter
Hy-Grade Dairy Products Company	Crawfordsville	Milk, Butter, Ice Cream
Ideal Pure Milk Company	Evansville	Milk, Butter, Ice Cream, Condensed
Indiana Condensed Milk Company	Lebanon	Condensed
Indiana Condensed Milk Company	Sheridan	Condensed
Indiana Dairy Company	South Bend	Milk, Butter
Indiana Dairy Marketing Ass'n	Muncie	Milk, Butter, Condensed
Indiana Ice and Dairy Company	Anderson	Milk, Butter, Condensed
Indiana Produce Company	Huntingburg	Butter
International Dairy Company	Deep River	Milk
Jacobi Dairy	Greenville	Milk, Butter
Jasper County Creamery	Rensselaer	Butter
Jersey Creamery Company	Newcastle	Milk, Butter, Ice Cream
Jersey Maid Dairy Company	Hammond	Milk
Jessup and Antrim Ice Cream Company	Indianapolis	Ice Cream, Condensed
Jessup Milk Company	Plainfield	Milk
Johnson Butter Company	Terre Haute	Butter, Milk, Ice Cream
Johnson Creamery Company	Bedford	Milk
Johnson Creamery Company	Bloomington	Milk, Butter, Ice Cream
Kimmel Farms, Inc.	Kendallville	Milk
A. W. King's Dairy	Richmond	Milk
King's Sanitary Dairy	Terre Haute	Milk, Butter
Kline's Dairy	Logansport	Milk
Knispel Dairy	Fort Wayne	Milk
Koch Dairy Company	Evansville	Milk, Butter, Ice Cream

Kosanke Bros.	Argos	Butter
Kraft-Phenix Cheese Corporation	Bloomfield	Cheese
Kraft-Phenix Cheese Corporation	Dale	Cheese
Kraft Cheese Company	Marshall	Cheese
Kraft Cheese Company	Paoli	Cheese
Kraft Cheese Company	Salem	Cheese
Kraft Cheese Company	Sharpsville	Cheese
Kraft Cheese Company	Shirley	Cheese
Kraft Cheese Company	Sullivan	Cheese
Kraft Cheese Company	Summitville	Cheese
Kraft Cheese Company	Sweetsers	Cheese
Kroger Grocery and Baking Company	Indianapolis	Milk
Kyle Creamery Association	Aurora, R.R.	Butter
Lafayette Ice Cream Company	Lafayette	Milk, Ice Cream
Lake Shore Dairy	Indiana Harbor	Milk
Lake View Dairy	Gary	Milk
Lanesville Creamery Company	Lanesville	Butter
Lemont Dairy	Brook	Milk
Lenicks Dairy	LaPorte	Milk, Ice Cream
Leonard Creamery Company	Paoli	Ice Cream
Liberty Creamery Company	Liberty	Milk, Butter
Lima Creamery Company	Howe	Butter
Linton Ice & Cold Storage Company	Linton	Ice Cream
Linton Milk Company	Linton	Milk
Longfield Creamery	Wakarusa	Butter
Mack and Company	Monon	Ice Cream
Madison Creamery Company	Madison	Butter
Maplehurst Farms	Indianapolis	Milk
Marion Pure Milk Company	Marion	Milk
Marley Dairy	Monterey	Milk
A. R. Mathews Dairy	Logansport	Milk
Mathews Dairy	South Bend	Milk
Maywood Milk Company	Maywood	Milk
Med-O-Bloom Dairy	Kokomo	Milk
Meadow Brook Farms	Hicksville, O.	Butter
Elmer Mennen	Lafayette	Milk
Middlebury Co-operative Creamery	Middlebury	Butter
Miller Bros. Dairy	Goshen	Milk
Fred Miller Bakery and Ice Cream Co.	Evansville	Ice Cream
J. M. Miller	Culver	Milk, Butter
Miller Yarling Dairy	Shelbyville	Milk
Mishawaka Farmers Dairy Co.	Mishawaka	Milk
Model Creamery	Indianapolis	Milk
Model Ice Cream Company	Terre Haute	Butter, Milk, Ice Cream
Modern Dairy	Mexico	Milk
Morfis Dairy	Indiana Harbor	Milk
Mt. Vernon Creamery Company	Mt. Vernon	Butter, Milk, Ice Cream
Muncie Pure Milk Company	Muncie	Milk
Murfield Creamery	Mishawaka	Butter

Mutual Milk Company	Indianapolis	Milk
Nance's Creamery	Brazil	Butter, Milk, Ice Cream
Napoleon Creamery	Napoleon	Butter
Nappanee Dairy	Nappanee	Milk
National Dairy	Whiting	Milk
New Paris Creamery	New Paris	Butter, Milk
North Judson Cheese Company	North Judson	Cheese
North Side Sanitary Dairy Company	Mishawaka	Milk
Northwestern Milk Company	Indianapolis	Milk
Orchard Hill Creamery	Mitchell	Milk
Orleans Creamery Company	Orleans	Butter, Ice Cream
Orchard Knoll Farm Creamery	Moores Hill	Butter
Osterhaus Dairy	Fort Wayne	Milk
Page Milk Company	Shelbyville	Milk, Butter, Condensed
Pango Milk Chocolate Company	Warsaw	Condensed
Parlor City Creamery	Bluffton	Butter
V. C. Pelton	Fremont	Butter
Pendleton Creamery	Pendleton	Milk, Butter, Ice Cream
People's Dairy	Fort Wayne	Milk
Phend Dairy Company	Goshen	Milk
Marco Plasterer	Huntington	Milk
Pleasant Hill Dairy Company	Fort Wayne	Milk
Polk Sanitary Milk Company, No. 1	Indianapolis	Milk
Polk Sanitary Milk Company, No. 2	Indianapolis	Butter
Prairie View Dairy	East Chicago	Milk
Prange-Flaugh Dairy	Fort Wayne	Milk
Producers Creamery	Hartford City	Cheese
Producers Creamery	Kewanna	Butter
Producers Creamery	Marion	Butter, Milk, Condensed
Producers Dairy Company	South Bend	Milk
Producers Dairy Market Ass'n	Orleans	Butter, Ice Cream
Producers Dairy Prod. Company	Crawfordsville	Milk
Purdue University Creamery	Lafayette	Milk, Butter, Ice Cream
Pure Cream Products Company	Tell City	Butter, Ice Cream
Purity Dairy	North Manchester	Milk
Purity Dairy Company	Huntington	Milk
Purity Dairy Products Company	Evansville	Milk, Ice Cream
Purity Maid Products Company	New Albany	Butter, Milk, Ice Cream
Purity Milk Company	Columbus	Milk
Quality Dairy Company	Boonville	Milk, Butter, Ice Cream
Quality Dairy	Warsaw	Milk
Ray and Arnold	Logansport	Butter, Milk
Reid's Creamery	Vincennes	Milk

Reliable Dairy Company	South Bend	Milk, Butter
Rensselaer Creamery and Prod. Co.	Rensselaer	Butter
Rea Riggin and Sons	Muncie, R.R.	Milk, Butter
Richmilk Dairy	Fort Wayne	Milk
Rising Sun Creamery	Rising Sun	Butter
W. F. Ritzman	Lawrenceburg	Butter, Ice Cream
Riverside Dairy	Columbia City	Milk
Riverside Dairy Company	Mishawaka	Milk
Roanoke Creamery Company	Roanoke	Butter
W. H. Roberts and Sons	Indianapolis	Milk
Rock Bottom Dairy Farm	Flat Rock	Butter
Rush Creamery Company	Rushville	Butter
Samples Dairy	Connersville	Milk
Sanitary Dairy	Crown Point	Milk
Sanitary Milk and Ice Cream Company	Peru	Milk, Butter, Ice Cream, Condensed
Sausaman Dairy Company	Peru	Milk
Schaper's Dairy	Fort Wayne	Milk
Schlosser Bros.	Bremen	Milk
Schlosser Bros.	Frankfort	Butter
Schlosser Bros.	Fort Wayne	Butter, Ice Cream
Schlosser Bros.	Indianapolis	Butter
Schlosser Bros.	Plymouth	Butter, Ice Cream
Schlosser Bros.	South Bend	Milk
Frank Schnaitter's Dairy	Madison	Ice Cream
Scholl Dairy Company	LaPorte, R.R.	Milk, Ice Cream
Schoppman Dairy	Fort Wayne	Milk
Shannon Dairy	Jeffersonville	Milk, Butter
Sherman White and Company	Fort Wayne	Butter
Sherman White and Company	Goodland	Butter
Shideler's Dairy	Roanoke	Milk
Shiveley Bros.	Greenfield	Milk
Shortle Dairy Farms	Kokomo	Milk
Snyder Dairy	Seymour	Milk
South Bend Pure Milk Company	South Bend	Milk
Spring Brook Dairy	Bremen	Milk
Standard Dairy	Evansville	Milk
Sugar Creek Creamery Company	Evansville	Butter
Sugar Creek Creamery Company	Indianapolis	Butter
Summers & Son	Elwood	Milk
Sunrise Dairies	Laketon	Butter
Sunshine Dairy	Fort Wayne	Milk
Sunshine Farms	Lafayette	Milk, Butter, Condensed
Superior Dairy	Garrett	Milk
Superior Milk and Ice Cream Co.	Lafayette	Milk, Ice Cream
Swift & Company	Alexandria	Cheese
Swift & Company	Evansville	Butter
Swift & Company	Logansport	Butter
Swift & Company	Marion	Butter
Swift & Company	Wabash	Cheese

Tansy Milk Company	Indianapolis	Milk
Teegarden Milk Association	Teegarden	Milk
Terre Haute Pure Milk and Ice Cream Co.	Terre Haute	Milk, Ice Cream
Thomas Dairy	Elkhart	Milk
Thompson Dairy Company	North Vernon	Milk
Thompson Dairy Company	Seymour	Milk, Ice Cream
Thompson Sanitary Dairy	Richmond	Milk
Tipton Ice Cream Company	Tipton	Ice Cream, Milk
Tip Top Creamery Company	Princeton	Milk, Ice Cream
Tip Top Creamery Company	Vincennes	Butter, Milk, Ice Cream, Condensed
Tip Top Creamery Company	Washington	Milk, Ice Cream
Tonne Dairy	Fort Wayne	Milk
Toto Cheese Company	Knox	Cheese
Turner Creamery Company	Paoli	Milk, Ice Cream
United Milk Products Corporation	Berne	Condensed
United Milk Products Corporation	Butler	Condensed
United Milk Products Corporation	Wolcottville	Condensed
United Milk Products Corporation	Yorktown	Condensed
Valparaiso Home Ice Company	Valparaiso	Milk, Ice Cream Butter
VanCamp Milk Company	Angola	Condensed
Velvet Ice Cream Company	Wabash	Ice Cream
Vernon Farms Dairy	Elkhart	Milk
The Wadley Company	Indianapolis	Butter
Wagner & Sons	Logansport	Milk
Wakarusa Co-operative Creamery	Wakarusa	Butter, Milk
Walnut Street Dairy	Hartford City	Milk
Wambaugh Sanitary Dairy	Elkhart	Milk
Sidney Wanzer and Sons	Servia	Milk
Warsaw Milk Company	Warsaw	Milk
Wayne Dairy Products Company	Richmond	Butter, Milk, Condensed
L. H. Weaver	Indianapolis	Milk
Weber Milk Company	Indianapolis	Milk, Butter
West End Milk Company	Newcastle	Milk
Western Reserve Creamery	Kokomo	Butter
White Eagle Dairy	Indiana Harbor	Milk
White Lily Milk and Ice Cream Co.	Evansville	Milk, Butter, Ice Cream
Whiting Dairy Company	Whiting	Milk, Butter
Williams Dairy	Richmond	Milk
Willida Dairy	South Bend	Milk
Willow Springs Dairy	Ligonier	Milk
Winamac Dairy	Winamac	Milk
Winona Dairy	Winona Lake	Milk
Wittner Dairy	South Bend	Milk
O. J. Wittner Dairy	South Bend	Milk
Wyandotte Dairy	Fort Wayne	Milk
Zanesville Creamery	Zanesville	Butter
Zapp's Dairy	New Albany	Milk, Butter

UNIVERSITY OF ARIZONA LIBRARY

Circular No. 195 March, 1933

COMMERCIAL FEEDING STUFFS

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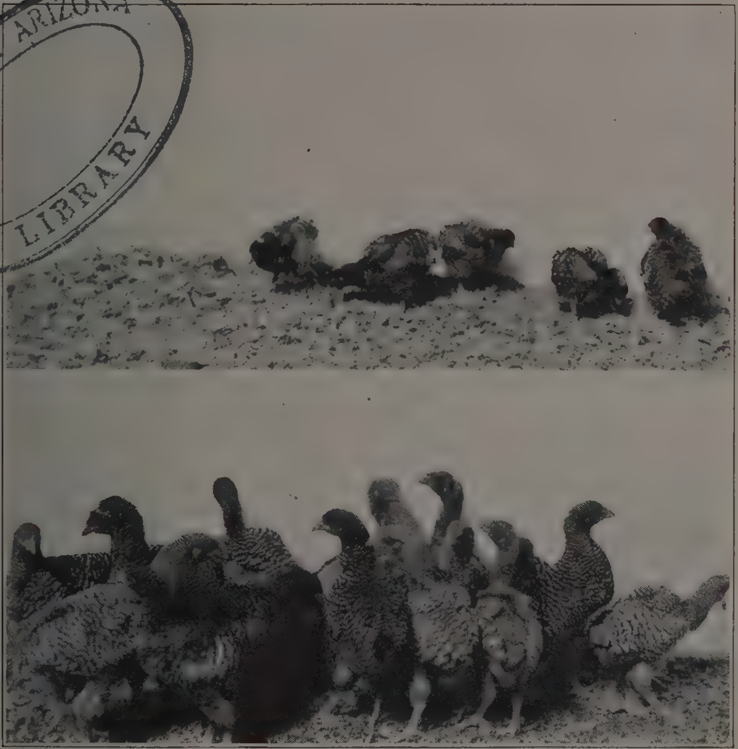

Both groups of chicks were fed alike. Ration of upper group lacked calcium and phosphorus while that of lower group contained an adequate amount of these minerals. However, too large amounts of them may cause "slipped-tendon" (leg deformities). See Table 1 for amount of calcium and phosphorus in feeding stuffs.

Purdue University
Agricultural Experiment Station
Lafayette, Indiana

This circular contains a condensed report of commercial feed inspection in Indiana for the year 1932.

From the sale of tags it is estimated that 244,909 tons of commercial feeding stuffs with a retail value of $6,853,043 were sold in Indiana in 1932. The inspectors of the State Chemist Department secured 2,312 samples, or approximately one sample for each 106 tons of feed sold in this state.

Of the 2,312 samples collected 353 were found to be incorrectly guaranteed and 228 were classed as being seriously deficient or misbranded. Shipments not tagged or seriously deficient were withdrawn from sale and manufacturers relabeled such feeds correctly and made refunds to the agents and consumers.

Amendment of the State Feeding Stuffs Law.

Explanation of terms used in the analysis of feeds.

Table 1—Calcium and phosphorus content of feeding stuffs.

Table 2—Average analyses of the common cereals and by-product feeds.

Definitions of feeding stuffs.

Table 3—Summary of withdrawals from sale.

Table 4—Estimated sales of various classes of feeding stuffs.

Table 5—Summary of the annual tonnage and expenditures for commercial feeding stuffs since 1911.

Table 6—Summary of inspection giving the standing of each feed manufacturer.

COMMERCIAL FEEDING STUFFS

H. R. KRAYBILL, *State Chemist*

O. S. ROBERTS, P. B. CURTIS, C. C. YUND, G. E. HALLIDAY, D. M. DOTY

The Indiana Feeding Stuffs Law passed in 1907 and amended in 1909 and in 1933 requires that all commercial feed sold or offered for sale in Indiana be labeled correctly. The intent of the law is to have the manufacturers state on these labels minimum guarantees for crude protein and crude fat, a maximum guarantee for crude fiber and the specific name of each ingredient used in preparing the feed. Mineral feeds containing no organic ingredient do not require the usual chemical feed guarantee but do require a declaration of each ingredient contained therein and the minimum percentages of lime (CaO), phosphoric acid (P_2O_5), iodine (I) and the maximum percentage of salt ($NaCl$) if same are present. With this information the purchaser is able to make an intelligent and economical purchase. The law does not, however, prohibit the sale of properly tagged inferior feeds unless they are actually injurious to livestock or poultry. Copies of this law may be secured by making application to the State Chemist.

To determine the correctness of the feed manufacturer's guarantees, 2,312 samples of commercial feeding stuffs were collected from manufacturers, dealers and consumers in various parts of the state during the year 1932. One inspection sample was secured from approximately each 106 tons of commercial feed sold in Indiana. All of the 2,312 samples were examined microscopically and 2,108 of them were analyzed chemically for moisture, crude protein, crude fat, crude fiber and ash content. Individual reports of analysis were sent to the manufacturer as soon as completed and to the dealer and consumer ten days later.

The year's inspection shows that 85 per cent of the samples were equal to or better than the guarantee of the manufacturer. This percentage is identical with that found for the year 1931. Of the 353 samples incorrectly guaranteed, 228 of them were classed as being seriously deficient or misbranded and not sold in accordance with the Indiana Feeding Stuffs Law.

Shipments found to be seriously deficient were removed from sale immediately and the manufacturers either replaced the shipments with feed up to guarantee or relabeled them with correct guarantees. Where deficient feed had already been sold, refunds were made to the dealers and consumers. The sum of $536.77 was refunded on 53 shipments by 31 different feed manufacturers.

During the year 1932, upon the advice of the State Chemist, 387.0 tons of feeding stuffs representing 161 shipments were withdrawn from sale on account of non-tagging, deficiency, misbranding and other reasons (Table 3). Of this amount 189.5 tons, representing 121 shipments, were removed because of lack of Indiana state tags.

Amendment of Feeding Stuffs Law

The Indiana Feeding Stuffs Law was amended through passage of House Bill No. 31, which was approved by the Governor March 8, 1933 (Chapter 179, The Acts of 1933) (Emergency).

The law as amended permits the manufacturer or agent desiring to sell any concentrated commercial feeding stuff in packages of five pounds or less to register such feeding stuff in either of two ways, as follows:

First method. The manufacturer or agent may continue to register the feeding stuff as provided in the law previously, paying no registration fee but attaching one Indiana state label to each package of feeding stuff.

Second method. The manufacturer or agent may register the feeding stuff and pay an annual registration fee of $20.00 per brand. When this is done it is not necessary for the manufacturer to attach Indiana state labels to the packages of feed of five pounds or less. In case this method of registration is chosen and Indiana state labels are not attached to the packages of five pounds or less, it is necessary for the manufacturer to print on his label certain information required by the feeding stuffs law as follows: (1) The number of net pounds of concentrated commercial feeding stuff in the package; (2) the name, brand name or trade mark under which the concentrated commercial feeding stuff is sold; (3) the name of the manufacturer; (4) the location of the principal office of the manufacturer; (5) the guaranteed analysis stating the minimum percentages of crude fat and crude protein, the maximum percentage of crude fiber and the ingredients from which the concentrated commercial feeding stuff is compounded.

If the feeding stuff is sold in packages of over five pounds it is necessary for the manufacturer or agent to attach one Indiana state tag or label to each package larger than five pounds.

Estimated Sales of Commercial Feeding Stuffs in 1932

Prevailing conditions make the annual statement of estimated sales of commercial feeding stuffs of more than usual interest. Based on the sale of official tags by the State Chemist, it is estimated that 244,909 tons of commercial feed with a retail value of $6,853,043 were sold in Indiana during the year 1932. Compared with the sales of previous years it may be seen from Table 5 that the tonnage sold and expenditures for same were the lowest since 1913. The reduction is no doubt due to the general economic conditions. Compared to the year 1931, the principal increases in tonnage were for animal by-products and corn gluten products. In practically all of the remaining classes of feed the tonnage dropped to much lower levels. A complete list of the tonnage and expenditures of the various classes of feeding stuffs compared to the immediate years preceding is given in Table 4. Even though the year of 1932 has been a trying one for the feed business, it is satisfying to note that in general the quality of the feeding stuffs has been maintained as compared with previous years. Several shipments of tankage were found to be deficient in crude protein or adulterated with hoof meal and a few samples of bone meal were adulterated with ground limestone. A number of shipments of condensed milk products were also found to be deficient in total solids.

Attention, Manufacturers and Dealers!

Manufacturers or distributors should not neglect to attach proper State Chemist tags to each and every bag of feed shipped into Indiana in order to protect their dealers.

Dealers and consumers should not accept any shipments without State Chemist tags or with such tags showing alterations.

Dealers and consumers should familiarize themselves with the Explanation of Terms Used in the Analysis of Feeding Stuffs as well as with the Definitions of Feeding Stuffs which have been adopted officially by the Association of American Feed Control Officials and published herein.

Table 6, "The Summary of Feed Inspection," is worth consideration by those who purchase commercial feeds.

Table 2, entitled "Average Analyses of Cereals and By-Products," may be helpful to those manufacturers who wish to compute safe guarantees for their feed formulas.

Manufacturers of mineral feeds having difficulty in calculating minimum percentage guarantees of lime (CaO) and phosphoric acid (P_2O_5) for their products should consult Table 1, entitled "Calcium and Phosphorus Content of Feeding Stuffs." Poultrymen and others interested in maintaining a definite calcium and phosphorus ratio in their feeds will also find valuable information in this table. Since minimum percentages of calcium expressed as lime (CaO) and phosphorus expressed as phosphoric acid (P_2O_5) are required in the guarantee of mineral feeds these values are stated rather than the actual percentages of calcium and phosphorus. If the percentage of calcium is desired the percentage of lime (CaO) must be multiplied by 0.7. If the percentage of phosphorus is desired the percentage of phosphoric acid (P_2O_5) must be multiplied by 0.44. While the values listed in the table may not be absolute they do represent average values. A study of the cover page reveals the importance of supplying these minerals in adequate amounts to poultry rations.

TABLE 1. CALCIUM AND PHOSPHORUS CONTENT OF FEEDING STUFFS

MATERIAL	Lime (CaO) %	Phosphoric Acid (P_2O_5) %
Alfalfa meal	1.70	0.53
Brewers' dried grains	0.22	1.03
Corn	0.02	0.65
Corn gluten feed	0.35	0.62
Cottonseed meal	0.37	2.89
Cowpeas	0.14	1.02
Distillers' grain corn	0.06	0.67
Linseed oil meal	0.51	1.65
Malt sprouts	0.21	1.61
Meat and bone scraps	14.00	11.55
Oats	0.14	0.85
Skimmed milk dried	1.80	2.20
Soy beans	0.29	1.37
Soy bean oil meal	0.38	1.43
Tankage digester	8.26	6.66
Wheat	0.06	0.86
Wheat bran	0.13	2.74
Wheat middling	0.10	2.06
Wheat reddog flour	0.17	1.95
Bone meal steamed	40.00	30.00
Bone black	40.00	30.00
Dicalcium phosphate	40.00	40.00
Rock phosphate	40.00	30.00
Super phosphate 16%	24.00	16.00
Super phosphate 20%	25.00	20.00
Phosphatic limestone	50.00	10.00
Limestone (95%)	53.00	......
Oyster shells	50.00	......
Wood ashes	30.00	......
Gypsum	35.00	...

Explanation of Terms Used in the Analysis of Feeding Stuffs

Moisture is the varying quantity of water occurring in feeding stuffs which can be driven off by heat at the temperature of boiling water. The amount of water present varies with the temperature, moisture content of the air, process of manufacture and the character of the substance. In most concentrates this value ranges from 5 to 15 per cent.

Crude Fat consists mainly of fats and oils with small amounts of waxes, resins, coloring matter and similar substances, dissolved from feeding stuffs by dry ether. In calculating the heat and energy value of a feed, the fat is considered 2.25 times greater than that of either carbohydrates or protein.

Crude Protein is the term applied to the nitrogenous constituents of a feeding stuff. It is obtained by multiplying the total nitrogen by 6.25. Protein is the most important as well as the most costly constituent in a feed. Plants have the power of building up protein from the inorganic elements of the soil and air while animals must secure their protein from the plants or other animals. The plant proteins contain varying amounts of the essential amino acids, therefore it is necessary to carefully select a variety of feeds which will furnish the essential amino acids economically.

Crude Fiber is the woody portion of a feeding stuff, for the most part cellulose, and is insoluble in dilute acids and alkalis. Most of the common seeds and grains contain very little fiber while the hulls, husks and stems are high in this constituent. In poultry and swine, crude fiber when present in considerable quantities exerts a retarding influence on the digestion of nutrients present.

Ash, the mineral matter of plants, is the residue left after burning a feeding stuff at low redness. It consists chiefly of the phosphates, sulphates, chlorides and carbonates of sodium, potassium, calcium and magnesium. The calcium and phosphorus are absolutely essential for the proper nutrition of the animal.

Nitrogen Free Extract consists of sugars, starches, pentoses, non-nitrogenous organic acids, etc., and is determined by subtracting the sum of moisture, crude fat, crude protein, crude fiber and ash from 100.

Carbohydrates is the sum of the crude fiber and nitrogen-free extract.

TABLE 2—Average Analysis of Cereals and By-Products

Material	Description of	Pounds in One Hundred		
		Crude Fat	Crude Protein	Crude Fiber
Alfalfa meal	Entire ground hay	1.5	13.0	33.0
Alfalfa leaf meal	Largely alfalfa leaves	2.5	20.0	18.0
Barley	Whole or ground	1.8	11.0	6.0
Beet pulp	Dried	0.9	8.5	18.0
Blood (dried)	Blood meal	0.5	80.0	none
Bone (raw)	Raw bone	3.0	20.0	1.0
Bone (steamed)	Steamed bone	0.5	6.0	1.0
Brewers' dried grains	From manufacture of beer	6.0	26.0	15.0
Buckwheat	Whole or ground	2.2	10.0	10.0
Buckwheat mixed feed	Entire product from manufacture of buckwheat flour	3.2	12.0	28.0
Buckwheat middlings	Entire product from manufacture of buckwheat flour, except the hulls	7.3	28.8	6.4
Buttermilk (dried)	Dried buttermilk	5.0	30.0	none
Buttermilk (condensed)	Condensed buttermilk	2.0	10.0	none
Cane seed	(Sorghum) removed from head and cleaned	2.5	9.0	2.5
Charcoal	Charcoal	none	none	90.0
Cob meal	Ground corn cob	0.5	2.0	31.0
Cocoanut oil meal	Dried cocoanut meats with partial extraction of oil	8.0	22.0	9.0
Corn	Old corn No. 2	4.0	9.5	2.0
Corn and cob meal	Ear corn (old)	3.5	8.0	8.0
Corn bran	Containing little corn germ	2.5	7.0	10.0
Corn mill feed	Corn bran germ and some meal from manufacture of meal or corn flour	7.4	11.0	4.2
Corn feed meal	Manufacture of cracked corn	3.5	9.0	2.0
Corn germ oil meal	Corn germ with part of the oil removed	8.0	20.0	8.0
Corn gluten feed	Remains after the larger part of starch and germ is removed	2.0	25.0	7.0
Corn gluten meal	From manufacture of corn starch and glucose	1.0	42.0	2.0
Corn screenings	Small and broken grains of corn, small pieces cob, etc., removed from shelled corn	2.7	8.6	8.6
Cottonseed meal (prime quality)	Sold as 36 per cent protein	6.0	36.0	14.0
Cottonseed meal (prime quality)	Sold as 41 per cent protein	6.0	41.0	12.0
Cottonseed meal (prime quality)	Sold as 43 per cent protein	6.0	43.0	10.0
Cottonseed feed	Below 36 per cent protein	4.0	22.8	22.0
Cottonseed hulls	Contains trace of lint and meal adhering	1.8	4.6	38.0
Cowpea	Seeds, pods removed	1.4	20.8	4.1
Distillers' grain (dried)	From corn or rye	9.0	27.0	12.0
Emmer	Often called spelt	2.0	11.5	10.0
Fish meal	Dried ground tissues of fish with or without the extraction of part of the oil	6.0	55.0	2.0
Flaxseed	Whole grain or meal without extraction of oil	32.0	22.0	7.0
Flax plant by-product	Shives, pods, etc.	2.1	15.0	31.0
Flaxseed screenings	Small and broken grains, flaxseed, weed seed and other foreign material cleaned from flaxseed	8.0	14.0	14.0
Hominy feed, meal or chop	Manufacture of hominy grits or meal by degerminator process	6.0	11.0	6.0
Kaffir corn	Milo	2.5	10.0	2.5
Kelp (dried)	Ground dried kelp	1.0	6.0	10.0
Linseed meal (old process)	Oil extracted by pressure	6.0	34.0	8.0
Malt sprouts	Sprout of the barley grain	1.3	27.9	12.1

Meat scraps	Ground dry rendered residue from animal tissues	6.0	50.0	3.0
Millet	Italian millet seed	3.9	10.3	9.4
Milo	Whole or ground	2.5	10.7	2.5
Molasses	From beets	none	3.0	....
Molasses	Blackstrap from cane	none	3.0	....
Oats	Ground or whole	4.0	11.0	11.0
Oat-clipped by-product	Clippings	2.0	9.0	30.0
Oat-groats	Kernels of oat berry	6.5	15.0	2.0
Oat hulls	Oat hulls	1.5	4.0	32.0
Oat meal mill by-product	Oat hulls and oat shorts	1.5	6.0	28.0
Oat middlings	Floury portion of oat groat	5.0	15.0	5.0
Peanut oil feed	Peanut meats and peanut hulls	6.0	30.0	25.0
Peanut oil meal	Residue after the extraction of part of the oil from peanut kernels	6.0	40.0	6.0
Peanut shells	Whole or finely ground	1.2	5.5	70.9
Rice bran	Cuticle layer beneath hull	12.0	12.0	12.0
Rye	Rye	1.5	11.0	2.0
Rye feed	Rye feed	3.5	16.0	5.0
Skimmed milk (dried)	Dried skimmed milk	0.5	30.0	none
Soybean	Seed pods removed	19.0	35.0	5.0
Soybean oil meal	Ground	6.0	40.0	6.0
Sunflower seed	Whole or ground	19.0	16.0	30.0
Tankage (digester)	60 per cent reinforced with concentrated tank water or dried blood	6.0	60.0	3.0
Unscreened flaxseed oil feed	Flaxseed meal and flaxseed screenings	6.0	30.0	9.0
Velvet bean feed	Velvet beans and pods	4.0	19.0	17.0
Wheat	Whole or ground	1.9	11.9	2.4
Wheat bran (soft)	Wheat bran	3.5	14.5	8.0
Wheat bran (hard)	Wheat bran	4.0	16.0	10.0
Wheat middlings	Wheat middlings	3.5	15.5	6.0
Wheat standard middlings	With and without screenings	4.0	16.0	9.5
Wheat red dog flour	Red dog flour	3.5	15.0	4.0
Wheat mixed feed and mill run screenings	Bran, middlings, red dog flour and screenings	3.5	15.0	8.0
Whey (dried)	Dried whey	0.5	12.0	none

DEFINITIONS OF FEEDING STUFFS*

ALFALFA PRODUCTS

Chopped Alfalfa is the entire alfalfa hay, chopped and not ground finely enough to become a meal. It must not contain an admixture of alfalfa straw or other foreign material. (Adopted prior to 1928.)

Alfalfa Meal is the product obtained from the grinding of the entire alfalfa hay, without the addition of any alfalfa stems, alfalfa straw or foreign material, or the abstraction of leaves. It must be reasonably free from other crop plants and weeds, and must not contain more than 33 per cent crude fiber. (Adopted 1928.)

Alfalfa Leaf Meal is the ground product consisting chiefly of leafy materials separated from alfalfa hay. It must be reasonably free from other crop plants and weeds and must not contain more than 18 per cent crude fiber. (Adopted 1928.)

Alfalfa Stem Meal is the ground product remaining after the separation of the leafy material from alfalfa hay or meal. It must be reasonably free from other crop plants and weeds. (Adopted 1928.)

ANIMAL PRODUCTS

Blood Meal is ground, dried blood. (Adopted 1926.)

Blood Flour is dried blood, prepared by special processes and reduced to a fine powder. (Adopted prior to 1928.)

Digester Tankage, Meat Meal Tankage or Feeding Tankage is the residue from animal tissues exclusive of hoof, horn, manure and stomach contents, except in such traces as might occur unavoidably in good factory practice, especially prepared for feeding purposes by tanking under live steam or by dry rendering or a mixture of the products made suitable by drying and grinding. When these products contain more than 10 per cent phosphoric acid (expressed as P_2O_5) they shall be designated Digester Tankage with Bone, Meat and Bone Meal Digester Tankage, Meat and Bone Meal Tankage, or Feeding Tankage with Bone. If they bear a name descriptive of their kind, composition or origin they must correspond thereto. (Adopted 1928.)

Meat Scraps is the ground, dry-rendered residue from animal tissues exclusive of hoof, horn, manure and stomach contents, except in such traces as might occur unavoidably in good factory practice. When this product contains more than 10 per cent phosphoric acid (expressed as P_2O_5), it shall be designated Meat and Bone Scrap. If it bears a name descriptive of its kind, composition or origin it must correspond thereto. (Adopted 1928.)

Raw Bone Meal is the dried, ground product suitable for animal feeding, obtained by cooking in water at atmospheric pressure, undecomposed bone, just enough to remove excess fat and meat. It must not contain less than 23 per cent protein. (Adopted 1929.)

Steamed Bone Meal is the dried, ground product suitable for animal feeding obtained by cooking bones with steam under presssure. (Adopted 1929.)

Special Steamed Bone Meal is the dried, ground product suitable for animal feeding obtained by cooking dried bone after the removal of grease and meat fiber with steam under pressure in the process of obtaining gelatine or glue. (Adopted 1929.)

BREWERS' AND DISTILLERS' PRODUCTS

Brewers' Dried Grains are the dried residue obtained in the manufacture of beer. (Adopted prior to 1928.)

Distillers' Dried Grains are the dried residue obtained in the manufacture of alcohol and distilled liquors. The product must bear the designation indicating the cereal predominating. (Adopted prior to 1928.)

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* These definitions have been adopted by the Association of American Feed Control Officials.

Distillers' Corn Solubles is a by-product from the manufacture of alcohol from corn solids obtained by the evaporation of the mash liquor after the removal of the alcohol and wet grains. (Adopted prior to 1928.)

Distillers' Rye Solubles is a by-product from the manufacture of alcohol from rye solids obtained by the evaporation of mash liquor after the removal of the alcohol and wet grains. (Adopted prior to 1928.)

Distillers' Corn and Rye Solubles is a by-product from the manufacture of alcohol from corn and rye solids obtained by the evaporation of mash liquor after the removal of the alcohol and wet grains. (Adopted prior to 1928.)

Malt Sprouts are the sprouts of the barley grain obtained from malted barley. Sprouts derived from any other malted cereal must be designated by the name of that cereal. (Adopted prior to 1928.)

Yeast or Vinegar Dried Grains are the properly dried residue from the mixture of cereals, malt and malt sprouts (sometimes cottonseed meal) obtained in the manufacture of yeast or vinegar, and consists of corn or corn and rye from which most of the starch has been extracted, together with malt added during the manufacturing process to change the starch to sugars, and malt sprouts (sometimes cottonseed meal) added during the manufacturing process to aid in filtering the residue from the wort and serve as a source of food supply for the yeast. (Adopted prior to 1928.)

BUCKWHEAT PRODUCTS

Buckwheat Shorts or Buckwheat Middlings are that portion of the buckwheat grain immediately inside the hull secured after separation from the flour. (Adopted prior to 1928.)

CORN PRODUCTS

Corn Meal (Feeding) is finely ground, unbolted corn. (Adopted prior to 1928.)

Corn Bran is the outer coating of the corn kernel, with little or none of the starchy part or germ. (Adopted 1931.)

Corn Feed Meal is the fine siftings obtained in the manufacture of screened corn chop, screened ground corn or screened cracked corn, with or without its aspiration products added. (Adopted 1931.)

Corn Chop, Ground Corn or Cracked Corn is the entire product made by grinding, cutting or chopping the grains of sound Indian corn, and may be fine, medium or coarse, and must not contain more than 4 per cent foreign material. (Adopted 1931.)

Screened Corn Chop, Screened Ground Corn, or Screened Cracked Corn is the coarse portion of corn chop, ground corn or cracked corn from which most of the fine particles have been removed, and must not contain more than 4 per cent foreign material. (Adopted 1931.)

Corn Grits, Hominy Grits are the fine or medium sized, hard flinty portions of sound Indian corn containing little or none of the bran or germ. (Adopted 1931.)

Ear Corn Chops is corn and cob chopped, without the husk, with no greater proportion of cob than occurs in the ear corn in its natural state. (Adopted prior to 1928.)

Corn Gluten Meal is that part of commercial shelled corn that remains after the separation of the larger part of the starch, the germ and the bran, by the processes employed in the manufacture of corn starch. It may or may not contain corn solubles. (Adopted prior to 1928.)

Corn Gluten Feed is that part of commercial shelled corn that remains after the separation of the larger part of the starch and the germs by the processes employed in the manufacture of corn starch. It may or may not contain corn solubles. (Adopted prior to 1928.)

Maltose Process Corn Gluten Feed is the dried residue from degermed corn, after removal of starch in the manufacture of malt syrup. (Adopted prior to 1928.)

Hominy Feed, Hominy Meal or Hominy Chop is the kiln-dried mixture of the mill-run bran coating, the mill-run germ, with or without a partial extraction of the oil, and a part of the starchy portion of the white corn kernel obtained in the manufacture of hominy, hominy grits, and corn meal by the degerming process. (Adopted prior to 1928.)

Yellow Hominy Feed, Yellow Hominy Meal or Yellow Hominy Chop is the kiln-dried mixture of the mill run bran coating, the mill run germ, with or without a partial extraction of the oil, and a part of the starchy portion of the yellow corn kernel obtained in the manufacture of yellow hominy grits and yellow corn meal by the degerming process. (Adopted prior to 1928.)

Corn Oil Cake consists of the corn germ from which part of the oil has been pressed and is the product obtained in the wet milling process of manufacture of corn starch, corn syrup, and other corn products. (Adopted prior to 1928.)

Corn Oil Meal is ground corn oil cake. (Adopted prior to 1928.)

Corn Germ Cake consists of corn germ with other parts of the corn kernel from which part of the oil has been pressed, and is the product obtained in the dry milling process of manufacture of corn meal, corn grits, hominy feed, and other corn products. (Adopted prior to 1928.)

Corn Germ Meal is ground corn germ cake. (Adopted prior to 1928.)

Corn Screenings are the small light grains of corn, parts of grains of corn and/or other cereals, and other materials having feeding value, obtained by screening shelled corn, excluding sand, dirt and other similar inert materials. (Adopted 1931.)

COTTONSEED PRODUCTS

Cottonseed Meal is a product of the cottonseed only, composed principally of the kernel with such portion of the hull as is necessary in the manufacture of oil; provided that nothing shall be recognized as cottonseed meal that does not conform to the foregoing definition and that does not contain at least 36 per cent protein. Cottonseed meal shall be graded and classed as follows: (Adopted prior to 1928.)

1. **Cottonseed Meal, Prime Quality.** Cottonseed meal, prime quality, must be finely ground, not necessarily bolted, of sweet odor, reasonably bright in color, yellowish, not brown or reddish, free from excessive lint, and shall contain not less than 36 per cent protein. It must be designated and sold according to its protein content. Cottonseed meal with 36 per cent protein must be termed "36 Per Cent Protein Cottonseed Meal, Prime Quality," and higher grades similarly designated (as "43 Per Cent Protein Cottonseed Meal, Prime Quality"), etc. (Adopted prior to 1928.)

2. **Cottonseed Meal, Off Quality.** Cottonseed meal not fulfilling the above requirements as to color, odor and texture must be graded "36 Per Cent Protein Cottonseed Meal, Off Quality," and higher grades similarly designated. (Adopted prior to 1928.)

Cottonseed Feed is a mixture of cottonseed meal and cottonseed hulls, containing less than 36 per cent protein. (Adopted prior to 1928.)

Cold Pressed Cottonseed is the product obtained from the subjection of the whole undecorticated cottonseed to the cold pressure process for the extraction of oil and includes the entire cottonseed less the oil extracted. (Adopted prior to 1928.)

Ground Cold Pressed Cottonseed is the product obtained by grinding cold pressed cottonseed. (Adopted prior to 1928.)

Whole Pressed Cottonseed, prime quality, is the product resulting from subjecting the whole, sound, mature, clean undecorticated cottonseed to pressure for the extraction of oil, and includes the entire cottonseed less the oil extracted and the lint removed. It must be designated and sold according to its protein content. (Adopted 1932.)

Ground Whole Pressed Cottonseed, prime quality, is whole pressed cottonseed, ground. It must be designated and sold according to its protein content. (Adopted 1932.)

LINSEED AND FLAX PRODUCTS

Linseed Cake or Meal is oil cake or meal made from flaxseed. The final product must contain less than 6 per cent weed seeds and other foreign materials and no portion of the stated 6 per cent weed seeds and other foreign materials shall be intentionally added. (Adopted prior to 1928.)

Old Process Oil Meal, Old Process Linseed Meal is oil meal as defined below, produced by crushing, cooking and hydraulic pressure. (Adopted prior to 1928.)

New Process Oil Meal, New Process Linseed Meal is oil meal as defined below, produced by crushing, heating and the use of solvents. (Adopted prior to 1928.)

Flax Plant By-Product is that portion of the flax plant remaining after the separation of the seed, the bast fiber and a portion of the shives, and consist of flax shives, flax pods, broken and immature flax seeds, and the cortical tissues of the stem. (Adopted prior to 1928.)

Ground Flaxseed or Flaxseed Meal is the product obtained by grinding flaxseed which has been screened and cleaned of weed seeds and other foreign materials by the most improved commercial process; the final product must contain less than 4 per cent weed seeds and other foreign materials, and no portion of the stated 4 per cent weed seeds and other foreign materials shall be intentionally added. (Adopted prior to 1928.)

Unscreened Flaxseed Oil Feed Cake is the product obtained by extraction of part of the oil from unscreened flaxseed by crushing, cooking and hydraulic pressure, or by crushing, heating and the use of solvents. The ingredients must be stated as "partially extracted flaxseed and foreign seeds (wheat, wild buckwheat, pigeon grass, wild mustard, etc.)." (Adopted prior to 1928.)

Ground Unscreened Flaxseed Oil Feed is the ground unscreened flaxseed oil feed cake. (Adopted prior to 1928.)

Screenings Oil Feed is the ground product obtained after extraction of part of the oil by crushing, cooking and hydraulic pressure, or by crushing, heating and the use of solvents from the smaller imperfect flaxseed, weed seeds and other foreign materials, having feeding value, separated in cleaning flaxseed. The name of the grain from which the screenings are separated must be prefixed to "screenings oil feed." (Adopted prior to 1928.)

Oil Cake is the product obtained after the extraction of part of the oil by crushing, cooking, and hydraulic pressure, or by crushing, heating and the use of solvents, from flaxseed which have been screened and cleaned of weed seeds, and other foreign materials by the most improved commercial process. When used alone the term "Oil Cake" shall be understood to designate linseed cake as defined. When used to cover any other products the name of the seed from which it is obtained must be prefixed to the words "Oil Cake." (Adopted prior to 1928.)

Oil Meal or Ground Oil Cake is oil cake ground to a meal. (Adopted prior to 1928.)

MILK PRODUCTS

Dried Buttermilk (Feeding) is the product resulting from the removal of water from clean, sound buttermilk derived from natural cream, to which no foreign substances have been added, excepting such as are necessary and permitted in the manufacture of butter. It contains not more than 8 per cent moisture, not more than 13 per cent mineral matter (ash), and not less than 5 per cent butterfat, as determined by the Rose-Gottlieb method. (Adopted 1932.)

Evaporated Buttermilk (Feeding), **Concentrated Buttermilk** (Feeding), **Condensed Buttermilk** (Feeding) is the product resulting from the removal of a considerable portion of water from clean, sound buttermilk derived from natural cream to which no foreign substances have been added excepting such as are permitted and necessary in the manufacture of butter. It contains not less than 27 per cent total solids, not less than 2 per cent butterfat, and not more than .14 per cent ash for each per cent of solids. This definition does not prohibit the use of a distinctive trade name, provided it is followed by one of the names given. (Adopted prior to 1928.)

Dried Skimmed Milk (Feeding) is the product resulting from the removal of water from clean, sound skimmed milk. It contains not more than 8 per cent moisture. (Adopted 1930.)

Dried Soured Skimmed Milk (Feeding) is the product resulting from the removal of water from clean, sound skimmed milk which has been soured by a suitable culture of lactic bacteria. It contains not more than 8 per cent moisture. (Adopted 1932.)

Evaporated Soured Skimmed Milk (Feeding), **Concentrated Soured Skimmed Milk** (Feeding), **Condensed Soured Skimmed Milk** (Feeding) is the product resulting from the removal of a considerable portion of water from the clean, sound skimmed milk which has been soured by a suitable culture of lactic bacteria. It contains not less than 27 per cent total solids. (Adopted 1932.)

Condensed Skimmed Milk (Feeding) is the product resulting from the removal of a considerable portion of water from clean, sound skimmed milk. It contains not less than 27 per cent total solids. (Adopted 1930.)

Milk Sugar Feed, Dried Whey (Feeding) is the by-product from the manufacture of cheese and should contain at least 70 per cent lactose (milk sugar). (Adopted 1932.)

OAT PRODUCTS

Oat Hulls are the outer coverings of the oat. (Adopted prior to 1928.)

Oat Middlings are the floury portions of the oat groat obtained in the milling of rolled oats. (Adopted prior to 1928.)

Oat Shorts are the covering of the oat grain lying immediately inside the hull, being a fuzzy material carrying with it considerable portions of the fine floury part of the groat obtained in the milling of rolled oats. (Adopted prior to 1928.)

Oat Chop, Ground Oats, Pulverized Oats, Crushed Oats and Crimped Oats consists of the entire product made by chopping, cutting, grinding, crushing or crimping whole oats. (Adopted 1931.)

Oat Groats are the kernels produced from cleaned and dried oats in the process of manufacturing oat meal. (Adopted 1931.)

Hulled Oats, Undried Oat Groats are the kernels produced from the undried grain in the process of hulling oats. (Adopted 1931.)

Oat Meal, Ground Oat Groats is the product produced by cutting, cracking or grinding oat groats. (Adopted 1931.)

Rolled Oat Groats (Rolled Oats) is the product obtained in the process of rolling oat groats. (Adopted 1931.)

Clipped Oat By-Products is the by-product obtained in the manufacture of clipped oats. It may contain the light chaffy material broken from the end of the hulls, empty hulls, light immature oats and dust. It must not contain an excessive amount of oat hulls. (Adopted prior to 1928.)

Oat Mill Feed (Oat Hulls, Oat Shorts and Oat Middlings) is the entire by-product produced in the manufacture of oat groats and consists of oat hulls, oat shorts and oat middlings. If used in a mixed feed, it shall be called Oat Mill Feed (Oat Hulls, Oat Shorts and Oat Middlings). (Adopted 1932.)

WHEAT PRODUCTS

Wheat Bran is the coarse outer covering of the wheat kernel as separated from cleaned and scoured wheat in the usual process of commercial milling. (Adopted prior to 1928.)

Standard Middlings consists mostly of fine particles of bran, germ, and very little of the fibrous offal obtained from the "tail of the mill." This product must be obtained in the usual commercial process of milling and must not contain more than 9.5 per cent crude fiber. (Adopted prior to 1928.)

Flour Middlings shall consist of standard middlings and red dog flour combined in the proportions obtained in the usual process of milling and must not contain more than 6.0 per cent crude fiber. (Adopted prior to 1928.)

Wheat Red Dog is a by-product obtained in the usual commercial process of flour milling, consisting principally of aleurone with small quantities of flour and fine bran particles and must not contain more than 4.0 per cent crude fiber. (Adopted prior to 1928.)

Wheat Low Grade Feed Flour is a by-product obtained in the usual commercial process of flour milling, consisting principally of flour with small quantities of aleurone and fine bran particles and must not contain more than 1.5 per cent crude fiber. (Adopted prior to 1928.)

Wheat Bran and Standard Middlings consists of the two commodities as defined above, mixed in the proportions obtained in the usual process of commercial milling. (Adopted prior to 1928.)

Hard Wheat Mixed Feed (mill-run wheat feed) consists of pure wheat bran and flour middlings combined in the proportions obtained in the usual process of commercial milling. This product must not contain more than 9.5 per cent crude fiber. (Adopted prior to 1928.)

Brown Shorts (Red Shorts) consists mostly of the fine particles of bran, germ and very little of the fibrous offal obtained from the "tail of the mill." This product must be obtained in the usual commercial process of milling and must not contain more than 7.5 per cent crude fiber. (Adopted prior to 1928.)

Gray Shorts (Gray Middlings or Total Shorts) consists of the fine particles of the outer bran, the inner bran or bee-wing bran, the germ and the offal or fibrous materials, obtained from the "tail of the mill." This product must be obtained in the usual process of commercial milling and must not contain more than 6.0 per cent crude fiber. (Adopted prior to 1928.)

White Shorts or White Middlings consists of a small portion of the fine bran particles and the germ and a large portion of the fibrous offal obtained from the "tail of the mill." This product must be obtained in the usual process of flour milling and must not contain more than 3.5 per cent crude fiber. (Adopted prior to 1928.)

Wheat Mixed Feed (Mill-run wheat feed) consists of pure wheat bran and the gray or total shorts combined in the proportions obtained in the usual process of commercial milling. This product must not contain more than 8.5 per cent crude fiber. (Adopted prior to 1928.)

Screenings consists of the smaller imperfect grains, weed seeds, and other foreign materials, having feed value, separated in cleaning the grain. (Adopted prior to 1928.)

Scourings consists of such portions of the cuticle, brush, white caps, dust, smut and other materials as are separated from the grain in the usual commercial process of scouring. (Adopted prior to 1928.)

(NOTE) If to any of the wheat or rye by-products feeds there should be added screenings or scourings—as above defined, either ground or unground, bolted or unbolted, such brand shall be so registered, labeled and sold as clearly to indicate this fact. The word "Screenings" or "Scourings" as the case may be, shall appear as part of the name or brand and shall be printed in the same size and face of type as the remainder of the brand name. When the word "Screenings" appears it is not necessary to show also on the labeling the word "Scourings." (Adopted prior to 1928.)

MINERAL FEEDS

Mixed feeds containing both feed and more than 5 per cent of mineral ingredients requires, in addition to the usual declaration of the chemical feed analysis, a declaration of each ingredient contained therein and the minimum percentages of lime expressed as CaO, phosphoric acid expressed as P_2O_5, iodine (I), and the maximum percentage of salt (NaCl) if same be present. If minerals predominate in the mixture, the usual declaration of the chemical feed analysis, with the exception of protein, may be omitted.

In mineral feeds containing no organic ingredient, the usual chemical feed guarantee need not be made. A declaration should be made of each ingredient contained therein and the minimum percentage of lime expressed as CaO, phosphoric acid expressed as P_2O_5, iodine (I), and the maximum percentage of salt (NaCl) if same be present.

The mineral ingredients should be stated in the common English terms, if any such terms exist.

It being impossible to classify separately the drug ingredients and the mineral ingredients, be it resolved:

(1) That all mixtures containing mineral ingredients generally regarded as dietary factors essential for the normal nutrition of animals and which are sold or represented for the primary purpose of supplying these minerals as additions to rations in which these same mineral factors may be deficient, be classified as mineral feeds.

(2) That all other preparations which are sold or represented primarily for the cure, mitigation or prevention of disease be classified by this Association as drugs, medicines or specifics. (Adopted prior to 1928.)

TENTATIVE DEFINITIONS

Iodized Salt (feeding) is common salt (NaCl) containing not less than 0.015 per cent iodine, uniformly distributed.

Hominy Feed is a mixture of corn bran, corn germ and a part of the starchy portion of either white or yellow corn kernels or mixture thereof as produced in the manufacture of pearl hominy, hominy grits, or table meal, and shall contain not less than 5 per cent fat. If prefixed with the words "white" or "yellow," the product must correspond thereto.

Hominy Meal is finely ground hominy feed.

Linseed Cake or Meal is oil cake or meal made from flaxseed; provided that the final product must contain less than 6 per cent weed seeds and other foreign materials; and, provided further, that no portion of the stated 6 per cent weed seeds and other foreign materials shall be deliberately added. It shall not contain more than 0.5 per cent acid insoluble ash.

MARINE PRODUCTS

Fish Meal (Feeding) is clean, dried, ground tissues of undecomposed whole fish and/or fish cuttings with or without the extraction of part of the oil, and contains not more than 3 per cent salt (NaCl). If it contains more than 3 per cent salt (NaCl) the amount of salt must constitute a part of the brand name, provided that in no case shall the salt content of this product exceed 7 per cent.

Fish Residue Meal (Feeding) is the clean, dried, undecomposed residue from the manufacture of glue from non-oily fish, and contains not more than 3 per cent salt (NaCl). If it contains more than 3 per cent salt (NaCl) the amount of salt must constitute a part of the brand name, provided that in no case shall the salt content of this product exceed 7 per cent.

Crab Meal (Feeding) is prepared from the undecomposed dried waste of the crab industry and contains the shell, viscera and part or all of the flesh. It contains not less than 25 per cent protein and not more than 3 per cent salt (NaCl). If it contains more than 3 per cent salt (NaCl) the amount of salt must constitute a part of the brand name, provided that in no case shall the salt content of this product exceed 7 per cent.

Shrimp Meal (Feeding) is prepared from the undecomposed dried waste of the shrimp industry and contains the heads, hull and/or the whole shrimp and not more than 3 per cent salt (NaCl). If it contains more than 3 per cent salt (NaCl) the amount of salt must constitute a part of the brand name, provided that in no case shall the salt content of this product exceed 7 per cent.

Whale Meal (Feeding) is prepared from the clean, dried, undecomposed flesh of the whale, after part of the oil has been extracted. It contains not more than 3 per cent salt (NaCl). If it contains more than 3 per cent salt (NaCl) the amount of salt must constitute a part of the brand name, provided that in no case shall the salt content of this product exceed 7 per cent.

SOYBEAN PRODUCTS

Ground Soybeans is the product obtained by grinding whole soybeans without cooking or removing any of the oil.

Soybean Oil Cake, Soybean Oil Chips is the product obtained by crushing, cooking and removing part of the oil from soybeans.

Soybean Oil Meal is ground soybean oil cake or ground soybean oil chips.

TABLE 3—Withdrawals from Sale

Number of Shipments Withdrawn from sale	Number of Manufacturers Represented	Reasons for Withdrawal from Sale	Amount Withdrawn Tons
121	83	Not tagged	189.5
13	12	Misbranded	13.4
11	10	Deficient in crude protein	15.5
8	7	Mutilated tags	9.2
5	1	Deficient in total solids	157.8
1	1	Deficient in crude fat	1.2
1	1	Excess crude fiber	0.2
1	1	Adulteration and deficiency in bone phosphate of lime	0.2
161	....	Totals	387.0

TABLE 4—ESTIMATED SALES OF COMMERCIAL FEEDING STUFFS IN INDIANA

KIND OF FEED	Estimated Tons			Estimated Retail Values, Dollars,	
	1930	1931	1932	1931	1932
Alfalfa meal and leaf meal	3,063	3,906	2,906	156,240	85,599
Animal by-products (Tankage, meat scraps, etc.)	27,750	32,719	35,656	1,328,391	1,030,458
Brewers' distillers' and yeast dried grains	94	63	94	1,764	1,880
Condimental poultry and stock feeds*	406	1,156	594	219,640	63,855
Corn feed meal	4,500	1,031	750	24,538	13,725
Corn germ meal	563	563	219	16,890	3,942
Corn gluten meal and feed	1,469	781	1,313	23,586	22,846
Corn and oats chop and miscellaneous chops	3,969	2,781	2,563	71,194	47,928
Cottonseed meal	11,750	6,750	5,563	193,725	126,836
Dried buttermilk, dried skimmed milk, condensed, etc	6,219	8,813	6,531	850,455	484,600
Hominy meal and hominy feed	41,219	16,188	2,750	406,319	42,900
Linseed oil meal	7,031	4,938	3,656	189,125	119,186
Mill by-products—wheat bran, middlings, rye feeds, etc., with and without screenings	117,156	84,719	69,781	1,846,874	1,221,168
Mineral feeds	7,125	5,062	3,063	376,613	169,078
Oat meal by-products—oat shorts, oat hulls, oat middlings, oat groats, etc.	1,719	1,625	719	33,150	11,504
Poultry scratch feed—with and without grit	45,969	19,187	14,375	706,082	391,000
Poultry mash	142,406	88,344	72,125	3,798,792	2,322,425
Proprietary feeds—total ready mixed	87,844	39,905	18,782	1,575,088	586,447
Cattle and dairy feeds†	56,894	23,719	10,563	775,611	273,582
Hog and pig meals†	22,330	10,687	5,438	478,778	180,542
Horse and mule feeds†	6,051	2,281	750	73,676	17,925
Small animal and pet feeds (rabbit, dog, etc.)†	1,219	2,437	1,656	182,044	93,398
Calf meals†	1,350	781	375	64,979	21,000
Soybean oil meal	125	2,281	2,000	68,430	48,200
Miscellaneous—beet pulp, rice bran, processed garbage, cocoanut oil meal, kelp, peanut oil meal, etc.	1,719	1,313	1,469	52,257	58,466
Totals	512,096	322,125	244,909	11,939,153	6,853,043

*Not all condimental feeds come under the law.
†Not included in total.

TABLE 5—SUMMARY OF THE ANNUAL TONNAGE AND EXPENDITURES FOR COMMERCIAL FEEDING STUFFS SINCE 1911

YEAR	1911	1912	1913	1914	1915	1916
Estimated sales, tons	179,000	196,752	217,689	271,751	270,339	317,664
Estimated retail value, dollars	5,056,906	6,371,571	6,406,645	8,461,751	8,221,684	10,316,51
YEAR	1917	1918	1919	1920	1921	1922
Estimated sales, tons	379,152	439,152	506,958	390,078	283,256	340,197
Estimated retail value, dollars	21,700,101	26,717,086	33,013,463	27,014,049	11,716,745	14,244,175
YEAR	1923	1924	1925	1926	1927	1928
Estimated sales, tons	389,971	419,441	408,713	337,298	440,534	524,4
Estimated retail value, dollars	18,026,682	19,720,313	20,945,026	16,837,512	24,173,605	29,818,5
YEAR			1929	1930	1931	1932
Estimated sales, tons			498,887	512,096	322,125	244,909
Estimated retail value, dollars			26,491,777	24,293,652	11,939,153	6,853,043

TABLE 6—Summary of Feed Inspection January 1, 1932 to January 1, 1933

Name and Address of Manufacturer	Number of Samples Examined	Number of Samples Passed	Number of Samples Not Passed	Number of Samples Not Tagged
Abingdon Milling & Cattle Feeding Co., Abingdon, Ill.	1	1		
Acme-Evans Co., Indianapolis, Ind.	8	7	1	
Acme Milling Co., Aurora, Ind.	1	1		
Aiman, W. H., Leroy, Ind.	1	1		
Allied Mills, Inc., Chicago, Ill.	15	15		3
American Milling Co., Peoria, Ill.	1	1		
American National Mineral Corp., Hillsboro, Ind.	13	8	5	
Amos Pig Grow Tonic & Food Co., Kokomo, Ind.	2	2		
Anchor Feed Store, Kokomo, Ind.	1	1		
Anchor Milling Co., Rochester, Ind.	10	9	1	
Anderson Mercantile Exchange, Anderson, Ind.	1	1		
Arcady Farms Milling Co., Chicago, Ill.	16	11	5	1
Archer-Daniels-Midland Co., Minneapolis, Minn.	3	3		1
Armour & Co., Chicago, Ill.	27	26	1	
Armour Creameries, Chicago, Ill.	5	4	1	1
Arnold Milling Co., Sterling, Kan.	1	1		
Ashcraft-Wilkinson Co., Atlanta, Ga.	1	1		
Ashcraft-Wilkinson Co., Norfolk, Va.	1	1		
Associated Feed Dealers of America, Inc., Chicago, Ill.	4	3	1	
Aubrey & Co., Louisville, Ky.	8	8		2
Auburn Roller Mills, Auburn, Ind.	2	2		
Audry Bros. Flour Mill, Birdseye, Ind.	1	1		
Aukerman Bros.-Catey Co,. Amboy, Ind.	1	1		
Aukerman Bros. Co., Peru, Ind.	6	6		
Aurora Flour & Feed Co., Aurora, Ind.	5	4	1	
Aviston Milling Co., East St. Louis, Ill.	2	2		1
Baldwin & Co., J. Jay, Crown Point Ind.	2	2		
Ballard Packing Co., Marion, Ind.	4	3	1	
Bargersville Grain Co., Bargersville, Ind.	2	2		
Barr Grain Co., O. L., Bicknell, Ind.	1		1	
Bart's Tankage Works, Joseph K., Rochester, Ind.	1	1		
Bash & Co., Inc., C. E., Huntington, Ind.	3	3		
Bashore Feed Store & Hatchery, Silver Lake, Ind.	2	2		
Bashore Feed Store & Hatchery, Warsaw, Ind.	3	3		
Batesville Fertilizer Co., Batesville, Ind.	2	2		
Battle Creek Dog Food Co., Battle Creek, Mich.	1	1		
Bauman's Feed Mill, DeMotte, Ind.	4	3	1	
Bausback Fertilizer Co., Shelbyville, Ind.	5	5		
Beck Grain & Feed Co., Shelbyville, Ind.	7	4	3	
Bee Line Feed Supply, LaPorte, Ind.	6	5		4
Bellman & Bortz, LaPorte, Ind.	4	3	1	
Benz Co., Inc., The, Batesville, Ind.	1	1		
Berne Grain & Hay Co., Berne, Ind.	5	5		
Berndt, Fred W., Rte 3, Indianapolis, Ind.	1	1		1
Bickels Feed & Supply Store, Corydon, Ind.	3	2	1	
Bisbee Linseed Co., Chicago Heights, Ill.	3	3		
Blanton & Son, Jos., Jasonville, Ind.	1		1	
Blish Milling Co., Seymour, Ind.	8	7	1	
Bloomingdale Mill Co., Bloomingdale, Ind.	2	2		
Bloomington Milling Co., Bloomington, Ind.	4	4		
Bloomington Packing Co., Bloomington, Ind.	8	6	2	
Blue River Reduction Co., Edinburg, Ind.	3	3		
Bluff City Mills & Elevator Co., Mt. Carmel, Ill.	4	4		4
Boldt Milling Co., Waynetown, Ind.	3	3		
Boonville Milling Co., Boonville, Ind.	6	5	1	
Bourbon Elevator & Feed Mill, Bourbon, Ind.	5	5		
Branch Grain & Seed Co., Martinsville, Ind.	3	3		
Brazil Flour & Feed Co., Brazil, Ind.	2	2		
Brazil Tankage Co., Brazil, Ind.	1	1		
Bremen Roller Mills, Bremen, Ind.	2	2		
Brewer Milling Co., Gosport, Ind.	1	1		
Bristol Co-operative Ass'n, Bristol, Ind.	1	1		
Brizius Co., The Chas. W., Evansville Ind.	6	6		
Brizius Co., The Chas. W., Newburg, Ind.	6	6		
Brode Corp., F. W., Memphis, Tenn.	5	5		
Brook Feed Mill, Brook, Ind.	1	1		
Brookie, D. L., Monon, Ind.	1	1		1
Brown Bros., Inc., Indianapolis, Ind.	4	3	1	
Brown Supply Co., Valparaiso, Ind.	1	1		
Buchsieb, E. G., Inc., Columbus, Ohio	4	4		1
Buhner Fertilizer Co., The, Seymour, Ind.	8	8		
Bundy Bros., Medora, Ind.	3	3		
Bundy Bros. Mill Co., Vallonia, Ind.	11	9	2	
Burk Elevator Co., Decatur, Ind.	3	3		
Butler Feed Store, Oakland City, Ind.	1	1		
Butt & Co., L. T., Center Point, Ind.	3	1	2	
Cadick Milling Co., Grand View, Ind.	4	4		

TABLE 6—Continued

NAME AND ADDRESS OF MANUFACTURER	Number of Samples Examined	Number of Samples Passed	Number of Samples Not Passed	Number of Samples Not Tagged
Cairo Meal & Cake Co., Cairo, Ill.	22	18	4	2
Calvert & Sons, R. F., Worthington, Ind.	1	1		
Cambridge Feed Mills, Cambridge City, Ind.	10	10		
Campbellsburg Milling Co., Campbellsburg, Ind.	1	1		
Cannelton Flour Mills, Cannelton, Ind.	2	2		
Cannon Valley Milling Co., Minneapolis, Minn.	1	1		
Capital Flour Mills, Inc., Minneapolis, Minn.	1	1		
Carmer Co., J. M., Auburn, Ind.	1	1		
Carney Hatcheries, Inc., Shelbyville, Ind.	3	3		
Cauble, O. L., Pekin, Ind.	6	5	1	
Cayuga Milling Co., Cayuga, Ind.	3	3		
Chapman-Doake Co., Decatur, Ill.	10	7	3	1
Charlestown Milling Co., Charlestown, Ind.	2	2		
Choctaw Sales Co., Kansas City, Mo.	1		1	
Clawson & Sons, Rte. 3, Attica, Ind.	1	1		
Clay County Farm Bureau Co-operative Ass'n, Inc., Brazil, Ind.	1	1		
Clinton Corn Syrup Refining Co., Clinton, Iowa	1	1		
Cloverleaf Creameries, Inc., Decatur, Ind.	5	5		
Cloverleaf Mills, Kokomo, Ind.	5	5		
Cohee & Clark, Kempton, Ind.	4	3	1	1
Collis Products Co., St. Paul, Minn.	1	1		1
Columbus Milling Co., Columbus, Ind.	18	13	5	1
Columbus Sanitary Reduction Co., Columbus, Ind.	5	5		
Combs, Gilbert, Bloomfield, Ind.	4	4		
Community Mill, Edinburg, Ind.	1	1		
Community Mill, Newberry, Ind.	1		1	
Community Mills, Valparaiso, Ind.	2	2		
Conders Feed Store, LaPorte, Ind.	4	4		
Conkey Co., G. E., Cleveland, Ohio	1	1		
Consolidated Products Co., Chicago, Ill.	3	3		
Consolidated Products Co., Danville, Ill.	5	4	1	
Cook Grain Co., E. N., Union Mills, Ind.	1	1		
Co-operative Elevator Co., Winamac, Ind.	1	1		
Corn Belt Feed Co., Boswell, Ind.	6	5	1	
Cottrell Bros., Terre Haute, Ind.	6	6		
Crabbs Reynolds Taylor Co., Lafayette, Ind.	23	21	2	1
Cynthiana Reduction Plant, Cynthiana, Ind.	3	3		
Daniel Bros., Inc., Columbia City, Ind.	2	1	1	
Darling & Co., Chicago, Ill.	9	9		
Daviess County Farm Bureau, Washington, Ind.	2	2		
Davis, S. P., Little Rock, Arkansas	4	4		
Davis Fertilizer Co., Plainfield, Ind.	1	1		
Decatur County Co-operative Co., Greensburg, Ind.	2	2		
Decatur Milling Co., Decatur, Ill.	5	5		1
Decatur Rendering Co., Decatur, Ind.	1		1	
Dekalb Tanking Co., Auburn, Ind.	1	1		
Denver Alfalfa Milling & Products Co., Lamar, Colo.	3	3		3
Depoy's Feed Mill, Ben, Muncie, Ind.	2	2		
Deshler Alfalfa Milling Co., Deshler, Ohio	1		1	
Dickinson Co., The Albert, Chicago, Ill.	7	7		1
Dryfus Packing Co., Lafayette, Ind.	4	2	2	
Dry Milk Products Co., Columbus, Ohio	2	2		1
Dubois County Farm Bureau Co-operative Ass'n, Huntingburg, Ind.	1	1		
Dutschke Milling Co., Cannelton, Ind.	4	4		
Dwiggins & Sons, Waynetown, Ind.	2	2		
Early & Daniel Co., Cincinnati, Ohio	7	5	2	4
Easton Feed Store, Bedford, Ind.	1	1		
Eberts & Brother, North Vernon, Ind.	3	3		
Eberts Grain Co., Louisville, Ky.	8	8		1
Economy Feed Co., Princeton, Ind.	2	2		
Edwards Distributing Co., Baltimore, Md.	1			1
Edwards & Co., Inc., S. T., Chicago, Ill.	6	4	2	
Edwardsport Garbage Co., Bicknell, Ind.	1	1		
Egloff Milling Co., Vincennes, Ind.	5	5		
Elkhart Packing Co., Elkhart, Ind.	4	4		
Emge & Sons, Ft. Branch, Ind.	7	6	1	
English & Milltown Milling Co., Milltown, Ind.	1	1		
Erie Elevator Co., Rochester, Ind.	2	2		
Erwin, J. R., Daylight, Ind.	1	1		
Etna Lumber & Elevator Co., Etna Green, Ind.	2	1	1	
Eureka Mercantile Corp., Corydon, Ind.	5	5		
Evans Milling Co., Indianapolis, Ind.	8	8		
Ewing Mill Co., Brownstown, Ind.	10	10		
Fairmont Creamery Co., Omaha, Neb.	4	2	2	2
Farm Bureau Elevator & Supply Co., Crawfordsville, Ind.	5	5		
Farm Bureau Service, Inc., Columbus, Ind.	8	8		
Farmers Coal & Feed Co., Goshen, Ind.	6	4	2	

TABLE 6—Continued

NAME AND ADDRESS OF MANUFACTURER	Number of Samples Examined	Number of Samples Passed	Number of Samples Not Passed	Number of Samples Not Tagged
Farmers Co-operative Co., Cicero, Ind.	3	3		
Farmers Co-operative Co., Southport, Ind.	6	6		
Farmers Co-operative Elevator, Seymour, Ind.	14	14		
Farmers Co-operative Elevator, Winamac, Ind.	4	4		
Farmers Elevator Co., South Whitley, Ind.	2	2		
Farmers Exchange, Inc., Warren, Ind.	1	1		
Farmers Feed & Coal Co., Bloomington, Ind.	6	6		
Farmers Feed Store, Dunkirk, Ind.	1	1		
Farmers Grain & Lumber Co., South Wanatah, Ind.	1	1		
Farmers Grain & Supply Co., Oak, Ind.	2	2		
Farmers Grain & Supply Co., Windfall, Ind.	4	4		
Farmers Marketing Ass'n, Columbus, Ind.	3	3		
Farmers & Merchants Exchange, New Albany, Ind.	9	7	2	
Farmers Mill, The, Huntingburg, Ind.	3	2	1	
Farmers Mill & Elevator, Ferdinand, Ind.	2	2		
Farmers Mill & Elevator Co., Columbia City, Ind.	6	6		
Farmers Produce Co., Salem, Ind.	2	2		
Farm Products Ass'n, Indianapolis, Ind.	2	2		
Fayette County Farm Bureau Co-operative Ass'n, Inc., Connersville, Ind.	1	1		
Finch & Weisel Elevator Co., Portland, Ind.	1	1		
Fischer Packing Co., Inc., Henry, Louisville, Ky.	1	1		
Fisher-Lambert Feed & Coal Co., Anderson, Ind.	1	1		
Flavo Mill, The, Bandon, Ind.	1	1		
Ford Milling Co., New Harmony, Ind.	2	2		
Forest Park Mills, North Terre Haute, Ind.	2	2		
Fort Madison Creamery Co., Fort Madison, Iowa	1			1
Foster-Kendall Co., Carmel, Ind.	11	11		
Frankfort Electric Hatchery, Frankfort, Ind.	1	1		
Frankfort Rendering Co., Frankfort, Ind.	8	8		
Franklin Grain Co., Franklin, Ind.	2	2		
Freese's Sons, George, Nappanee, Ind.	2	2		
French Bros.-Bauer Co., The, Cincinnati, Ohio	1	1		1
French Lick Milling Co., French Lick, Ind.	1	1		
Fretz Feed Co., R. C., Waterloo, Ind.	5	5		
Friend, R. T., Lafayette, Ind.	1	1		
Friendship Milling Co., Friendship, Ind.	4	4		
Frierson III, John S., Mt. Pleasant, Tenn.	1		1	
Froedtert Grain & Malting Co., Milwaukee, Wis.	1	1		1
Fry Feed Mill & Elevator Co., Herbert B., Argos, Ind.	3	3		
Fuhrer-Ford Milling Co., Mt. Vernon, Ind.	3	3		
Fulton Mill, The, Fulton, Ind.	2	2		
Fyke Milling Co., Kendallville, Ind.	3	3		
Galesburg Milling Co., Galesburg, Ill.	2	1		2
Garland Milling Co., Greensburg, Ind.	2	2		
Garten Feed Co., Indianapolis, Ind.	16	15	1	1
Geabes Bros., Clay City, Ind.	8	7	1	
Geneva Equity Exchange, Geneva, Ind.	1	1		
Geneva Milling & Grain Co., Geneva, Ind.	5	5		
Germantown Rendering Co., Germantown, Ohio	2	1	1	
Gibson County Shipping Ass'n, Princeton, Ind.	7	3	4	
Goeke Sons, Edward F., Evansville, Ind.	17	12	5	
Goldreich Fertilizer Co., Marion, Ind.	1	1		
Goodrich Bros. Co., Winchester, Ind.	33	33		2
Graft, C. V., Winchester, Ind.	6	6		
Graham Farms, Washington, Ind.	1	1		
Grant Coal & Feed Co., Marion, Ind.	5	5		
Gray-Von Allmen Creamery Co., Louisville, Ky.	3	3		1
Great Atlantic & Pacific Tea Co., The, New York, N. Y.	2	2		1
Greene Coal & Supply Co., H. O., Goshen, Ind.	3	3		
Greene County Farm Bureau Co-operative Ass'n, Linton, Ind.	12	10	2	1
Greenfield Fertilizer Co., Greenfield, Ind.	1		1	
Gust, E. G., Westville, Ind.	4	4		
Gutwein Milling Co., Francesville, Ind.	4	4		
Habig Brothers, Indianapolis, Ind.	20	18	2	
Hagerman & Co., H. J., South Bend, Ind.	7	7		
Haines-Thompson Milling Co., Crawfordsville, Ind.	1	1		
Haldeman-Baum Co., Akron, Ind.	1	1		
Hales & Hunter Co., Chicago. Ill.	4	4		1
Hallawells Feed Store, North Vernon, Ind.	6	6		
Hamlet Grain & Feed Co., Hamlet, Ind.	2	2		
Hammond Mills, Hammond, Ind.	1	1		
Hancock County Farm Bureau Co-operative Ass'n, Inc., Greeifield, Ind.	2	2		
Hansel, C. D., North Terre Haute, Ind.	2	2		
Hardy & Son, M. N., Scottsburg, Ind.	2	2		
Hartford City Milling Co., Hartford City, Ind.	3	3		
Hartman & Dotterer, Bluffton, Ind.	1	1		
Hauser, C. M., New Carlisle, Ind.	2	2		

TABLE 6—Continued

NAME AND ADDRESS OF MANUFACTURER	Number of Samples Examined	Number of Samples Passed	Number of Samples Not Passed	Number of Samples Not Tagged
Hay's Branch Mills, Dillsboro, Ind.	1	1		
Hayes, W. E., Kokomo, Ind.	5	5		
Hayes & Son, Charles M., Oakland City, Ind.	2	1	1	
Hayesville Milling Co., Rte. 3, Jasper, Ind.	2	2		
Haynes Milling Co., Portland, Ind.	5	5		
Hebron Feed Co., Hebron, Ind.	3	3		
Heise Brothers, Orleans, Ind.	22	20	2	
Heitschmidt, A. C., Michigan City, Ind.	1	1		
Heldt Co., The, Evansville, Ind.	2	2		
Helena Cotton Oil Mill, Helena, Ark.	2	2		2
Hemlock Grain Co., Hemlock, Ind.	2	1	1	1
Heppe Co., The, Logansport, Ind.	2	2		
Hinshaw Grain Co., Summitville, Ind.	1		1	
Hirst & Begley Linseed Works, Chicago, Ill.	2	2		
Hite Brothers, Peru, Ind.	1		1	
Hobson, Fred S., Rte. 1, Russiaville, Ind.	1	1		
Holders Elevator, John M., Clifford, Ind.	2	2		
Holland Mills, The, Holland, Ind.	1	1		
Home Mill & Grain Co., Mt. Vernon, Ind.	2	2		1
Home Packing & Ice Co., Terre Haute, Ind.	3	3		
Hoosier Abattoir, Indianapolis, Ind.	1	1		
Hoosier Condensed Milk Co., Bluffton, Ind.	1	1		
Hoosier-Dell Leghorn Farm, Rte. B, Indianapolis, Ind.	1		1	
Hoosier Mineral Feed Co., Greenwood, Ind.	8	6	2	
Hooton-Davis Corp., Lebanon, Ind.	1		1	
Hornung's Mill, Greensburg, Ind.	1	1		
Hughes-Curry Packing Co., Anderson, Ind.	6	6		
Humphreys-Godwin Co., Memphis, Tenn.	15	14	1	2
Hunter Packing Co., East St. Louis, Ill.	1	1		
Huntington Mill Co., Huntington, Ind.	3	2	1	
Hurn Milling Co., W. D., Leavenworth, Ind.	3	3		1
Igleheart Bros., Inc., Evansville, Ind.	4	4		
Illinois Stock Medicine Co., Quincy, Ill.	1			1
Imbs Milling Co., J. F., Belleville, Ill.	1	1		1
Imperial Mills, Cambridge City, Ind.	4	4		
Indiana Dairy Marketing Ass'n, Muncie, Ind.	4	4		
Indiana Farm Bureau Co-operative Ass'n, Inc., Indianapolis, Ind.	19	17	2	2
Indiana Flour & Feed Co., Muncie, Ind.	10	9	1	
Indiana Hide & Tallow Co., South Bend, Ind.	8	6	2	1
Indiana State Milling Co., South Bend, Ind.	9	5	4	
Indianapolis Abattoir Corp., Indianapolis, Ind.	1		1	
Iroquois Roller Mills, Rensselaer, Ind.	12	12		
Irwins Feed Store & Hatchery, Madison, Ind.	3	3		
Jacobson, Soren, Young America, Ind.	2	2		
Jennings County Farm Bureau Co-operative Ass'n, Inc., North Vernon, Ind.	6	6		
Jersee Co., The, Minneapolis, Minn.	2	2		
Johnston & Sons Milling Co., Prairieton, Ind.	3	1	2	
Joslin-Schmidt Corp., Cincinnati, Ohio	11	11		
Kahn's Sons Co., The E., Cincinnati, Ohio	1	1		
Kamman, Frank W., Cross Plains, Ind.	1	1		
Karsell Co., The, Bloomington, Ind.	4	4		
Kasch, Louis, Logansport, Ind.	4	4		
Kehoe, Inc., James E., Chicago, Ill.	3	1	2	
Kell, R. C., Oakland City, Ind.	5	5		
Kellogg & Sons, Inc., Spencer, Buffalo, N. Y.	1	1		
Kentucky Chemical Manufacturing Co., Covington, Ky.	4	4		
Kentucky Feed & Grain Co., Louisville, Ky.	2	2		2
Kentucky Feed Mills, Louisville, Ky.	2	2		1
Kiefer Feed & Supply Co., Elwood, Ind.	4	4		
Kiest Milling Co., Knox, Ind.	4	4		
King Elevator Co., Wabash, Ind.	1	1		
Kingan & Co., Indianapolis, Ind.	5	5		
Klondike Milling Co., Danville, Ind.	1	1		
Knapp, C. E., South Bend, Ind.	3	3		1
Knecht Milling Co., Hartford City, Ind.	3	3		
Knightstown Grain Co., Knightstown, Ind.	3	2	1	
Knox County Farm Bureau Co-operative Ass'n, Inc., Vincennes, Ind.	8	8		
Knox County Fertilizer Co., Vincennes, Ind.	4	3	1	
Koschnick & Co., Indianapolis, Ind.	3	3		
Kosciusko County Farm Bureau Co-operative Ass'n, Inc., Warsaw, Ind.	2	2		
Kraft-Phenix Cheese Corp., Chicago, Ill.	1	1		
Kuhner Packing Co., Muncie, Ind.	14	12	2	
Lafayette Co-operative Elevator Co., Lafayette, Ind.	9	8	1	
Lafayette Milling Co., Lafayette, Ind.	4	3	1	
Lagrange County Farm Bureau, Lagrange, Ind.	2	2		
Lake County Oil Mill, Tiptonville, Tenn.	1		1	
Lanesville Milling Co., Lanesville, Ind.	3	3		

TABLE 6—Continued

Name and Address of Manufacturer	Number of Samples Examined	Number of Samples Passed	Number of Samples Not Passed	Number of Samples Not Tagged
Land O'Lakes Creameries, Inc., Minneapolis, Minn.	1		1	
Lapaz Grain Co., Lapaz, Ind.	3	3		
LaPorte County Hatcheries, LaPorte, Ind.	1		1	
Larkin & Denny, Cloverdale, Ind.	4	4		
Larrow Milling Co., Detroit, Mich.	1	1		
Lash Flour Mills, Fred B., Farmersburg, Ind.	5	5		
Lawrence County Farm Bureau Co-operative Ass'n, Inc., Bedford, Ind.	5	5		
Leavenworth Roller Mills, Leavenworth, Ind.	1	1		
Lebanon Grain Co., Lebanon, Ind.	1	1		
Lemon Milling Co., Bedford, Ind.	7	6	1	
Lexington Flour Mill, Danville, Ill.	1	1		
Liberty Mills, Liberty, Ind.	2	2		
Lima Elevator Co., Howe, Ind.	3	3		
Linkhart & Son, North Vernon, Ind.	1	1		
Logansport Elevator Co., Logansport, Ind.	3	3		
Loughery Bros. Milling & Grain Co., Monticello, Ind.	1	1		
Louisville Cereal Mill Co., Louisville, Ky.	1	1		
Lovitt & Co., L. B., Memphis, Tenn.	5	5		3
Lucas Cash Store, Brownstown, Ind.	2	2		
Lyon & Greenleaf Co., Ligonier, Ind.	2	2		
McCardle & Wallace, Terhune, Ind.	1	1		
McCarty Seed Co., J. A., Evansville, Ind.	21	21		
McCarty Seed Co., Inc., Terre Haute, Ind.	1	1		
McComas & Pritchard, Mohawk, Ind.	6	6		
McCormick Co., Chas. W., Logansport, Ind.	1	1		
McKenzie Milling Co., Quincy, Mich.	2			2
McMahan Seed Co., Valparaiso, Ind.	5	5		
MacDonald, C. L., Rte. 5, Marion, Ind.	1	1		
Maegerlein, E. S., Patricksburg, Ind.	2	2		
Magee, E. R., Rte, Monticello, Ind.	1	1		
Major Bros. Packing Co., Mishawaka, Ind.	2	2		
Majot Mills, E. C., Rte. 2, Michigan City, Ind.	6	5	1	
M. & R. Grain Corp., Indianapolis, Ind.	4	4		
Marianna Sales Co., Memphis, Tenn.	7	6	1	1
Marshall Feed & Grain Co., Marshall, Ind.	2	2		
Martin, John D., Lafayette, Ind.	15	14	1	
Martins Feed & Supply Store, Palmyra, Ind.	1	1		
Martinsville Milling Co., Martinsville, Ind.	9	8	1	1
Massie Hatchery, Columbus, Ind.	2	2		
Maxwell Grain Co., Maxwell, Ind.	2	2		
Mayer Grain Co., South Whitley, Ind.	5	5		
Mayflower Mills, Ft. Wayne, Ind.	3	3		
Mead Johnson & Co., Evansville, Ind.	4	3		1
Meat Products Co., The, Cleveland, Ohio	1	1		
Medaryville Co-operative Co., Medaryville, Ind.	1	1		
Meier Packing Co., Indianapolis, Ind.	3	3		
Menaugh, Will H., Osceola, Ind.	5	4	1	
Metamora Roller Mills, Metamora, Ind.	2	2		
Mexico Elevator & Live Stock Co., Mexico, Ind.	2	2		
Middlebury Grain Co., Middlebury, Ind.	10	9	1	
Middletown Grain Co., Middletown, Ind.	1	1		
Miesenhelder Bros., Palestine, Ill.	2	1		1
Milford Grain & Milling Co., Milford, Ind.	2	2		
Miller & Thomas, Jonesboro, Ind.	3	3		
Miller Grain Co., Inc., Bainbridge, Ind.	8	8		
Millersburg Hammer Mill, Millersburg, Ind.	3	3		
Minneapolis Milling Co., Minneapolis, Minn.	1	1		1
Mishawaka Grain & Coal Co., Mishawaka, Ind.	10	10		
Missouri Cotton Oil Co., Cairo, Ill.	15	15		1
Modoc Roller Mills & Elevator, Modoc, Ind.	3	3		
Moellering's Flour Mill, Ft. Wayne, Ind.	2	2		
Monroe Grain Co., Monroe, Ind.	1	1		
Monroeville Equity Union Exchange, Monroeville, Ind.	1	1		
Mooresville Milling Co., Mooresville, Ind.	2	2		
Morgan, Frank, Plainville, Ind.	1	1		
Morgan, J. L., Lyons, Ind.	1	1		
Morgan County Farm Bureau Co-operative Ass'n, Inc., Martinsville, Ind.	1	1		
Morris & Co. (Branch North American Provision Co.), Chicago, Ill.	20	19	1	
Mt. Jackson Feed & Seed Co., Indianapolis, Ind.	8	7	1	
Mt. Vernon Milling Co., Mt. Vernon, Ind.	2	2		
Moutoux, P. E., Evansville, Ind.	1	1		
Mulberry Grain Co., Mulberry, Ind.	3	3		
Munn Packing Co., Lexington, Ky.	2			2
Mutschler Packing Co., Fred, Decatur, Ind.	2	2		
Myers, Bros., Alfordsville, Ind.	2	2		
Myers Bros., Bourbon, Ind.	2	1	1	
Naber & Co., Chas. F., Alexandria, Ind.	2	2		

TABLE 6—Continued

NAME AND ADDRESS OF MANUFACTURER	Number of Samples Examined	Number of Samples Passed	Number of Samples Not Passed	Number o Samples Not Tagge
Naber & Co., Chas. F., Fairmount, Ind.	1	1		
Nading Grain Co., William, Greensburg, Ind.	3	3		
Nappanee Milling Co., Nappanee, Ind.	8	8		
National Milling Co., Toledo, Ohio.	4	4		
New Albany Milling Co., New Albany, Ind.	7	7		
New Haven-Thurman Equity Exchange, New Haven, Ind.	1	1		
New Paris Creamery Co., New Paris, Ind.	7	6	1	
New Paris Feed & Coal Co., New Paris, Ind.	4	3	1	
New Ross Grain & Lumber Co., New Ross, Ind.	2	2		
New Ulm Roller Mill Co., New Ulm, Minn.	2	2		
Niles Creamery Co., Niles, Mich.	2	2		
Noblesville Milling Co., Noblesville, Ind.	3	3		
Norman & Roberts, G. M., Bedford, Ind.	5	5		
Northern Illinois Cereal Co., Lockport, Ill.	2	2		1
Northern Indiana Co-operative Ass'n, Mentone, Ind.	4	4		1
North Manchester Fertilizer Co., North Manchester, Ind.	1	1		
North Side Feed Store, Mishawaka, Ind.	6	6		
Nowak Milling Corp., Hammond, Ind.	17	17		
Nunn & Sons Milling Co., Chas., Evansville, Ind.	13	9	4	
Oakland City Milling Co., Oakland City, Ind.	3	3		
O'Brien & Sons, Inc., Greenville, Ohio	5	4	1	3
Odon Milling Co., Odon, Ind.	4	4		
Ohio Equity Exchange Co., The, Lima, Ohio.	1	1		1
Ohio Valley Seed Co., Evansville, Ind.	2	2		1
Owens Coal & Feed Co., Bloomington, Ind.	1	1		
Page Milk Co., Shelbyville, Ind.	1	1		
Palestine Mills, Palestine, Ind.	3	1	2	
Paoli Milling Co., Paoli, Ind.	1	1		
Paxson, C. E., Elkhart, Ind.	3	1	2	
Pearl Packing Co., Inc., Madison, Ind.	2		2	
Pecos Valley Alfalfa Mill Co., Hagerman, N. Mex.	4	2	1	2
Penick & Ford, Ltd., Inc., Cedar Rapids, Iowa	1	1		1
Penman Bros., Brazil, Ind.	1		1	
Pennington Feed Store, Bloomington, Ind.	6	5	1	
Perry County Farm Bureau, Tell City, Ind.	4	4		
Peru Grain & Coal Co., Peru, Ind.	6	6		
Petersburg Milling & Grain Co., Petersburg, Ind.	3	3		
Pfeffer Milling Co., Lebanon, Ill.	2	2		
Phillips, J. C., Star City, Ind.	1	1		
Pico Feed Co., Warsaw, Ind.	2	2		
Piel Bros. Starch Co., Indianapolis, Ind.	2	2		
Pine Village Feed Co., Pine Village, Ind.	1		1	
Pinola Co-operative Co., LaPorte, Ind.	4	3	1	
Pioneer Elevator Co., Worthington, Ind.	2	1	1	
Pittsburg Plate Glass Co., Red Wing, Minn.	2	2		
Plainville Mill & Elevator Co., Plainville, Ind.	2	2		1
Plymouth Fertilizer Co., Rte. 1, Plymouth, Ind.	3	3		
Polk Sanitary Milk Co., Indianapolis, Ind.	19	4	15	
Porter County Farm Bureau, Supply Dept., Valparaiso, Ind.	4	3	1	
Posey Seed & Feed Co., Mt. Vernon, Ind.	5	5		
Poseyville Grain & Feed Co., Inc., Poseyville, Ind.	6	5	1	
Postel Milling Co., Ph. H., Mascoutah, Ill.	2			2
Prairie Creek Mill, Prairie Creek, Ind.	2	2		
Prairie State Milling Co., Chicago, Ill.	1	1		
Pratt Food Co., Hammond, Ind.	10	10		1
Pratt Food Co., Philadelphia, Pa.	1		1	
Price, L., Converse, Ind.	1	1		
Producers Creamery, Marion, Ind.	3	2	1	
Purcell Seed Co., Inc., Evansville, Ind.	6	6		
Quaker Oats Co., Chicago, Ill.	9	9		
Rach Milling Co., Cairo, Ill.	2	2		
Ragsdale & Owen, Bedford, Ind.	2	2		
Ralston-Purina Co., St. Louis, Mo.	8	8		1
Rapier Sugar Feed Co., Owensboro, Ky.	1	1		1
Rauh & Sons Co., Inc., E., Dayton, Ohio	1	1		
Rauh & Sons Animal Feed Co., E., Indianapolis, Ind.	6	6		
Read Phosphate Co., New Albany, Ind.	10	9	1	2
Reed Elevator Co., Decatur, Ind.	7	7		
Reese & Co., Wm., Mishawaka, Ind.	1	1		1
Reid, Volney T., Salem, Ind.	1	1		
Reising & Sons, N., Poseyville, Ind.	5	4	1	
Reveal & Beydler, Lebanon, Ind.	1	1		
Richmond Roller Mills, Inc., Richmond, Ind.	4	2	2	
Riedling, R. D., Louisville, Ky.	1	1		1
Riverdale Products Co., Chicago, Ill.	11	8	2	2
Roberts Cotton Oil Mill, Cairo, Ill.	2	2		
Robinson Feed Co., Perrysville, Ind.	3	3		

TABLE 6—Continued

Name and Address of Manufacturer	Number of Samples Examined	Number of Samples Passed	Number of Samples Not Passed	Number of Samples Not Tagged
Robinson Grain Co., Williamsport, Ind.	1	1		
Rochester Co-operative Elevator Co., Rochester, Ind.	6	6		
Rochester Fertilizer & Tankage Co., Rochester, Ind.	1	1		
Rolling Prairie Lumber & Grain Co., Rolling Prairie, Ind.	2	2		
Roper & Brown, Hobart, Ind.	11	11		
Rose & Co., G. P., Nashville, Tenn.	1	1		
Rosedale Elevator Co., Rosedale, Ind.	1	1		
Rowe Sons Co., A., Terre Haute, Ind.	2	2		
Rund Packing Co., Lafayette, Ind.	4	3	1	
Rush County Mills, Rushville, Ind.	4	3	1	
Russell & Martin, Elkhart, Ind.	4	4		
Russellville Flour & Feed Co., Russellville, Ind.	1	1		
Ryde & Co., Chicago, Ill.	1	1		
Salamonie Mills, Warren, Ind.	1	1		
Sample, John L., Madison, Ind.	2	2		
Santa Fe Elevator Co., Santa Fe, Ind.	7	7		
Schaefer, John H., Columbus, Ind.	6	6		
Schlosser Bros., Frankfort, Ind.	5	5		2
Schmadel Packing & Ice Co., Evansville, Ind.	3	2	1	
Schnaible Co., M. J., Lafayette, Ind.	2	2		
Schulte, W. C., Freelandville, Ind.	5	2	3	
Schultz, Baujan & Co., Beardstown, Ill.	2	2		
Schultz Bros., Elberfeld, Ind.	2	2		
Schuppert Milling Co., New Salisbury, Ind.	1	1		
Scottsburg Elevator Co., Scottsburg, Ind.	1	1		
Sheets Elevator Co., Cleveland, Ohio	1	1		
Shelby County Farm Bureau Co-operative Ass'n, Shelbyville, Ind.	2	2		
Sherman-White & Co., Goodland, Ind.	1	1		
Shine & Co., J. H., New Albany, Ind.	7	6	1	1
Silver Lake Egg Farm & Hatchery, Silver Lake, Ind.	5	5		
Sims Milling Co., Frankfort, Ind.	8	8		
Slone, Thomas H., Chicago, Ill.	2	2		2
Slugg, W. G., Milwaukee, Wis.	1	1		
Smith, William B., Logansport, Ind.	1		1	
Smith Agricultural Chemical Co., The, Indianapolis, Ind.	2	1	1	
Smock & Caca, Noblesville, Ind.	1		1	
Sommerfield & Swanson, LaPorte, Ind.	2	1	1	
Southern Indiana Reduction Co., Salem, Ind.	5	4	1	
Sowash, E. K., Crown Point, Ind.	6	6		
Soya Products, Inc., Chicago, Ill.	7	7		2
Spurgin, Archie B., Columbus, Ind.	5	5		
Stadler Products Co., The, Cleveland, Ohio	3	3		
Stahl Packing Co., Evansville, Ind.	3	3		
Stanley Feed Co., Salem, Ind.	2	2		
Star Milling Co., Shoals, Ind.	1	1		
Starr Mills, South Bend, Ind.	8	8		
Star Roller Mills, Burlington, Ind.	3	2	1	
Staser & Dayhoff, Lyons, Ind.	1	1		
Steckleys Feed Mill, Kendallville, Ind.	2	1	1	
Steventon Bros., Rockville, Ind.	2	2		
Stolle & Sons, Anton, Richmond, Ind.	1	1		
Strauch, Albert H., Royal Center, Ind.	1	1		
Strauss & Son, J. W., North Manchester, Ind.	1	1		
Street Milling Co., J., LaPorte, Ind.	6	6		
Success Mills, Inc., Chicago, Ill.	4	4		
Suckow Milling Co., Franklin, Ind.	3	2	1	
Sullivan County Farm Bureau Co-operative Ass'n, Sullivan, Ind.	3	3		
Sullivan Fertilizer Co., Sullivan, Ind.	1	1		
Sunnyside Milling Co., Evansville, Ind.	5	5		
Sun-O-Dine Co., The, Chicago, Ill.	2	2		
Sunshine Farms, Inc., Lafayette, Ind.	2	2		
Swarthout, Jacob, Vernon, Ind.	1	1		
Swayzee Grain Co., Swayzee, Ind.	3	2	1	
Swift & Co., Chicago, Ill.	24	21	3	2
Syler & Syler, Nappanee, Ind.	5	5		
Syler & Syler, Plymouth, Ind.	2	2		
Tarkio Molasses Feed Co., Kansas City, Mo.	1	1		
Tell City Flouring Mills, Tell City, Ind.	3	2	1	
Terre Haute Abattoir Stock Yards Co., Terre Haute, Ind.	1		1	
Terre Haute Grease & Tallow Factory, Terre Haute, Ind.	2	1	1	
Thomas Milling Co., Marion, Ind.	10	10		1
Thompson, Ernest, Danville, Ind.	1	1		1
Thornburg Milling & Elevator Co., Martinsville, Ind.	2	2		
Tipton County Farm Bureau Co-operative Ass'n, Inc., Tipton, Ind.	1	1		1
Tipton Fertilizer Co., Tipton, Ind.	1		1	
Tipton Milling Co., Tipton, Ind.	3	2	1	
Topeka Roller Mill, Topeka, Ind.	4	4		

TABLE 6—Continued

NAME AND ADDRESS OF MANUFACTURER	Number of Samples Examined	Number of Samples Passed	Number of Samples Not Passed	Number of Samples Not Tagged
Tower & Merryman, Marengo, Ind.	1	1		
Tri-County Farm Bureau Co-operative Ass'n, Inc., Evansville, Ind.	9	9		
Tri State Feed Mill, Daylight, Ind.	4	4		
Trow Co., W., Madison, Ind.	7	7		
Turley, Ross, Orleans, Ind.	2	2		
Turner Coal & Feed Co., Muncie, Ind.	2	1	1	
Ubiko Milling Co., Cincinnati, Ohio	6	6		
Uhl-Snider Milling Co., Connersville, Ind.	2	2		
Union Mills, Wabash, Ind.	3	2	1	
Union Mineral Co., The, Liberty, Ind.	1		1	
Urbana Mills, Urbana, Ohio	2	2		
Urmston Elevators, Inc., Camden, Ind.	3	3		
Urmston Elevators, Inc., Frankton, Ind.	2	1	1	
Urmston Grain & Seed Co., Anderson, Ind.	1		1	
Urschel Bros., Tippecanoe, Ind.	1	1		
Valentine & Co., Terre Haute, Ind.	3	3		
Valley Milling Co., Crawfordsville, Ind.	1	1		
Vaughn, O. W., Guilford, Ind.	1	1		
Veedersburg Roller Mills, Veedersburg, Ind.	3	2	1	
Vermillion County Farmers, Inc., Dana, Ind.	1	1		
Versailles Feed Co., Versailles, Ind.	3	3		
Vevay Flour Mills, Vevay, Ind.	2	2		
Victoria Mill & Elevator Co., Jasper, Ind.	4	4		
Vigo County Farm Bureau Co-operative Ass'n, Inc., Terre Haute, Ind.	2	1	1	
Vitality Mills, Inc., Chicago, Ill.	3	2	1	
Vogel Bros., Seymour, Ind.	6	6		
Wabash County Farm Bureau Co-operative Ass'n, Inc., Wabash, Ind.	2	2		
Wachtel Co., John, Indianapolis, Ind.	13	11	2	
Wadley Co., The, Indianapolis, Ind.	1	1		
Walker & Company, Peter M., Loogootee, Ind.	1	1		
Walker & Company, Peter M., Washington, Ind.	3	3		
Walker & Son, J. M., Middletown, Ind.	1	1		
Ward Dry Milk Co., St. Paul, Minn.	5	5		1
Warsaw Milling & Grain Co., Warsaw, Ind.	2	1	1	
Washburn Crosby, General Mills, Inc., Minneapolis, Minn.	3	3		1
Washington County Farm Bureau Co-operative Ass'n, Salem, Ind.	15	15		
Washington Flour Mill, Washington, Mo.	2	2		1
Waterloo Mills, Waterloo, Ind.	5	5		
Wayne Dairy Products Co., Richmond, Ind.	3	2	1	
Weinkauf Grain Co., LaCrosse, Ind.	3	3		
Wellington Milling Co., Anderson, Ind.	3	3		
Westville Hammer Mill, Westville, Ind.	2	2		
Wheatland Grain Co., Wheatland, Ind.	3	2	1	
Whelan, Omer G., Richmond, Ind.	2		2	
Whitelock Mill Co., Petersburg, Ind.	2	2		
Wilson & Co., Chicago, Ill.	6	6		
Wilson & Co., J. C., Russellville, Ind.	1	1		
Winkler & Son, Inc., J., Dale, Ind.	2	1	1	
Wolcottville Elevator Co., Wolcottville, Ind.	1	1		
Wolf & Son Hatchery & Feed, North Judson, Ind.	1	1		
Wolfe Grain Co., Shipshewana, Ind.	2	1	1	
Woodbury-Elliott Grain Co., Muncie, Ind.	4	1	3	
Woodstock Mills, Seymour, Ind.	1	1		
Worthington Grain Co., Worthington, Ind.	1		1	
Wright, John H., Clinton, Ind.	3	3		
Wuichet Fertilizer Co., Dayton, Ohio	9	7	2	
Wyatt Grain Co., Wyatt, Ind.	2	2		
Yeddo Farmers Grain Co., Yeddo, Ind.	1	1		
Yum Yum Feed Mills, Inc., Brookville, Ind.	3	3		
Ziliak & Schaefer Milling Co., Evansville, Ind.	27	25	2	
Zionsville Grain Co., Zionsville, Ind.	2	2		

UNIVERSITY OF ARIZONA
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Circular No. 196 May, 1933

COMMERCIAL FERTILIZERS

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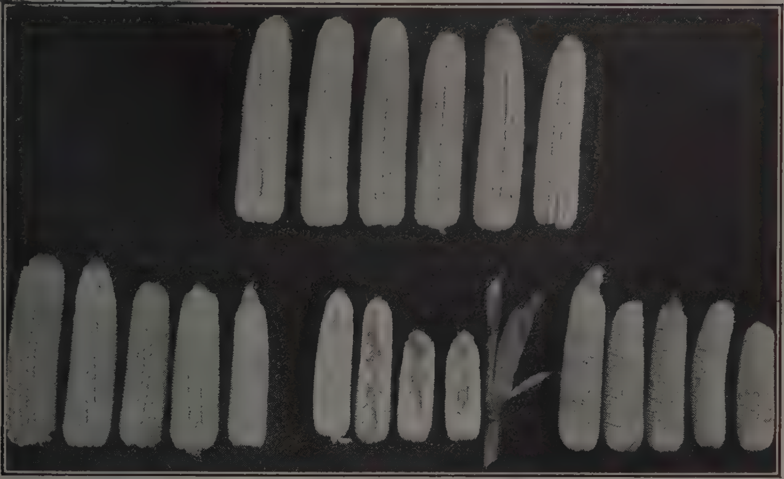


Upper Center—Abundant balanced fertility
Lower left—Nitrogen deficiency
Lower center—Phosphate starvation
Lower right—Potash starvation

Purdue University
Agricultural Experiment Station
Lafayette, Indiana

This circular gives a detailed report of the inspection of commercial fertilizers for the year 1932. The inspectors visited every county in the state in both the fall and spring season and collected 1,138 official samples or one sample for approximately each 90 tons of fertilizer sold.

The Indiana Fertilizer Law protects the honest and efficient manufacturer, dealer and agent as well as the consumer. In order to obtain maximum protection the consumer must read carefully and understand thoroughly the information on the tag.

Refunds amounting to $357.91 were paid by 18 manufacturers on 59 shipments of deficient fertilizer.

There are no satisfactory substitutes for fertilizer (see page 5).

Table 1 gives the average composition of the common fertilizer materials.

Table 3 shows the tonnages of the different analyses which were sold in largest quantities. The tonnage sales of 2-12-6 amounted to over 30 per cent of all fertilizer sold. Over 80 per cent of the total tonnage was confined to 33 analyses while less than 20 per cent was divided among 120 different grades.

The average content of actual plant food in all of the fertilizers sold in 1932 was 458 pounds per ton. The average analysis was ~~2.4~~ 2.3 per cent nitrogen, 12.8 ~~13.6~~ per cent available phosphoric acid and ~~7.1~~ 6.5 per cent water soluble potash.

Table 11 gives the standing of manufacturers as determined by inspection for the year 1932.

Due to lack of funds the table giving the analyses of individual samples is omitted from the report this year. It is intended to resume publication of the table in future publications as soon as funds are available.

COMMERCIAL FERTILIZERS

H. R. KRAYBILL, *State Chemist*

O. S. ROBERTS O. W. FORD L. E. HORAT
M. H. THORNTON

This circular gives the results of the inspection of commercial fertilizers for the year 1932. From the sale of tags it is estimated that 79,400 tons of fertilizer were sold while from manufacturers reports a tonnage of 100,581 is indicated. It is believed that the latter figure represents more nearly the actual tonnage. The difference between the two estimates is doubtless due to the fact that manufacturers reduced their stocks of tags on hand during the year.

Inspectors from the department visited every county in the state in both the fall and spring season and collected 1,138 official samples. Thus one sample was drawn for approximately each 90 tons of fertilizer that were sold. Of these samples 1,053 were equal to or above the guarantee in value; 80 were within 10 per cent of the value guaranteed, and 5 were 10 per cent or more below the guarantee in value. Fourteen of the 816 samples which contained nitrogen contained nitrogen of inferior quality, of which 7 were dried manure and 3 were muck.

The Indiana Fertilizer Law is essentially a correct labeling act. The intent of the law is not to determine what type of fertliizer may be sold. The law is designed to furnish the purchaser with a true statement of certain information on the state tag that will enable him to decide whether or not the fertilizer is the type that will meet his needs. The state tag gives a statement of the percentage of total nitrogen, the total or the available phosphoric acid and the water soluble potash. With this information available the purchaser should be able to judge whether the fertilizer offered for sale meets his requirements. *In order to do this the consumer must read carefully and understand thoroughly the information on the state tag.*

The Indiana Fertilizer Law protects the honest and efficient manufacturer, dealer and agent as well as the consumer. Full cooperation on the part of the manufacturer, dealer, agent and consumer is necessary in order to accomplish the full purpose of the law.

A copy of the full text of the law will be sent to persons making requests for the same to the State Chemist, Purdue University Agricultural Experiment Station, Lafayette, Indiana.

Refunds

Every year a few cases of deficiencies occur due to errors in labeling the fertilizer. This results from carelessness on the part of the person responsible for attaching the tags. Manufacturers should guard against such errors.

When deficiencies in analysis amounting to $1.00 or more per ton on raw materials, as calculated from the wholesale price, are found, refunds are calculated and indicated on the report of the analysis which is sent to the manufacturer and to the consumer. Refunds on mixed fertilizers are usually calculated when one ingredient is deficient to the extent of $1.00 or more per ton regardless of the excess in amounts of the other ingredients. Nitrogen, phosphoric acid and potash play definite roles in crop production. An excess of one ingredient will not necessarily compensate for a deficiency of another.

All refunds are required to be distributed to the consumer wherever possible and receipts for the same must be filed with the State Chemist. In case there are no records as to the consumer the refunds may be turned over to a local charitable organization but receipts for the same must be filed with the State Chemist.

The payment of a refund by the manufacturer to the consumer does not remove the violation but it does indicate good intentions on the part of the manufacturer and shows his willingness to do what he can to correct the violation in so far as possible. However the payment of the refund does not nullify the right of anyone in the state to call a deficiency of analysis to the attention of the prosecuting attorney.

Refunds amounting to $357.91 were paid by 18 manufacturers on 59 shipments of fertilizer in 1932.

Manufacturers

The term "Commercial Fertilizer" is defined by law to include all materials used for manurial purposes except barnyard manure, marl, lime, wood ashes and plaster. Barnyard manure, sheep manure and muck when dried or processed in any way come under the provisions of the law. Before any commercial fertilizer is exposed or offered for sale or sold in the state it is necessary to register the fertilizer with the State Chemist and tag it properly with Indiana State Tags or Labels. Bulk shipments must be accompanied with sufficient labels to cover the total weight of the material.

Manufacturers should not ship fertilizer without having it properly tagged with Indiana state tags. Experiences has shown that when this is done it is difficult to avoid the sale of untagged fertilizer. The State Chemist has no authority to grant permission to a manufacturer to ship unlabeled fertilizer.

Agents, Dealers and Distributors

Agents should familiarize themselves with the provisions of the Indiana Fertilizer Law. Each package of fertilizer offered or exposed for sale or sold in Indiana must have attached to it the Indiana state tag bearing the fac simile signature of the State Chemist (see reproduction page 12). *In case you receive a car of untagged fertilizer wire the manufacturer for tags and notify the State Chemist. Do not accept the shipment until proper tags are furnished.*

Since local agents are responsible for the fertilizer that they offer for sale, they should deal only with those manufacturers who agree to assume full responsibility in cases where the fertilizer fails to meet the requirements of the law.

When inspection reports show that fertilizer in your possession is deficient enough so that a refund is calculated on it, withdraw it from sale at once *and notify the State Chemist giving the date and the amount withdrawn from sale.*

Consumers

The Indiana state tag is your guarantee of the fertilizer that you purchase. Read the tag. Let the analysis on the state tag be your guide rather than the brand name. Refuse to accept any fertilizer which does not have the Indiana state tag attached to each package.

When analysis of a fertilizer is desired do not forward a sample but notify the State Chemist telling how much you have on hand and send in a copy of the official label which is attached to the fertilizer.

Purchase the type of fertilizer that will meet the plant food requirements of your crops. Consult Circular No. 162 of the Purdue University Agricultural Experiment Station entitled "Fertilizers for Indiana Soils and Crops."

Caution

The consumer should remember that the presence of the Indiana state label with the fac simile signature of the State Chemist does not mean that the State Chemist recommends the fertilizer. Poor quality fertilizer may be sold legally provided it is correctly labeled. The consumer should be guided by the analysis of the fertilizer.

The consumer should also beware of products which are not fertilizers but which are sold to take the place of lime or fertilizer. There are no products which are satisfactory substitutes for lime and fertilizer. One such product was submitted for analysis to the State Chemist during the last year. Analysis showed that it contained 0.17 per cent total nitrogen, 0.00 per cent phosphoric acid, and 0.06 per cent of water soluble potash and that it had a neutralizing value equivalent to 11.25 per cent of pure limestone. This product has no more fertilizer value than an equal quantity of a good soil mixed with a small amount of lime, yet it is sold at a price that would be equal to over a million dollars for an acre of soil one half foot deep.

Meaning of Analysis

As recognized under the Indiana Fertilizer Law there are only three valuable fertilizer elements, nitrogen, phosphorus and potassium. These three elements do not occur in a free state but are always combined as chemical compounds. This facilitates the handling of them in commercial fertilizer mixtures. A brief discussion of these, their value and availability as plant food follows:

Nitrogen.—In 1881 when the Indiana Fertilizer Law was passed the principal source of nitrogen was of an organic nature. The nitrogen was derived largely from such products as dried blood, bone, tankage and slaughter house by-products, garbage, tankage, cottonseed meal, castor pomace, tobacco stems, manure sweepings and dried peat. Although there is little water soluble nitrogen in the above products all carry a good source of nitrogen with the exception of garbage tankage, manure sweepings, tobacco stems and dried peat. In more recent years most of the animal products have been diverted into the mixed feed channels and water soluble forms of nitrogen have taken their place in fertilizer mixtures. Today we find that most of the nitrogen carrying fertilizers have more than 80 per cent of their nitrogen content in some water soluble form.

A few of the sources of water soluble forms of nitrogen are as follows: nitrate of soda (natural and synthetic), ammonium sulphate, cal-urea, cal-nitro, urea, cyanamide and calcium nitrate.

Since water soluble forms of nitrogen are considered as being readily available for plant growth, we class a fertilizer that has 60 per cent of its guaranteed nitrogen as water soluble as satisfactory.

If less than 60 per cent of its guaranteed nitrogen is water soluble then the availability of the insoluble organic nitrogen is determined by the alkaline permanganate method. In this case if the active water insoluble nitrogen is equal to or greater than the inactive the nitrogen is classed as satisfactory. If less than half of the insoluble nitrogen is active the nitrogen is classed as inferior.

Manures and garbage tankages that have not been acidulated show an inferior quality of nitrogen. This is not the fault of the manufacturer when they are sold as manure and garbage tankage.

Phosphoric Acid.—The phosphorus in the fertilizer is linked up as chemical compounds with calcium, iron and aluminum. It may be present as mono-, di- or tricalcium phosphate.

As monocalcium phosphate $CaH_4(PO_4)_2$ it is water soluble and readily available to plants for growth.

As dicalcium phosphate $Ca_2H_2(PO_4)_2$ it is soluble in the soil solution and rendered available to plants for growth.

As tricalcium phosphate $Ca_3(PO_4)_2$ it is somewhat less available to plants.

As a complex tricalcium phosphate combined with fluorine and lime (raw rock phosphate) it is much less available to plants and becomes available only slowly in the soil.

The bulk of the fertilizer sold today contains mixtures of large amounts of mono- and dicalcium phosphate and some tricalcium phosphate. This is in contrast to the earlier years when most of the fertilizer used was bone where the phosphorus is present as tricalcium phosphate.

In acidulated goods the phosphorus is sold only on the basis of the available phosphoric acid (P_2O_5) content. The available is the sum of the soluble and reverted phosphoric acid (P_2O_5).

In bone and rock phosphate when sold as such the phosphorus is sold only on the basis of the total phosphoric acid (P_2O_5) content. It is only fair to state, however, that about 60 to 75 per cent of the total phosphoric acid (P_2O_5) content of bone is available by the neutral ammonium citrate method while only from three to six per cent of the total phosphoric acid (P_2O_5) of rock phosphate is available by the same method.

Potash.—Potash, as the official label states, must be soluble in water, in which form it is considered directly available for plant use.

No difference in crop growth has been noted in American, French or German potash. Muriate of potash (KCl) being the cheapest has largely supplanted other potash salts for general crops.

Average Composition of Fertilizer Materials

Table 1 gives the average composition of some of the more common fertilizer materials.

TABLE 1. Average Composition and Comparative Evaluation of the Common Fertilizing Materials

Material	Nitrogen Per Cents							Phosphoric Acid Per Cents			Water Soluble Potash Per Cent	Comparative Value Per Ton Dollars
	Total	Water Soluble Organic	Water Soluble Ammonia	Water Soluble Nitrate	Water Insoluble Organic	Active Insoluble Organic	Inactive Insoluble Organic	Total	Insoluble	Available		
Sodium Nitrate	15.5			15.5								$23.25
Calcium Nitrate	14.0			14.0								21.00
Ammonium Sulphate	20.5		20.5									30.75
Cyanamid	22.0	21.6			0.40							33.00
Garbage Tankage	3.3	0.63			2.70	0.66	**2.04**	4.47	2.49	1.98	0.75	7.85
Cattle Manure	2.50	0.52			1.98	0.72	**1.26**	1.6			1.6	6.77
Sheep Manure	2.50	0.57			1.93	0.62	**1.31**	1.8			2.2	7.51
Poultry Manure	4.3	1.90	0.60		1.80			3.1			1.7	10.32
Muck	2.0	0.13			1.90	0.34	**1.56**					3.00
Activated Sewage	6.0	0.84			5.11	3.54	1.57	2.2				10.54
Raw Bone	3.6	0.84			2.80	2.03	0.77	23.4	9.2	14.2		22.36
Steam Bone	2.2	0.42			1.79	1.41	0.38	27.5	10.4	17.1		23.52
Animal Tankage	6.0	1.50			4.50	2.98	1.52	12.0	4.0	6.0		18.20
Bone Black	1.3				1.30	0.09	**1.21**	30.3	23.4	6.9		15.87
Basic Slag								17.7	2.7	15.0		17.70
Raw Rock Phosphate								33.4	31.1	2.3		11.63
Superphosphate—												
0-40-0								0.41	1.0	40.0		40.00
0-24-0								0.25	1.0	24.0		24.00
0-20-0								0.21	1.0	20.0		20.00
0-16-0								0.17	1.0	16.0		16.00
Muriate of Potash											50.0	50.00
Sulphate of Potash											48.0	48.00
Manure Salts											20.00	20.00
Kainit											14.00	14.00
Tobacco Dust	1.50	0.31		0.39	0.80	0.17	0.63	0.50			5.4	8.00
Coal Ash								0.4			0.1	0.38
Corn Cob Ash								4.9			31.0	34.43
Hard Wood Ash								2.2			10.2	11.80
Soft Wood Ash								3.1			4.3	6.47

Values appearing in the Inactive Insoluble Organic column in heavy type indicate an inferior source of nitrogen.

Classified Fertilizer Sales

Table 2 illustrates the changes that have occurred in the types of fertilizers sold during the last fifty years.

Table 2. Classified Fertilizer Sales Since 1883

Year	Total Tons	Tons Nitrogen Salts	Tons Potash Salts	Tons Super-Phosphate	Tons Bone	Tons Raw Phosphate Rock	Tons Phosphate Potash	Tons Ammoniated Super-Phosphate	Tons Complete
1883	8,000	...	...	...	8,000	...	...	...	...
1888	10,000	...	...	‡	10,000	...	‡	‡	‡
1893	38,000	...	...	1,000	14,000	...	1,000	4,000	18,000
1895	45,000	...	...	1,000	15,000	...	1,000	3,800	20,300
1897	49,400	...	...	7,200	13,900	50	1,500	5,200	21,450
1909	134,064	268*	2,146	8,111	13,004	804	18,769	1,009	89,287
1914	219,139	123*	3,576	12,878	11,023	2,400	40,462	1,184	148,126
1918	244,446	82*	...	57,984	13,300	1,079	9,822	83,111	78,302
1923	195,702	1,550†	3,251	49,501	8,669	...	35,494	4,309	91,220
1927	240,498	3,530†	5,200	32,041	5,050	719	41,785	520	151,112
1928	221,082	1,350†	1,700	26,997	2,782	968	40,451	...	145,709
1929	291,193	3,140	1,800	21,655	2,848	844	45,000	62	214,010
1930	219,684	2,950	1,900	12,188	2,445	1,500	34,657	...	163,136
1931	170,777	4,200	2,100	12,790	3,437	1,313	25,262	...	119,831
1932	79,400	1,750	950	7,605	1,436	93	9,198	...	57,626

*Largely Nitrate of Soda.
†Nitrate of Soda and Ammonium Sulphate.
‡Light Sales.

Many Grades Unnecessary

Table 3 shows the tonnage of fertilizer sold under the different grades of analyses. Over 80 per cent of the tonnage is represented by 33 grades while less than 20 per cent was distributed over 120 analyses. Considerable saving could be made by the manufacturer if the number of grades were reduced materially.

Table 3. Tons Sold Under 33 Analyses for Past Eight Years

Analysis	Year* 1925	Year* 1926	Year* 1927	Year* 1928	Year* 1929	Year* 1930	Year* 1931	Year* 1932	Rept. by Mfrs. Year 1932
Nitrate of Soda	500	350	433	500	1,740	1,150	2,200	600	122
Ammonium Sulphate	4,100	2,350	3,090	900	1,400	1,800	2,100	950	722
0-16-0	23,282	16,744	12,665	8,053	6,241	3,937	5,780	2,625	3,980
0-20-0	21,093	19,518	16,281	13,000	12,826	6,781	5,753	4,875	6,077
0-40-0	11,186	9,375	2,905	3,689	1,563	750	838	313	242
Potash Salts	10,000	5,700	4,500	1,600	1,800	1,750	2,100	1,350	851
Raw Bone	2,266	900	1,750	813	869	750	1,249	625	196
Steamed Bone	3,025	4,175	2,706	1,094	1,781	1,250	2,188	531	430
2-8-2	2,990	1,340	1,260	594	2,063	1,094	563	688	299
2-8-5	1,656	2,625	1,053	1,906	1,531	563	744	531	409
2-8-10	1,125	1,650	656	1,125	1,463	1,094	781	625	527
2-8-16	2,150	282	2,650	2,531	3,919	4,063	2,719	1,625	2,256
2-10-4	875	1,750	1,625	2,169	1,146	406	782	375	528
2-12-2	31,044	41,237	45,109	43,606	36,550	19,313	17,063	9,469	12,819
2-12-4	2,406	4,154	4,375	2,906	2,688	1,375	219	31	223
2-12-6	21,881	23,580	37,290	43,078	74,850	78,894	56,344	29,375	36,938
2-14-4	....	....	...	2,760	9,906	3,719	1,219	438	834
2-16-2	4,400	4,562	4,821	2,813	2,575	844	281	....	164
2-16-8	740	1,081	2,018	2,250	2,769	3,594	2,156	781	1,002
4-24-4	1,562	2,812	5,275	3,603	4,150	2,619	1,781	344	786
4-24-12	718	687	906	3,331	7,853	6,806	4,625	1,250	2,443
0-8-24	2,400	2,687	3,962	1,681	1,750	3,444	2,563	1,375	1,620
0-10-10	10,843	10,481	15,525	11,969	7,744	7,206	6,000	2,438	3,532
0-12-12	5,325	5,031	5,312	3,438	6,813	6,500	6,063	2,500	2,874
0-20-20	531	1,156	2,531	2,281	1,313	2,181	2,063	656	801
0-12-6	4,187	4,056	5,312	5,312	1,954	1,000	813	281	298
0-14-4	1,750	3,156	4,312	3,750	1,625	719	500	719	152
0-14-6	....	....	....	2,063	9,150	7,425	3,250	781	2,201
0-8-32	....	....	....	343	856	656	63	31	237
0-16-4	......	......	......	2,250	313	937	594	....	82
0-14-14	......	625	718	463	813	969	375	500	531
0-16-8	......	500	593	1,313	844	94	375	125	133
0-12-8	31	......	......	..	1,844	406	188	....	168
33 analyses	172,066	172,564	189,633	175,260	214,702	174,089	134,332	67,809	84,519
Other analyses	54,082	55,716	50,865	45,822	76,491	45,595	36,445	11,591	14,970
Total tonnage	226,148	228,280	240,498	221,082	291,193	219,684	170,777	79,400	†99,489
Total number of analyses	....	....	....	....	157	163	167	153	....

*Tonnage calculated by tag sales.

†This does not include the 1,092 tons calculated from tag sales of companies that did not report their tonnage sales for 1932.

Table 4 gives the total tonnage by grades as reported by the manufacturers.

Table 4. Fertilizer Tonnage Sold in Indiana in 1932 as Reported by Fertilizer Manufacturers

A. Raw Materials—

1. Nitrogen Salts—

Nitrate of Soda	Ammonium Sulphate
122	722

2. Superphosphates—

Above 40% P_2O_5	0-32-0	0-24-0	0-20-0	0-16-0	0-14-0	0-13-0
242	10	171	6,077	3,990	203	6

3. Potash Salts—

Muriate of Potash	Sulphate of Potash	Manure Salts	Kainit
687	11	157	1

4. Raw Rock Phosphate

146

B. Phosphate and Potash Mixtures—

0-28-12	76	0-16-4	82	0-12-18	75	0-9-27	7
0-24-24	127	0-15-30	8	0-12-12	2,874	0-8-32	237
0-24-12	19	0-15-7	9	0-12-8	163	0-8-24	1,620
0-22-22	13	0-14-14	531	0-12-6	298	0-8-16	22
0-21-9	28	0-14-6	2,201	0-12-5	1	0-5-15	6
0-20-20	801	0-14-4	183	0-12-4	18		
0-16-8	133	0-13-13	66	0-11-15	4		
0-16-6	59	0-12-20	6	0-10-10	3,532		

C. Complete Fertilizer Mixtures—

12-12-6	2
12-6-4	5
12-3-3	10
10-8-6	10
10-6-4	15
10-3-3	14
9-27-9	8
9-18-18	3
8-24-8	4
8-16-16	2
8-6-6	1
7-7-1	7
6-15-9	27
6-8-6	64
6-8-4	5
5-10-5	27
5-9-6	1
5-8-7	2
5-8-6	10
4-28-8	10
4-24-12	2,443
4-24-4	786
4-16-32	42
4-16-20	10
4-16-4	208
4-12-8	110
4-12-4	94
4-10-6	268
4-10-4	2
4-8-8	60
4-8-7	37
4-8-6	520
4-8-3	17
3-24-6	3
3-21-6	58
3-20-20	6
3-18-9	461
3-18-3	14
3-15-12	160
3-12-12	98
3-12-10	1
3-12-7	7
3-12-4	70
3-11-14	33
3-10-7	87
3-10-6	202
3-9-18	698
3-8-6	463
3-7-7	170
2-20-10	50
2-16-8	1,002
2-16-6	34
2-16-2	164
2-15-4	8
2-14-7	38
2-14-4	834
2-13-11	11
2-12-8	34
2-12-6	36,938
2-12-4	223
2-12-2	12,819
2-10-8	178
2-10-6	57
2-10-4	528
2-10-2	65
2-9-5	81
2-8-16	2,256
2-8-15	50
2-8-10	527
2-8-8	33
2-8-6	81
2-8-5	409
2-8-4	216
2-8-2	299
1-14-5	304
1-14-3	26
1-14-2	150
1-13-5	77
1-12-4	61
1-12-3	543
1-12-2	192
1-12-1	24
1-11-5	1,089
1-11-4	623
1-11-3	194
1-10-5	213
1-10-4	113
1-10-3	283
1-10-2	382
1-10-1	98
1-8-32	10
1-8-8	55
1-8-5	30
1-8-4	826
1-8-3	630
1-8-2	45
1-8-1	2
1.6-8-2	8
3-9A*-9I*-3	75
3-8A*-8I*-3	551
2-8A*-8I*-6	49
2-8A*-8I*-2	23
2-8A*-4I*-6	277
2-8A*-4I*-2	262
2-6A*-10I*-2	70
2-6A*-6I*-6	105
2-6A*-6I*-3	300
2-6A*-6I*-2	180
1-8A*-4I*-2	95
0-6A*-6I*-10	39

D. Bone Products (Steam and Raw Bone—Fertilizer Tankages)—996

E. Miscellaneous—1,364

Summary—

1. Total tons reported—99,489
2. Tag sales from firms not reporting—1,092
3. Total tonnage based on reports (Items 1 and 2)—100,581
4. Total tonnage from tag sales—79,400

*A = Available P_2O_5; I = Insoluble P_2O_5.

Table 5 gives the total tonnage, retail value, cost per ton, pounds of actual plant food per ton and the cost per pound of plant food for the past 12 years.

TABLE 5

Year	Tons Reported By Manufacturer	Tonnage Per Year Based On Tag Sales	Retail Value Dollars	Cost Per Ton Dollars	Pounds Per Ton Actual Plant Food	Cost Per Pound Plant Food Cents
1920	....	231,791	8,637,055	37.26	328	0.114
1921	....	187,923	6,031,305	32.10	354	0.091
1922	....	209,310	5,730,536	27.40	372	0.074
1923	....	198,581	6,293,033	31.70	412	0.077
1924	....	192,417	6,479,605	33.68	446	0.075
1925	....	226,148	8,253,670	36.50	458	0.079
1926	....	228,280	8,464,607	37.22	452	0.082
1927	....	240,498	8,998,412	37.41	444	0.084
1928	....	221,082	8,254,591	37.33	444	0.084
1929	*237,590	291,193	11,327,868	38.89	417	0.094
1930	*246,009	219,684	8,521,905	38.79	518	0.075
1931	*188,495	170,777	5,503,088	32.22	490	0.065
1932	*100,581	79,400	2,319,147	29.21	458	0.064

*Estimated from manufacturers' reports and tag sales of companies that did not report their tonnage sales

Table 6 shows the amount of low and medium grade (below 14 total units) and the amount of high grade (14 units and above) of mixed fertilizer sold for each of the last 13 years.

TABLE 6

Mixed Fertilizer	1920 Tons	1921 Tons	1922 Tons	1923 Tons	1924 Tons	1925 Tons	1926 Tons	1927 Tons	1928 Tons	1929 Tons	1930 Tons	1931 Tons	1932 Tons
Low and Medium Grade	84,760	55,887	43,459	25,773	21,759	17,989	16,892	13,722	6,562	10,506	5,001	2,956	3,625
High Grade..	57,881	59,809	89,527	104,990	98,832	127,928	146,177	179,695	179,597	248,566	192,792	131,512	54,001

Table 7 gives the amount of plant food in tons sold for each of the last 13 years.

TABLE 7. Plant Food in Tons

Year	Nitrogen	Available Phosphoric Acid	Insoluble Phosphoric Acid	Total Phosphoric Acid (Bone)	Total Phosphoric Acid (Rock)	Potash
1920	1,748.56	25,129.73	3,401.61	2,840.77	1,045.18	3,795.72
1921	1,640.07	21,657.09	2,407.64	2,615.83	289.99	4,559.46
1922	1,887.08	24,870.10	2,791.37	2,778.99	9.28	6,689.43
1923	2,348.63	24,124.84	2,777.82	2,545.94	....	9,131.80
1924	2,159.37	*25,731.53	*2,340.83	2,740.71	....	10,032.16
1925	3,160.08	31,182.63	2,987.80	1,567.16	....	12,906.17
1926	3,167.26	31,811.25	3,196.64	1,529.17	37.13	11,831.11
1927	3,822.06	31,214.50	2,912.51	1,141.05	210.67	14,087.88
1928	3,142.32	30,471.69	1,840.96	708.66	302.02	12,572.95
1929	5,978.96	31,760.58	3,632.01	732.02	274.30	18,361.48
1930	4,304.99	33,875.30	3,114.06	556.76	449.36	14,512.80
1931	4,076.88	22,231.65	2,138.00	735.90	532.14	12,201.72
1932	1,849.31	10,185.88	688.95	309.46	38.06	5,128.08

*Corrected figures for 1924.
Values calculated from tag sales and inspection reports.

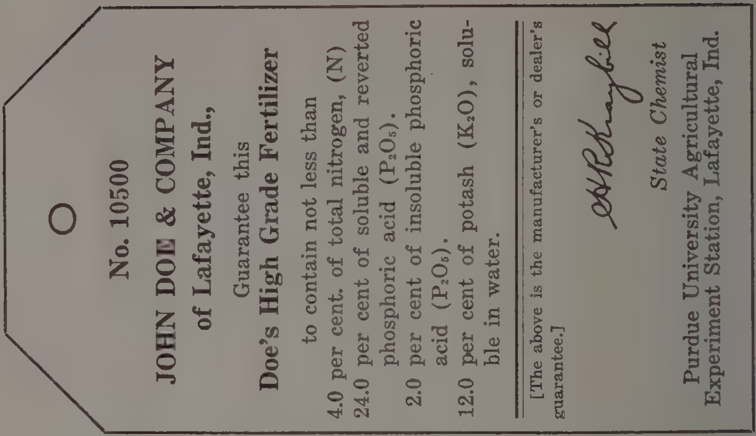
Table 8 gives a summary of inspection for the last 31 years

TABLE 8. Summary of Inspection for the Past Thirty-One Years

Year	Number of samples reported	Number equal to guarantee in every particular	Number equal in value of guarantee	Number within 10 per cent of value of guarantee	Number not within 10 per cent of value of guarantee
1902	679	335	564	93	22
1903	674	286	492	139	43
1904	643	248	451	148	44
1905	734	312	528	158	48
1906	879	374	642	176	61
1907	793	265	481	210	102
1908	901	391	683	171	47
1909	969	417	720	215	34
1910	1,118	441	834	242	42
1911	1,095	527	896	180	19
1912	1,220	636	1,034	175	11
1913	1,204	714	1,021	178	5
1914	1,396	727	1,152	239	5
1915	1,368	684	1,145	214	9
1916	1,367	870	1,183	168	16
1917	919	622	830	76	13
1918	1,285	888	1,142	121	22
1919	1,401[1]	936	1,227	141	32
1920	1,491[2]	944	1,267	188	27
1921	1,314	754	1,070	227	17
1922	1,216	812	1,071	132	13
1923	1,325	970	1,214	108	3
1924	1,439	1,072	1,340	94	5
1925	1,442	1,019	1,329	111	2
1926	1,225	798	1,033	183	9
1927	1,450	909	1,277	153	10
1928	1,437	865	1,283	144	9
1929	1,378	854	1,217	155	6
1930	1,421	1,090	1,320	89	10
1931	1,396[1]	1,100	1,315	74	7
1932	1,138	835	1,053	80	5

[1] One sample not registered.
[2] Nine samples not registered.

Official State Label



No. 10500

JOHN DOE & COMPANY

of Lafayette, Ind.,

Guarantee this

Doe's High Grade Fertilizer

to contain not less than

4.0 per cent. of total nitrogen, (N)

24.0 per cent of soluble and reverted phosphoric acid (P_2O_5).

2.0 per cent of insoluble phosphoric acid (P_2O_5).

12.0 per cent of potash (K_2O), soluble in water.

[The above is the manufacturer's or dealer's guarantee.]

H R Kraybill

State Chemist

Purdue University Agricultural Experiment Station, Lafayette, Ind.

The only label recognized under the law is that bearing the fac simile signature of the State Chemist. (See reproduction.) The label as issued is always printed and contains all the facts required by law; any alteration thereon constitutes a violation of the law.

Label No. 10500 guarantees that each 100 pounds of fertilizer will contain at least 4.0 pounds of total nitrogen (N), 24.0 pounds of soluble and reverted phosphoric acid (P_2O_5), and 2.0 pounds of insoluble phosphoric acid (P_2O_5), and 12.0 pounds of water soluble potash (K_2O).

We hope that it will not again be necessary to file affidavits against agents for distributing unlabeled fertilizer. There can be no excuse for shipping unlabeled fertilizer. Agents receiving same should protect themselves by refusing to accept the car. Wire the manufacturer for official labels and write the State Chemist fully concerning the unlabeled shipment.

Prices Used in Securing Comparative Value of Fertilizers

These values are not for the purpose of fixing the commercial value of mixed fertilizers, but are for comparative purposes only. They are for use in comparing the value of inspection samples with manufacturers' guarantees, and can be used advantageously by fertilizer purchasers in calculating the relative values of various brands offered for sale by different manufacturers.

For use in determining the comparative values of fertilizer inspected in 1933 the following prices have been adopted:

	Per lb. cts.	Per unit or per cent. $
All fertilizers—		
Nitrogen (N)	7.5	1.50
Potash (K_2O) soluble in water	5.0	1.00
Soluble and reverted phosphoric acid (P_2O_5)	5.0	1.00
Mixed fertilizers containing nitrogen—		
Insoluble phosphoric acid (P_2O_5)	1.5	0.30
Precipitated bone—		
Available phpsphoric acid (P_2O_5)	5.0	1.00
Insoluble phosphoric acid (P_2O_5)	1.5	0.30
Animal by-products, bone, tankage, etc.—		
Total phosphoric acid (P_2O_5)	3.5	0.70
Basic Slag—		
Total phosphoric acid (P_2O_5)	4.5	0.90
Rock phosphate (floats) and low grade slag—		
Total phosphoric acid (P_2O_5)	1.5	0.30
Mixed fertilizer, acid phosphate, etc., containing no nitrogen—		
Insoluble phosphoric acid	.0	0.00

Table 9 gives the fertilizer tonnage for the spring and fall seasons and also the total tonnage and estimated retail value for the year 1932.

TABLE 9. Fertilizer Tonnage and Estimated Retail Value, 1932

Class of Fertilizer	Spring 1932 Tons	Fall 1932 Tons	Total 1932 Tons	Estimated 1932 Retail Value Dollars
1. Acid phosphate, 14% and less	....	93	93	$2,072.04
2. Acid phosphate, 16%	613	2,125	2,738	57,251.58
3. Acid phosphate, 18-20%	594	3,906	4,500	111,735.00
4. Acid phosphate above 20%	181	93	274	12,768.40
10. Acid phosphate and potash, 14-19 units	375	219	594	14,398.56
10a. Acid phosphate and potash above 20 units	7,219	1,375	8,594	265,351.44
11. Complete fertilizer (low)	156	750	906	19,116.60
12. Complete fertilizer (medium)	1,313	1,406	2,719	56,908.67
13. Complete fertilizer (high)	7,969	9,500	17,469	490,878.90
13a. Complete fertilizer above 20 units	22,969	13,563	36,532	1,136,510.52
14. Steamed bone	250	281	531	17,873.46
15. Raw bone	156	406	562	15,955.18
16. Tankage	31	313	344	8,187.20
20. Rock phosphate and potash salts (A)	93	....	93	2,999.25
21. Rock phosphate	63	....	63	960.75
22. Nitrogen salts*	1,650	100	1,750	52,820.00
23. Potash salts*	900	50	950	39,187.50
31. Miscellaneous (peat, dried manure, dried blood, garbage, tankage, etc.)	563	125	688	14,172.80
Total	45,095	34,305	79,400	$2,319,147.85

*Tonnage in these classes estimated on the 200-pound sack or 10 per ton. All other classes estimated on the 125-pound sack or 16 per ton.

(A) Mixture of rock phosphate and potash salts.

Table 10 gives a summary of inspection on the basis of composition guaranteed, found and retail values while Table 11 gives the standing of the manufacturers as determined by the inspection of 1932.

TABLE 10. Summary of Inspection on the Basis of Composition, Guaranteed, Found, and Retail Values

Class of Fertilizer	Number of samples	Nitrogen (N), average per cent.		Available phosphoric acid (P_2O_5), average per cent.		Insoluble phosphoric acid (P_2O_5), average per cent.		Total phosphoric acid (P_2O_5), average per cent.		Potash (K_2O), soluble in water average per cent.		Comparative value per ton, dollars		Retail price per ton, average, dollars	Comparison, retail price and found comparative value per ton, dollars	Range in retail price per ton, dollars
		Guaranteed	Found	Guaranteed	Found	Guaranteed	Found	Guaranteed	Found	Guaranteed	Found	Guaranteed	Found			
1. Acid phosphate, less than 16 per cent available phosphoric acid	3	......	......	14.0	14.5	......	1.3	......	......	......	......	14.00	14.50	22.28	+7.78	21.50–23.05
2. Acid phosphate, 16 to 18 per cent available phosphoric acid	57	......	......	16.0	16.7	0.6	0.7	......	......	......	......	16.00	16.70	20.91	+4.21	16.33–25.00
3. Acid phosphate, 18 to 20 per cent available phosphoric acid	75	......	......	20.0	21.1	0.7	0.5	......	......	......	......	20.00	21.10	24.83	+3.73	21.15–30.55
4. Acid phosphate more than 20 per cent available phosphoric acid	6	......	......	41.0	43.1	1.0	0.5	......	......	......	......	41.00	43.10	46.60	+3.50	40.50–50.60
10. Acid phosphate and potash (High grade), 14 or more per cent available plant food	8	......	......	12.3	13.3	1.0	0.7	......	......	5.5	5.5	17.80	18.80	24.24	+5.44	22.20–27.55
10a. Acid phosphate and potash (High grade), 20 or more per cent available plant food	152	......	......	12.2	12.8	0.9	0.6	......	......	12.5	12.3	24.70	25.10	30.76	+5.66	20.00–56.15
11. Complete fertilizer (Low grade) less than 12 per cent available plant food	11	1.6	2.1	6.4	6.5	6.6	7.7	......	......	2.1	2.3	12.88	14.26	21.10	+6.84	16.00–26.95
12. Complete fertilizer (Medium grade), 12 to 14 per cent available plant food	34	1.3	1.6	8.0	9.2	1.5	0.7	......	......	2.9	3.2	13.30	15.01	20.93	+5.92	18.50–24.00
13. Complete fertilizer (High grade), 14 or more per cent available plant food	279	2.1	2.4	10.7	11.5	2.4	1.4	......	......	3.1	3.3	17.67	18.82	28.10	+9.28	18.40–60.00
13a. Complete fertilizer (High grade), 20 or more per cent available plant food	458	2.4	2.6	11.1	14.1	0.9	0.7	......	......	7.7	7.8	22.67	26.01	31.11	+5.10	20.58–70.00
14. Steamed bone	5	1.7	2.1	......	......	......	......	27.0	28.1	......	......	22.95	24.32	33.66	+9.34	26.00–42.00
15. Raw bone	9	3.1	3.2	......	......	......	......	22.8	23.8	......	......	20.61	21.46	28.39	+6.93	25.00–33.75
16. Tankage	4	5.2	6.9	......	......	......	......	6.8	4.7	......	......	12.56	13.64	23.80	+10.16	9.00–53.00
20. Rock phosphate and potash salts	4	......	......	......	......	......	......	17.2	18.9	17.2	18.1	22.36	23.77	32.25	+8.48	25.00–35.00
21. Rock phosphate	5	......	......	......	......	......	......	32.0	32.5	......	......	9.60	9.75	15.25	+5.50	12.00–17.00
22. Nitrogen salts	11	19.8	20.1	......	......	......	......	......	......	......	......	29.70	30.15	30.24	+0.09	17.00–41.10
23. Potash salts	7	......	......	......	......	......	......	......	......	50.0	50.0	50.00	50.00	41.25	−8.75	36.55–48.00
31. Miscellaneous (peat, peat and limestone, dried manure, dried blood, garbage tankage, etc.)	8	1.8	1.9	......	......	......	......	0.9	1.5	1.4	1.7	9.33	10.35	20.60	+10.25	16.00–26.60

TABLE 11. Standing of Manufacturers Determined by Inspection of 1932

Manufacturers	Number of samples reported	Number equal to guarantee in every particular	Number equal in value to guarantee	Number within 10 per cent of value of guarantee	Number not within 10 per cent of value of guarantee	Number with inferior nitrogen	Total number with nitrogen
American Agricultural Chemical Co., The, New York, N. Y.	49	31	45	4			38
Armour Fertilizer Works, Chicago, Ill.	64	50	57	7			46
Baugh & Sons Co. of Ohio, Canton, Ohio	2	2	2				
Buhner Fertilizer Co., The, Seymour, Ind.	101	41	90	10	1		86
Clendenin Fertilizer Co., Richmond, Ind.	2		1	1			2
Columbus Sanitary Reduction Co., Columbus, Ind.	1		1				1
Consolidated Chemical Co., Louisville, Ky.	9	9	9				3
Corya, J. W., Indianapolis, Ind.	3			2	1	3	3
Cory Orchards, Cory, Ind.	1	1	1				1
Darling & Co., Chicago, Ill.	49	35	47	2			35
Dewig Bros., Haubstadt, Ind.	1	1	1				1
Diamond Fertilizer Co., Sandusky, Ohio	5	3	5				4
Dockwiler & Kingsbury Co., Indianapolis, Ind.	2	2	2				1
Federal Chemical Co., Inc., Louisville, Ky.	73	45	66	7			65
Ford Motor Co., Dearborn, Mich.	1	1	1				1
Fox Chemical Co., Louisville, Ky.	1	1	1				1
Globe Fertilizer Co., Louisville, Ky.	1	1	1				1
Grasselli Chemical Co., The, Cleveland, Ohio	1		1				1
Greiner Chemical Corp., The, Fort Wayne, Ind.	3		3				3
Groves Chemical Co., Columbus, Ohio	1	1	1				1
Hopkins Fertilizer Co., New Albany, Ind.	41	33	39	2		4	39
Indiana Consumers Gas & By-products Co., Terre Haute, Ind.	1	1	1				1
Indiana Farm Bureau Cooperative Ass'n, Inc., Indianapolis, Ind.	211	174	201	10			136
International Agricultural Corp., Cincinnati, Ohio	39	32	39				28
Jarecki Chemical Co., Cincinnati, Ohio	2	2	2				1
Jones Phosphate Co., The Robin, Nashville, Tenn.	1	1	1				
Joslin-Schmidt Corp., Cincinnati, Ohio	4	2	3	1			3
Kingsbury & Co., Inc., Indianapolis, Ind.	63	49	59	4			45
Louisville Fertilizer Co., Louisville, Ky.	1		1				1
McCarty Seed Co., J. A., Evansville, Ind.	24	20	23		1		17
Madison Glue Manufacturing Co., Madison, Ind.	2	2	2				2
Miami Fertilizer Co., The, Dayton, Ohio	5	5	5				3
Missouri Dahlia Farms Co., Inc., St. Louis, Mo.	3	3	3			3†	3
Nitrate Fertilizer Co., Columbus, Ohio	1	1	1				
Norris Fertilizer Co., The, Rushville, Ind.	16	12	13	3		1	14
North American Fertilizer Co., Louisville, Ky.	11	10	10	1			10
Old Gardener Co., Pittsburgh, Pa.	1	1	1				1
Pacific Manure & Fertilizer Co., San Francisco, Calif.	1	1	1			1†	1
People's Cooperative Store, Wolcott, Ind.	4	4	4				
Price Chemical Co., Louisville, Ky.	21	15	20	1			13
Rauh & Sons Fertilizer Co., E., Indianapolis, Ind.	61	42	54	7			37

TABLE 11—Continued

Manufacturers	Number of samples reported	Number equal to guarantee in every particular	Number equal in value to guarantee	Number within 10 per cent of value of guarantee	Number not within 10 per cent of value of guarantee	Number with inferior nitrogen	Total number with nitrogen
Read Phosphate Co., New Albany Ind.	12	8	12	....	....	....	7
Royster Guano Co., F. S., Toledo, Ohio	7	6	7	....	....	....	5
Ruhm Phosphate & Chemical Co., Mount Pleasant, Tenn.	4	4	4	....	....	....	....
Sanitary Commissioners, Board of, Indianapolis, Ind.	1	....	1	....	....	....	1
Sewerage Commission of the City of Milwaukee, Milwaukee, Wis.	1	....	1	....	....	....	1
Smith Agricultural Chemical Co., The, Indianapolis, Ind.	114	101	110	4	....	....	74
Steinkamp, Hugo, Holland, Ind.	4	2	4	....	....	....	4
Swift & Co., Calumet City, Ill.	39	33	34	4	1	....	26
Tri State Feed & Fertilizer Mills, Daylight, R. R. 2, Inglefield, Ind.	8	....	5	2	1	2	8
United States Guano Company, Baltimore, Md.	5	1	2	3	....	....	2
Virginia-Carolina Chemical Corp., Cincinnati, Ohio	56	45	52	4	....	....	35
Wenning, A. E., New Salisbury, Ind.	1	....	....	1	....	....	1
Wuichet Fertilizer Co., The, Dayton, Ohio	3	1	3	....	....	....	3
Totals	1,138	835	1,053	80	5	14	816

†Manure—Manufacturers not responsible for the quality of the nitrogen in manure.

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Circular No. 197 June, 1933

REPORT OF
MOSES FELL ANNEX FARM

BEDFORD, INDIANA

JUNE, 1933

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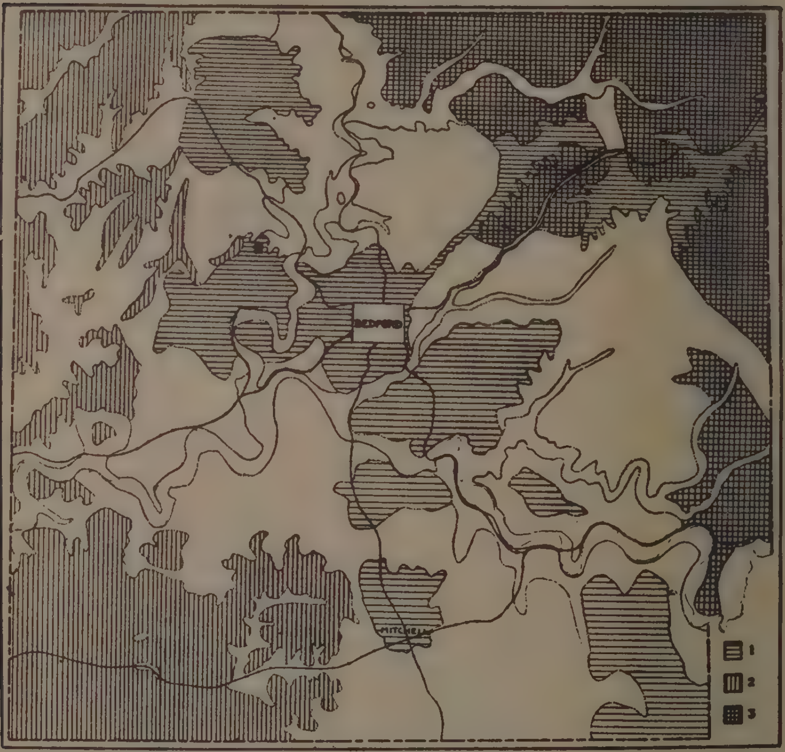
RSITY OF

The Hon. Moses F. Dunn and Antoinette Fell gave this farm to Purdue University in 1914 so that a long time program of agricultural research and demonstration could be carried forward. It serves the people of southern Indiana without cost to the taxpayers of the State.

Purdue University
Agricultural Experiment Station
Lafayette, Indiana

Map Showing Soil Types Similar to Experiment Field



Region	Principal Soil Characteristics
No. 1.	Yellowish limestone land like Bedford experimental field.
No. 2.	Yellowish "freestone" land.
No. 3.	Like No. 1 on ridge tops and like No. 2 on lower slopes.

The results of the Moses Fell Annex Farm can be applied to the greater part of Lawrence County and surrounding territory.

The soil survey made in this county in 1922 enabled the Department of Agronomy to classify the soils of this section and to indicate the types which can benefit most from the experimental work on this farm.

The results will apply to all similar land in the county, which is indicated by shading No. 1 on the map. They will also apply fully as well to the areas indicated by shading No. 2, and more or less fully to the areas indicated by shading No. 3 where the hilltops are like No. 1 and the lower slopes like No. 2.

Portions of the unshaded area would doubtless respond to similar treatments, but most of it does not need either lime or fertilizer to the same extent as the shaded areas.

REPORT OF
MOSES FELL ANNEX FARM

June 1933

H. J. Reed, Farm Director

H. G. Hall, Superintendent

Economical production of farm products and live stock of a satisfactory quality must continue to be an important factor in successful and profitable agriculture.

The work on this farm has shown that the use of the proper fertilizers and high yielding varieties of grain will produce yields that compare favorably with those on the better soils of the state.

The application of these results make possible the further development of the live stock, dairy, and poultry industries in southern Indiana. The limited amount of work on pasture improvement has already shown that a great increase in yield of grass can be obtained by fertilization, and reseeding with a good mixture of adapted grasses. Common and Korean lespedeza are proving worthwhile in old pastures; alfalfa soybeans and clover are successfully produced as hay crops; and sudan grass has been satisfactorily used as supplementing pasture during the hot summer months.

EXPERIMENTAL FACTS POINT THE WAY

These facts suggest the opportunities to go forward in cattle raising, production of poultry and eggs, and dairy products. The flock of Plymouth Rock chickens on this farm demonstrates that a good return can be obtained from a high producing flock.

The work on lamb production has many lessons of value to those interested in sheep and shows that southern Indiana can occupy a more important place in wool and lamb production in Indiana.

Hybrid seed corn grown on this farm produced the highest yield in the yield-test conducted in Ohio last year. Two hundred bushels of potatoes have been produced per acre using complete fertilizer and certified seed. Fifteen hundred to eighteen hundred pounds of tobacco have been produced per acre. Small fruits and canning crops can be successfully grown. A few acres of these intensive crops offer an opportunity for high cash returns on farms with a small acreage of good, tillable land.

The orchard is a practical demonstration of what can be done to produce commercial crops of fruit in this area. Indiana is close to the large consuming centers and can compete successfully with other sections if high quality products are produced economically.

The experimental and demonstration work on this farm can be of practical value to all farmers of this section. The effort is being made to solve problems that will make possible a well balanced program for the further development of southern Indiana Agriculture.

The new gateway erected as a memorial to Moses F. Dunn and Antoinette Fell, commemorating the gift of the Moses Fell Annex Farm to the Purdue University Agricultural Experiment Station for the benefit of the agriculture of southern Indiana.

GENERAL SOIL FERTILITY TEST

The soil fertility experiments carried on under the direction o A. T. Wiancko, Chief, and G. P. Walker, Associate, of the Agronomy Department are showing striking results that are of great value to the farmers o southern Indiana.

The field was laid out and tile drained in the spring of 1917. Th original rotation was corn, wheat, clover and timothy, but this was change in 1923 to corn, soybeans, wheat and clover, which is a more suitable rotation for this kind of land. All crops are removed except on plots 6, 7, 8 10 and 11, where only the ear corn, wheat grain, soybean grain, and clove hay are removed, leaving all the roughage, except the clover hay on the lan in lieu of manure.

The treatments shown in the second column of the table are as follows L = ground limestone; Res. = crop residue; 0 = no treatment; M = manure.

All limed plots received 3 tons of ground limestone per acre in th spring of 1917 and an additional 2 tons in 1931. The fertilizers indicate in the table have been applied at the rate of 200 pounds per acre in the ro for corn and 400 pounds for wheat since 1929. To the end of 1928 the potas in the fertilizer was 4 per cent and the phosphorus and potash were equall divided between the corn and wheat, but the nitrogen was all applied fo wheat, half in the fall and half in the spring.

The manure applications consisted of 6 tons per acre plowed under fo corn in the first round of the rotation. Since then the rate of manurin has been equal to the amount of produce removed during the previous round o the rotation except the wheat grain.

The following table shows the results of different soil treatments begun in 1917:

Table I.--Results of General Fertility Test

Plot No.	Treatment	Average Yields per Acre				Financial Statement per Rotation			
		Corn bus. 1917-1932	Soy-beans bus. 1923-1932	Wheat bus. 1918-1932	Hay lbs. 1917-1932	Total value of grain and hay	Value of increase due to soil treatment	Cost of treatment	Gain over cost o treatment
1	L	24.6	9.1	4.5	1326	$26.02			
2	L 0-12-0	40.9	15.1	12.9	2465	48.62	$28.53	$7.44	$21.09
3	L 0-12-6	46.0	14.5	13.5	2509	50.84	30.33	9.06	21.27
4	L 2-12-6	44.8	14.6	15.4	2472	51.81	30.88	9.96	20.92
5	L	26.4	9.4	5.1	1382	27.69			
6	L 2-12-6 Res.	47.7	16.6	16.3	2678	56.11	34.69	11.67	23.02
7	L 0-12-6 Res.	48.2	16.8	15.0	2757	55.75	34.25	10.64	23.61
8	L 0-12-0 Res.	47.9	17.2	13.7	2600	54.28	32.70	8.68	24.02
9	L	27.6	9.3	5.3	1319	28.00			
10	L Res.	28.9	10.2	5.3	1407	29.59	8.53	3.98	4.55
11	- Res.	24.5	9.5	4.4	1228	25.83	5.36	.73	4.63
12	- 2-12-6	40.5	11.9	13.5	2115	44.98	25.09	6.84	18.25
13	L	24.8	8.5	4.7	1294	25.66	6.35	3.12	3.23
14	0	20.4	7.1	3.1	791	19.48			
15	-M	37.0	9.3	5.6	1227	31.63	11.98	2.50	9.48
16	LM	42.4	11.1	7.1	1528	37.63	17.81	5.77	12.04
17	L	26.0	8.7	5.0	1242	26.33			
18	LM 0-12-0	52.1	17.1	14.7	2667	56.95	37.48	10.84	26.64
19	LM 0-12-6	53.4	16.7	15.4	2647	57.76	38.67	12.46	26.21
20	LM 2-12-6	50.6	16.2	16.1	2637	56.63	38.17	13.31	24.86
21	L	24.3	8.0	4.6	1127	24.31			
	Av.L checks	25.7	8.8	4.9	1315	26.50			

NOTE.--In computing the financial results, corn has been valued at 40¢ wheat at 80¢ and soybeans at 80¢ per bushel; and hay at $8.00 per ton Straw and stover have not been counted. Nitrogen has been charged at 7-1/2¢ phosphoric acid at 6¢ and potash at 6¢ per pound. Ground limestone has bee charged at $2.50 per ton. Manure has been charged at 50¢ and residues a $1.00 per ton for spreading on the land.

COMPARE THESE

It will be noted, in comparing with earlier reports and in examining the crops on the experiment field, that the spread between the good and poor treatments is becoming greater year by year, and that the better treatments are becoming more and more profitable. Without soil treatment, the average value of the crops per acre per rotation of corn, soybeans, wheat, and clover, is now $19.48 (plot 14). With lime, manure and fertilizer, the value is $57.63 at an average cost of $9.06 for lime and fertilizer (plot 19).

ONE ACRE CAN DO THE WORK OF TWO

The most profitable returns have been secured on the limed land, which has received an average of 6.8 tons of manure for corn and 450 pounds of superphosphate divided between the corn and wheat in the rotation of corn, soybeans, wheat and clover (plot 18). The crop increases from this treatment have averaged 26.6 bushels of corn; 8.6 bushels of soybeans; 9.8 bushels of wheat; and 1,454 pounds of hay per acre, valued at $37.48 per rotation at a cost of $7.44 for lime and fertilizer.

Phosphorus is by far the most important plant food need of this soil. Applications of superphosphate have been highly profitable, either alone or in addition to manure. Without manure (plot 2) 225 pounds of 16 per cent superphosphate for corn and wheat in the four-year rotation has produced average crop increases of 15.9 bushels of corn, 5.9 bushels of soybeans, 8.3 bushels of wheat and 1,125 pounds of hay per acre, valued at $22.18 at a cost of $4.32 for the fertilizer. On land receiving an average of 6.8 tons of manure for corn, a similar use of superphosphate has further increased the crop yields by 9.9 bushels of corn, 6.1 bushels of soybeans, 7.6 bushels of wheat and 1,181 pounds of hay, valued at $19.67 at a cost of $4.32 for the phosphate, showing that manure is not sufficient on this land. (Compare plots 16 and 18).

In recent years, however, *potash has become increasingly important on the land which has been receiving only phosphate,* showing that the available supply of potash has been so reduced that it has become a limiting factor. It is showing up particularly on the corn and hay. During the last round of the rotation corn has *averaged 10.4 bushels more* and hay 285 pounds more on plot 3 than on plot 2.

Manure applied at an average rate of 5.0 tons per acre for the corn has produced average crop increases of 16.3 bushels of corn, 2.2 bushels of soybeans, 2.4 bushels of wheat and 449 pounds of mixed hay per acre, valued at $11.98, which amounts to an average return of $2.40 per ton of manure applied. (Compare plots 14 and 15).

Ground limestone applied at the rate of three tons per acre in 1917 and 2 tons in 1931 has so far produced average crop increases of 4.7 bushels of corn, 1.5 bushels of soybeans, 1.6 bushels of wheat, and 490 pounds of mixed hay per acre, valued at $25.40, up to the present time. (Compare plots 13 and 14).

Lime and manure together have produced average increases of 21.4 bushels of corn, 4.0 bushels of soybeans, 3.8 bushels of wheat, and 763 pounds of mixed hay per acre, amounting to $17.81 for the rotation. (Compare plots 14 and 16).

$6.84 WELL SPENT

Phosphate and potash on the corn and complete fertilizer on the wheat have produced average increases of 19.7 bushels of corn, 4.7 bushels of soybeans, 10.3 bushels of wheat, and 1,305 pounds of mixed hay per acre, amounting to $25.09 at a total cost of $6.84 for the fertilizer. (Compare plots 12 and 14).

TOP-DRESSING WHEAT WITH NITROGEN

Beginning with 1928, the wheat on the west ends of plots 4, 6, 12 and 20 of the General Fertility Test has been given a spring top-dressing of 15 pounds of nitrogen per acre. The average results for the five years are shown in the following table:

TABLE II.--RESULTS OF TOP-DRESSING WHEAT WITH NITROGEN IN SPRING

Plot No.	Treatment	Bushels wheat per acre 1928-1932	Bushels increase due to spring top-dressin
4 east end	2-12-6 in fall	14.8	
4 west end	2-12-6 in fall + 58# N in spring	20.0	5.2
6 east end	2-12-6 in fall	16.5	
6 west end	2-12-6 in fall + 15# N in spring	22.2	5.7
12 east end	2-12-6 in fall	12.3	
12 west end	2-12-6 in fall + 15# N in spring	17.9	5.6
20 east end	2-12-6 in fall	17.9	
20 west end	2-12-6 in fall + 15# N in spring	23.6	5.7

Top-dressing the wheat with 15 pounds of nitrogen per acre in April ha increased the yields by 5.2 to 5.7 bushels per acre. This increase ha averaged one bushel of wheat for each 2.7 pounds of nitrogen applied. Wit nitrogen at 7.5 cents per pound, the increase in yield has been secured a a cost of 20 1/4 cents per bushel.

COMPARISON OF DIFFERENT PHOSPHATES

The object of this experiment is to determine the relative values o superphosphate, rock phosphate, bone meal, and basic slag as phosphatic fertilizers. Superphosphate and rock phosphate are also compared in severa different proportions with and without lime, manure, nitrogen and potas fertilizers.

This field was laid out and tile drained in the summer of 1915. Th crop rotation is corn, wheat and clover with all produce removed, excep second growth clover.

The treatments shown in the second column of the table are as follows L = ground limestone; M = manure; St.B. = steamed bone meal; BS = basi slag; SP = superphosphate; RP = rock phosphate; N = 12 pounds nitrogen K = 50 pounds potash.

Ground limestone was applied at the rate of 4 tons per acre in 1915 an an additional 2 tons in 1931.

Manure was applied at the rate of 6 tons per acre for corn in the firs round of the rotation and since then in amounts equal to the produce remove except wheat grain. The phosphates are applied at the rates shown in th third column in Table III. The rock phosphate is plowed under for corn an the other phosphates, and the nitrogen and potash are broadcast and harrowed in before planting. The following table shows the results to date c treatments begun in 1916.

TABLE III.--Results of Phosphate Experiment.

Plot No.	Treatment	Lbs. phos. acid per acre	Average Yields per Acre			Financial Statement per Rotation			
			Corn bus. 1916-1932	Wheat bus. 1917 1932	Hay lbs. 1918-1932	Total value of grain and hay	Value of increase due to soil treatment	Cost of treat-ment	Gain over cost of treatmen
0	0		23.4	4.4	1240	$17.84			
1	LM		37.7	8.6	1660	28.60			
2	LM St.B.	48	44.5	12.7	2521	38.04	$21.30	$ 7.90	$13.40
3	LM BS	48	47.6	14.0	2450	40.04	22.84	8.01	14.83
4	LM		39.9	8.8	1742	29.97			
5	LM SP	48	49.1	14.5	2669	41.92	23.66	8.13	15.53
6	LM RP	192	48.6	13.1	2537	40.07	21.20	8.98	12.22
7	LM		41.5	9.3	1942	31.81			
8	-M SP	48	46.9	13.1	2549	39.44	20.06	5.30	14.76

Table III.--Results of Phosphate Experiment--Concluded

Plot No.	Treatment	Lbs. phos. acid per acre	Average Yields per Acre			Financial Statement per Rotation			
			Corn bus. 1916-1932	Wheat bus. 1917-1932	Hay lbs. 1918-1932	Total value of grain and hay	Value of increase due to soil treatment	Cost of treat-ment	Gain over cost of treatment
9	-M RP	192	47.3	13.4	2879	$41.16	$21.80	$ 6.36	$15.46
10	LM		40.8	9.4	1936	31.58			
11	L-SP	48	31.7	10.1	2161	29.40	10.40	5.53	4.87
12	L-RP	192	29.4	8.3	1987	26.35	7.61	6.49	1.12
13	L[1]		24.4	5.2	1394	19.50	1.02	2.65	-1.63
14	-SP	48	32.3	8.1	1783	26.53	8.30	2.88	5.42
15	-RP	192	36.0	10.1	2298	31.67	13.69	3.84	9.85
16	LM		38.6	9.1	1832	30.05			
17	L-NK SP[2]	48	42.1	12.0	2292	35.61	17.32	9.31	8.08
18	L-NK RP[2]	192	36.2	9.9	2227	31.31	12.60	10.27	2.33
19	LM		40.2	9.8	1899	31.52			
20	-NK SP[2]	48	41.6	11.1	2020	33.60	14.91	6.66	8.25
21	-NK RP[2]	192	41.3	11.6	2549	36.00	17.82	7.62	10.20
22	LM		38.9	8.6	1888	29.99			
23	LM SP	24	47.9	13.5	2467	39.83	20.48	6.63	13.85
24	LM RP	96	45.8	12.5	2433	38.05	17.02	7.04	9.98
25	LM		42.7	11.9	2107	35.03			
26	LM SP	72	51.2	17.1	3097	46.55	24.56	9.77	14.79
27	LM RP	288	48.7	14.5	2840	42.44	21.17	11.08	10.09
28	LM		41.6	10.0	2057	32.87			
29	LM SP	160[3]	49.3	15.4	2855	43.46	23.87	8.75	15.12
30	LM RP	600[3]	47.7	13.4	2695	40.58	21.94	9.43	12.51
31	LM		40.3	8.5	1773	30.01			
32	-M		32.9	6.9	1160	23.32	7.58	1.55	6.03
33	-		20.3	4.2	965	15.34			
34	LM		37.7	9.3	1574	28.82	13.88	4.67	9.21
	Av.LM checks		40.0	9.4	1855	30.94			

1. Plot 13 was manured on Series B in 1916 and Series C in 1917.
2. Plots 17, 18, 20 and 21 receive 12 pounds of nitrogen and 50 pounds of potash per acre per rotation, all on the corn.
3. Applied in 1916 and again in 1925.

NOTE.--In computing the financial results, corn has been valued at 40¢, and wheat at 80¢ per bushel and hay at $8.00 per ton. Straw and stover have not been counted. Nitrogen has been charged at 7 1/2¢, phosphoric acid at 6¢ and potash at 6¢ per pound. Rock phosphate (30%) has been charged at $12.00, and ground limestone at $2.50 per ton. Manure has been charged at 50¢ per ton for spreading on the land.

The largest returns have been secured from the combination of ground limestone, manure and medium to heavy applications of superphosphate (plots 5 and 26). The heavy treatment (plot 26) has produced average increases of 27.2 bushels of corn, 10.8 bushels of wheat, and 1,681 pounds of mixed hay per acre over the average of the untreated land. (Compare plot 26 with 33).

In combination with lime and manure, superphosphate has been the most profitable source of phosphorus. (Compare plots 5, 3, 2 and 6). In this comparison, superphosphate, basic slag and steamed bone meal have been applied at the rate of 48 pounds and rock phosphate at 192 pounds of phosphoric acid per acre with manure for each corn crop.

On limed land, superphosphate has been more efficient than rock phosphate in all cases, whether used in large or small amounts, and with or without manure or nitrogen and potash (compare plots 5, 11, 17, 23, 26 and 29 with plots 6, 12, 18, 24, 27 and 30).

On manured land without lime, rock phosphate has been slightly more profitable than superphosphate (compare plots 8 and 9).

Without lime, rock phosphate has produced larger returns than the combination of lime and superphosphate. In both cases, however, the crop yields have been too low to be profitable.

VARIETY TESTS OF FARM CROPS

The selection of hardy, high-yielding varieties of the crops grown in any section is very important. To determine those best adapted for this part of the state, the most promising varieties of several crops have been compared each year for a number of years. Each variety has been harvested separately and the yields determined by weight. The land on which the variety tests are carried has been kept in a good state of fertility by uniform applications of fertilizer on wheat, and manure on each corn crop.

Table IV.--Results of Crop Variety Tests, 1922--1932

Varieties	Average yields bushels per acre 1930-1932	1929-1932	1922-1925
Winter Wheat			
Purkof	26.5	26.3	21.9
Selection 21-2-11	26.3	24.6	
Michigan Amber	26.2	25.1	19.5
Fulhio	26.1	24.5	
Fultz	27.2	25.8	19.1
Poole			17.5
Rudy			17.4
Red Rock	24.0		17.2
Red Chaff			18.2
Red Cross	23.5	23.5	
Trumbull	26.4	25.4	
Gladden	26.6		
Nabob	27.3		
Berkeley Rock	25.3		
Kharkov	23.0		
American Banner	20.4		
Winter Rye			
Mammoth Winter		25.4	21.2
Wisconsin Pedigree			18.9
Rosen			19.0
Winter Barley			
Purdue 21		37.4	20.7
Tennessee Winter			19.0

Varieties	Average yields bushels per acre 1926-1930	1922-1925	1930-1932
Oats			
Gopher			30.1
Iogren			21.8
Iowar			28.3
Minota	35.2	37.2	28.4
Swedish Select	30.4	33.9	
Iowa 103	33.7	33.4	28.5
Fairfield		32.7	
Big Four		29.2	
Burt		29.0	
Victory		27.8	
Iowar	36.3		
Fulghum	33.0		30.4
Cornellian	31.5		
Cartier			35.7
Hulless			20.3
Spring Barley	11.2	10.4	13.7
Spring Wheat	5.8	8.3	4.6
Spring Rye	9.9	13.7	
Soybeans	Hay pounds per acre 1927-31	1930-32	Seed bu bus.per acre Av 1930-3
Kingwa		3972	17.7
Dunfield	4683	3741	14.1
Manchu	4527		
Midwest	5206	3042	16.9
Wilson	4774	3414	14.6
Virginia	4565		
Mansoy	3510		
Illini		3509	14.1
Harbinsoy		3556	13.1

PASTURE EXPERIMENTS

The improvement of pasture land has a very definite place in the agricultural program for southern Indiana. Large areas of this section are better adapted to pasture purposes than to its present use. There is a considerable area of pasture land that is not producing in a satisfactory way. The development of better pastures will make possible the expansion of the livestock industry from both the beef cattle and the dairy cattle point of view.

Several years ago a series of pasture plots was laid out in one section of the old pasture, and the results of soil treatment are given in the following table.

Grass mixtures including timothy, red top, Kentucky blue grass, orchard grass, alsike clover, sweet clover, alfalfa and lespedeza were seeded on the p plots in April, 1924. The first 2 years' growth was largely alsike clover, timothy and red top with scattered clumps of orchard grass, sweet clover and alfalfa.

BETTER PASTURES

After 9 years blue grass and red top persist along with some timothy on the fertilized plots. Blue grass is much better on the limed and phosphated areas than on the unlimed. Most of the lespedeza, both Korean and common, seemed to have disappeared in the extreme drouth of 1930 but is slowly coming back. Hop clover, a member of the clover family, gradually came into the mixtures. This early growing legume seems to have some real worth for rolling pasture land of this type.

For new pasture seedings a mixture of timothy, red top, blue grass, alsike clover and lespedeza is recommended for rolling limestone land. On sour thin land, a mixture of lespedeza and red top seems best.

Table V.--Results of Pasture Experiment, 1924-1931

Plot No.	Treatment per Acre*	Green forage, pounds per acre 1924	Green forage, increase over untreated	1925	Cured forage, pounds per acre average 1926-32	Cured forage, increase over untreated
1	Manure	5445	1512	Due to dry weather growth was small in 1925 and nothing was harvested	1381	488
2	500 lb. 2-12-6	16940	13007		2162	1269
3	500 lb. 0-12-6	13613	9680		1564	671
4	500 lb. 0-12-0	13310	9377		1533	640
5	Untreated	3933			893	
6	Limestone, 2 tons	6363	2430		1344	451
7	Lime, 500 lb. 0-12-0	13613	9680		1609	716
8	Lime, 500 lb. 0-12-6	18150	14217		1739	846
9	Lime, 500 lb. 2-12-6	16940	13007		2318	1425
10	Lime, manure	13613	9860		1649	756

* Treatments applied at seeding time in April, 1923, and fertilizer repeated in fall of 1929. Plots 2 and 9 receive top-dressings of 100 pounds of nitrate of soda per acre each spring.

ROTATION EXPERIMENT

A comparison of clover, alfalfa, sweet clover, Korean lespedeza and timothy in rotation with corn and wheat is being made on 17 quarter acre plots.

The effect of these crops on succeeding grain crops, their adaptation and dependability as one year rotation crops and their productive capacity are being studied.

All wheat receives 300 pounds per acre of 2-12-6 fertilizer and corn 100 pounds of 0-12-6 in the row. Manure equal to the total weight of produce (except wheat grain) in the previous round of the rotation is divided between corn and wheat.

The rotations under comparison are:

1. Corn, wheat, timothy (hay)
2. Corn, wheat, clover (hay)
3. Corn, wheat, alfalfa (hay)
4. Corn, wheat, sweet clover (seed)
5. Corn, wheat, (sweet clover intercrop)
6. Corn, wheat, Korean lespedeza (hay and seed).

HORTICULTURAL WORK

The Horticultural Department, Professor L. Greene, Chief and Professor C. L. Burkholder, Assistant Chief , is carrying on numerous projects of interest to fruit growers of the State.

The large planting of promising plum and prune varieties will produce the first fruits this year. Practically all of the commercial acreage of pears in southern Indiana has been destroyed by blight. The work in the three year old pear orchard may bring new information of special value at this time. Other work includes a study of various types of spray schedules and their relation to fruit and foliage injury and residue, storage studies, apple washing costs and comparison of various washing materials, stationary vs. portable spraying, peach and apple variety tests and a half acre farm garden.

USE OF ICE IN AN INSULATED COOL AIR APPLE STORAGE

MARKETING PERIOD LENGTHENED BY ICE

The data on this project dealing with the use of ice during the early fall storage period of Grimes and Jonathan has been carried on since 1925 by the Dep'ts of Horticultural and Agricultural Engineering. A complete report covering the work up to 1933 will be published in a few weeks and those interested should write the Purdue Agricultural Experiment Station for a copy of this publication. Circulating air over large blocks of ice reduced the temperature in the storage from 10° F. to 16° F. - below the temperature of a similar room cooled by ventilation during August and September. When the air was circulated through cracked ice and salt the temperature in the insulated room was 18° F. to 22° F. lower than that of a similar but uninsulated room adjoining. The seasonal cost of icing and operating the iced room varied from 16 to 26.6 cents per bushel with an average of 20.8 per bushel for the six years covered by this report. These are just a few of the interesting and valuable facts to be found in this new bulletin.

APPLE WASHING

Soon after a United States tolerance was placed on arsenic on fruit a commercial apple washer was installed at the farm. A great many tests have been conducted during the past two seasons with various cleaning materials. In 1931 the cost of acid, labor, power and 15 per cent depreciation on the original cost of the washer amounted to 1.05 cents per bushel on the 16,000 crates of fruit run through the washer. In 1932 only 7,600 crates of fruit were run through the washer at a cost of 1.5 cents per box. During the two seasons that this type of washing equipment has been used the average removal of arsenic has been from 60 to 70 per cent of the amount present when the fruit started through the machine. The percentage removal of lead residue has been about the same. However, there is usually three or more times as much lead residue present per pound of fruit as of arsenic. The use of several soap emulsifiers with the 2 per cent by volume hydrochloric acid in 1932 failed to increase the percentage of removal over 2 per cent while some of the emulsifiers tried did not increase the percentage removal over acid alone.

SANITARY MEASURES IN CODLING MOTH CONTROL

SANITATION COUNTS IN CODLING MOTH CONTROL

Up until the day of the meeting the packing shed was kept carefully closed and screened so that none of the moths of the over-wintering codling moth could get into the orchard. All of the orchard crates and bushel baskets that were left over from the 1932 harvest were stored in the basement of this building. The areas in the orchard which have shown the heaviest codling moth infestation in the past have been banded and the trees scraped to encourage pupation of the codling moth larva in the treated bands which destroy them soon after they spin up. Mr. Marshall, in charge of the entomology field station on the farm, has estimated that it costs 11.6 cents to kill 100 codling moth larva by spraying and 1.78 cents per 100 to destroy them by the use of self working bands. Of course the bands cannot be depended upon alone but where codling moths are a serious problem or where they are becoming more numerous neither method should be neglected in carrying out an effective control program.

PLUM AND PRUNE VARIETY TESTS

There are about thirty varieties included in this planting. The trees are located along the west edge of the apple orchard, and nearly directly west of the large machinery shed. Most of the older trees had a very nice bloom in the spring of 1933, and many of the varieties have set enough fruit to give some advance idea of their possible production in this part of the state. It is of special interest to note that all of the varieties remaining in this plot have not been troubled by the low winter temperatures which have destroyed the fruit buds of peaches in this area for the past two years.

PEAR BLIGHT AND VARIETY TEST PLOT

All of the trees in this block are on blight resistant roots. The trunks are also of the Old Home variety, which is partially blight resistant. Last spring these trees had completed two growing seasons in the field, and the scaffold branches were budded to the varieties selected for study. A period of cold, windy weather followed and many of the buds did not set. The branches which have not been worked over at the present time will be budded this fall.

SOIL MANAGEMENT

Up until about five years ago the north half of the apple orchard was kept in grass while the south half was cultivated and a cover crop planted each fall. The area in the south half of the orchard seemed to be level enough that serious erosion could be avoided, but after a number of years trial it was found that the trees in this area were beginning to stand up on mounds and that the soil between the tree rows was gradually washing away. It was then decided to straw mulch as much of the orchard as possible each year. A bale of straw has been used to the tree and some of the area that was mulched three years ago received a second bale of straw per tree in the spring of 1933. The trees in this south area are beginning to show a better, darker green color and are making a longer terminal growth. The mulch and grass crops sown between the rows has aided in stopping erosion.

FARM GARDEN

A HUNDRED DOLLARS WERE SAVED HERE

One of the most interesting plots on the farm is a half acre of farm garden. This has been laid out with the idea of furnishing a constant supply of vegetables and small fruits for the farm table, beginning with rhubarb, asparagus and early radishes and continuing to furnish a daily and inexpensive supply of food well into the fall months. This half acre has furnished over one hundred dollars worth of food for the farm families during each of the last two years. This plot is also located along the west side of the apple orchard and anyone who has even a small plot to devote to vegetable gardening and small fruits will find it well worthwhile to visit the garden.

LIVESTOCK

The livestock work on the farm has been continued on the same basis as last year, with the cooperation of Professor F. G. King, Chief, and Professor Claude Harper, Assistant Chief of the Department of Animal Husbandry. The lamb production test has been carried on using a lot of type C merino ewes headed by a merino buck, and the following lots each headed by a southdown buck - merino ewes; western ewes and native ewes. Records are being kept of the feed consumption so that costs, gains, profits and effect on wool production can be determined.

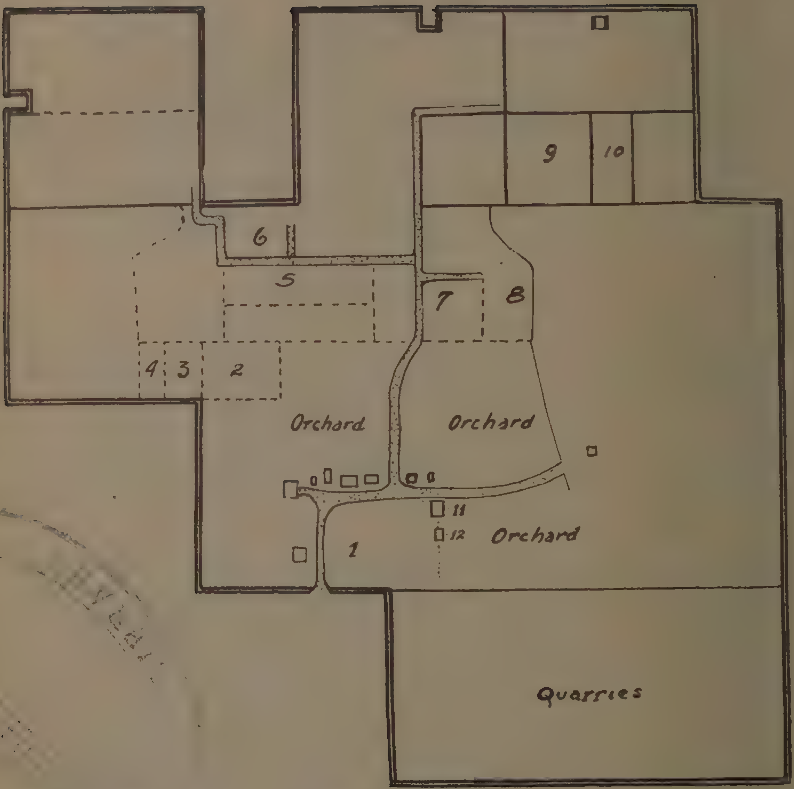
The herd of young cattle is developing nicely. These animals will be the basis for studying the milking and beefing qualities of this strain of Shorthorn cattle. This project is carried on in cooperation with the Bureau of Animal Industry, U. S. Department of Agriculture, and it is hoped that much valuable data will be obtained which will be of interest to all cattle breeders. Records and observations will be made regularly on these animals so that the dual qualities of the progeny may be accurately measured.

POULTRY

A consistent effort is being made to develop one of the finest flocks of Barred Plymouth Rocks in the country. In this work Mr. S. M. Walford of the Department of Poultry Husbandry advises regarding tthe management and assists in the development of a constructive breeding program.

A uniform intermingling of the several Indiana and imported blood lines in the flock of 750 pullets and hens is beginning to show results in a more uniform, high egg production.

By pedigree breeding and wing banding, the progeny of outstanding females is definitely indentified.



POINTS OF INTEREST

1. Picnic and meeting grounds.
2. Orchard Experiments.
3. Elberta Peach Orchard.
4. Peach Variety Orchard.
5. Soils Experiments, General Fertility Series.
6. Soils Experiments, Phosphate Series.
7. Crop Variety Tests.
8. Alfalfa Field.
9. Pasture being improved.
10. Pasture Experiments.
11. Apple Packing and Storage Building.
12. Sheep Barn.

Visit these places and feel at liberty to ask questions. Representatives of the various departments will be present to answer and discuss your problems with you.

Circular No. 198 July, 1933

NINETEENTH ANNUAL REPORT

of the

CREAMERY LICENSE DIVISION

For the Year Ending March 31, 1933

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Purdue University
Agricultural Experiment Station
Lafayette, Indiana

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Creamery License Division

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Mr. W. F. Epple	Glassware Inspector
Mr. V. D. Rhodes	Assistant Inspector
Mr. C. E. Schumacher	Assistant Inspector

Milk Handled by Licensed Plants and Total Estimated Milk Production, 1920-1932

Year	Number of Licensed Plants	Pounds of Milk or Its Equivalent Handled by Licensed Plants	*Number of Milk Cows	Total Milk Production
1920	183	1,227,971,123	659,000	3,086,007,190
1921	198	1,350,320,469	653,000	3,035,325,150
1922	234	1,471,978,897	659,000	3,093,440,591
1923	220	1,439,266,503	652,000	3,133,036,289
1924	234	1,698,110,981	659,000	3,200,137,516
1925	243	1,758,946,467	679,000	3,280,146,910
1926	272	1,830,970,397	678,000	3,447,213,947
1927	307	2,132,280,140	680,000	3,669,804,287
1928	334	2,444,867,845	686,000	3,792,498,038
1929	344	2,434,039,990	693,000	3,842,440,026
1930	369	2,552,288,533	702,000	3,924,405,203
1931	372	2,912,519,251	722,000	3,965,671,198
1932	389	2,639,138,629	751,000	4,202,419,131
1933	....	....	774,000	....

* Indiana Crops and Livestock, 1933. Department of Agricultural Statistics.

NINETEENTH ANNUAL REPORT OF THE CREAMERY LICENSE DIVISION

T. H. Binney

Indiana Dairy Statistics

In spite of economic conditions, Indiana retained its position among the leading dairy states of the nation in the production and manufacture of dairy products during 1932. Indiana's rank among the states for 1932 in the manufacture of the principal dairy products is as follows:

Product	Rank
Butter	8th
Pressed Cheese	4th
Cottage Cheese	9th
Sweetened Condensed Milk	8th
Unsweetened Condensed Milk	1st
Evaporated Milk	10th
Ice Cream	11th

As shown in the following table, manufactured dairy products did not follow the general trend of percentage changes in 1932 when compared with 1931.

PERCENTAGE CHANGE OF PRINCIPAL MANUFACTURED DAIRY PRODUCTS IN 1932 FROM 1931

PRODUCT	Unit	Percentage change 1931 to 1932	
		*United States	Indiana Licensed Plants
Creamery Butter	Pounds	+ 1.6	+11.0
Cheese	Pounds	— 1.7	+ 3.8
Condensed Milk	Pounds	—17.5	—19.2
Evaporated Milk	Pounds	+ 9.9	— 3.2
Ice Cream	Gallons	—25.8	— 7.6

*Dairy Situation, September 19, 1933. U. S. D. A. Bureau of Agricultural Economics.

At the time of applying for the renewal of creamery licenses, all creameries, milk plants, cheese factories, condenseries, etc., report the amount of butter, milk, cheese, or other dairy products made or sold during the year. With this information, together with figures supplied through a co-operative agreement with the U. S. D. A., Bureau of Agricultural Economics, it is possible to compile reliable statistics concerning the total production of licensed dairy manufacturing plants.

The following table is a summary of the reports received from licensed plants for the years indicated:

OUTPUT OF LICENSED PLANTS IN INDIANA FOR 1914, 1920, 1926, 1931 AND 1932

	1914	1920	1926	1931	1932
Pounds of Butter	26,636,520	42,577,180	56,091,822	67,991,081	75,506,568
Pounds of Milk	51,067,066	155,950,136	367,074,252	602,079,739	505,210,133
Pounds of Cream	5,421,838	12,224,488	25,800,641	70,230,197	28,833,326
Gallons of Ice Cream	2,035,874	4,132,318	4,604,079	3,932,034	3,653,512
Pounds of Cheese	211,922	233,806	216,548	14,703,669	15,265,027
Pounds of Sweetened Condensed Milk	1,019,400	6,920,592	11,469,103	1,418,904	1,258,553
Pounds of Evaporated Milk	10,106,800	10,265,791	17,280,480	38,521,763	37,301,632
Pounds of Bulk Evaporated Milk	2,450,988	5,977,716	7,847,662	32,886,766	27,518,303

By comparing the figures for 1932 with those for 1931 in the above table, it will be noted that butter, milk and cheese show an increase while the remaining products show a decrease. The increase in the amount of butter made is 7,515,487 pounds, or 11 per cent. A total of 505,210,133 pounds of milk and 28,833,326 pounds of sweet cream were sold in licensed plants during the past year. This represents an increase of 0.6 per cent of milk and a decrease of 143.5 per cent of cream in 1932 as compared with 1931. The amount of ice cream manufactured during the past year shows a decrease of 278,522 gallons, or 7.6 per cent. Cheese production increased 561,358 pounds, or 3.8 per cent. Sweetened condensed milk decreased 160,351 pounds, or 12.7 per cent; evaporated milk (case goods) decreased 1,220,131 pounds, or 3.2 per cent, and bulk evaporated milk decreased 5,368,463 pounds, or 19.1 per cent.

In addition to the above products, dairy plants of the state manufactured 13,888,634 pounds of condensed skim milk; 1,214,650 pounds of evaporated skim milk; 3,738,624 pounds of concentrated skim milk (for animal feed); 6,741,032 pounds of condensed or evaporated buttermilk; 4,650,823 pounds of dried or powdered skim milk, and 1,911,990 pounds of dried or powdered buttermilk.

An estimate of the total amount of dairy products manufactured in the state may be secured by using the above statistics and estimating the amount of dairy products manufactured and sold in the plants which are not licensed. A large number of ice cream plants and market milk plants buy milk on a gallon or weight basis rather than on a butterfat basis and do not come under the jurisdiction of the Creamery License Division.

AMOUNT OF BUTTER, MILK, ICE CREAM, CONDENSED MILK AND CHEESE
ESTIMATED AS PRODUCED IN INDIANA DURING 1932

Pounds of Creamery Butter	75,506,568
Pounds of Dairy Butter	10,305,055
Pounds of Milk Consumed	1,649,080,903
Gallons of Ice Cream	9,072,953
Pounds of Condensed and Evaporated Milk	66,078,488
Pounds of Cheese	15,265,027
Pounds of Cottage Cheese	2,937,193

By taking the amount of milk used in the manufacture of each of the various dairy products, the total milk production of the state may be calculated. In making this calculation, it has been necessary to estimate the amount of milk and cream consumed direct, the amount of dairy butter made, the amount of milk fed to calves, and the amount of milk lost on farms and in factories.

TOTAL (ESTIMATED) MILK PRODUCTION

Creamery Butter Used	1,585,637,928	pounds
Dairy Butter Used	216,406,155	pounds
Milk Consumed Direct	1,649,080,903	pounds
Ice Cream Used	124,753,106	pounds
Cheese Used	152,650,270	pounds
Condensed Milk Used	165,196,220	pounds
Milk Fed to Calves	110,181,400	pounds
Milk Shipped Out of State	272,750,432	pounds
Losses on Farms and in Factories	128,299,692	pounds
Total	4,404,956,106	pounds
Milk Shipped in	202,537,975	pounds
Total Milk Production in Indiana	4,202,419,131	pounds

Creamery Licenses

Every factory and station where milk or cream is bought on a butterfat basis is required to have a creamery license. A creamery license is valid for one year, providing that the Law or the Rules and Regulations under which the license was granted are not violated. In case of a violation, a creamery license may be revoked by the Purdue University Agricultural Experiment Station.

During the past year 1,752 creamery licenses were issued. This is a decrease of 77 from the previous year's total of 1,829. Plant licenses show a gain of 17 in number, while the number of station licenses show a decrease of 94.

The following table is a summary of the number and kinds of plants issued creamery licenses during the year ending March 31, 1933, and for previous years, as indicated.

CREAMERY LICENSES ISSUED FROM 1926-1932, INCLUSIVE

PLANTS AND STATIONS	NUMBER AND YEAR						
	1926	1927	1928	1929	1930	1931	1932
Butter	64	58	56	58	56	58	57
Milk	91	108	129	141	162	147	162
Ice Cream	17	15	11	16	18	16	12
Cheese	3	9	18	17	18	19	18
Condensed Milk	7	8	8	9	8	10	10
Butter and Milk	33	43	39	33	36	46	54
Butter and Ice Cream	12	14	17	13	10	13	9
Butter and Condensed Milk	1	1	0	0	0	0	1
Butter and Cheese	0	0	3	2	1	2	3
Butter, Milk, and Ice Cream	13	16	13	15	20	17	23
Butter, Milk and Condensed Milk	4	4	5	5	7	6	2
Butter, Milk, Ice Cream and Condensed Milk	4	6	7	7	6	6	7
Butter, Milk, Ice Cream and Cheese	0	0	0	0	0	1	1
Butter, Milk, Cheese and Condensed Milk	0	0	0	1	0	0	1
Milk and Ice Cream	19	20	24	18	19	26	25
Milk and Condensed Milk	3	3	2	5	4	5	4
Milk, Ice Cream and Condensed Milk	1	2	2	3	2	0	0
Milk, Ice Cream and Cheese	0	0	0	1	1	0	0
Total number of Plants	272	307	334	344	369	372	389
Stations	1,631	1,653	1,614	1,588	1,524	1,457	1,363
Total Licenses Issued	1,903	1,960	1,948	1,932	1,893	1,829	1,752

The following table shows the number of plants which reported each of the five major products handled in licensed plants for the years indicated:

PRODUCT	NUMBER OF PLANTS REPORTING						
	1926	1927	1928	1929	1930	1931	1932
Butter	131	142	140	134	136	149	158
Milk	168	202	221	229	257	254	279
Ice Cream	66	73	74	73	76	79	77
Cheese	3	9	21	21	20	22	22
Condensed Milk	20	24	24	30	28	31	25

Testers' Licenses and Examinations

Before obtaining a license to test milk or cream, testers must demonstrate their ability to make reliable tests by passing an examination consisting of both written and laboratory work. The written examination covers general information of testing procedure and consists of twenty questions taken from Circular 41 issued by the Purdue University Agricultural Experiment Station. In the laboratory, candidates must demonstrate their ability to prepare samples for testing, weigh out accurate samples of cream, measure accurate samples of milk, make correct readings of tests and show their general knowledge of the operation of the Babcock test.

Three hundred and forty-two candidates appeared for the tester's examination during the past year. This is the smallest number of candidates to take the examination in any year since the Creamery and Testers' License Law was passed. Out of this number twenty failed to receive a passing grade; fourteen of the failures were due to unsatisfactory written work, one was due to laboratory work and five were due to both written and laboratory work.

Twenty-one hundred and nine testers' licenses were issued during the past year, a decrease of two hundred and six from the previous year's total of twenty-three hundred and fifteen.

The following table shows the number of candidates examined and testers' licenses issued for the year indicated:

NUMBER OF CANDIDATES EXAMINED AND TESTERS' LICENSES ISSUED FOR THE YEARS ENDING MARCH 31, 1920, 1924, 1928, 1932 AND 1933

	1920	1924	1928	1932	1933
Number of Individual Examinations	1,339	850	904	501	342
Number of Failures	226	125	290	33	20
Number of Persons Passing Examination	1,113	725	614	468	322
Number of Testers' Licenses Issued	2,371	2,518	2,661	2,315	2,109

The results of the seventy examinations which were held at the nine examination points in the state are given in the following table:

RESULTS OF TESTERS' EXAMINATIONS, 1932-1933

PLACE OF EXAMINATION	Number of Examinations	Number of Candidates	AVERAGE GRADES (PER CENT)		
			All Candidates	Candidates Passed	Candidates Failed
Lafayette	13	84	82.7	84.8	27.0
Muncie	7	49	83.0	85.8	62.5
Fort Wayne	8	70	84.4	86.0	57.0
New Albany	4	13	79.8	81.2	62.0
Evansville	6	19	84.3	84.3	....
Terre Haute	6	30	82.9	83.9	54.0
Indianapolis	6	38	83.0	83.4	67.0
North Vernon	6	39	83.3	84.9	69.0
Totals	56	342	83.2	84.8	57.1

Glassware Inspection

The first requisite in securing an accurate test of milk or cream is a representative sample. Of equal importance in securing an accurate test is the use of accurate Babcock testing glassware and accurate weights. To assure the dairy industry that their test bottles, milk pipettes, and weights are accurate, they are examined by the Purdue University Agricultural Experiment Station. If they are within the allowable tolerance they are stamped with the letters

"S. G. P.," meaning "Standard Glassware, Purdue." The use of glassware not stamped with the letters "S. G. P." is a violation of Sections 7 and 13 of the Creamery and Testers' License Law and Rule 3 of the Rules and Regulations.

During the past fiscal year 34,079 pieces of Babcock testing glassware were examined by the Glassware Inspector of the Agricultural Experiment Station. In addition, 194 nine-gram weights were inspected and all found to be correct. This is 5,218 pieces of glassware less and 170 nine-gram weights more than were inspected last year.

The following table gives the amount of each kind of glassware inspected, and the number of pieces found to be incorrect:

GLASSWARE INSPECTION

KINDS OF GLASSWARE	Total Number of Pieces	Number Incorrect	Per Cent Incorrect
Cream Test bottles	25,476	61	.239
Milk Test bottles	7,548	0	.000
Milk Pipettes	1,055	0	.000
Summary	34,079	61	.179

Licenses Revoked and Prosecutions

One of the duties of the Creamery License Division is to insure accurate tests and weights of milk and cream to both the producer and manufacturer. This is accomplished through inspectors who inspect cream and milk stations, and factories, to determine the accuracy of tests, weights, and records of milk and cream purchased. Whenever an operator is found manipulating tests, weights, or records, either intentionally or unintentionally, he is first warned to discontinue such practice. If such violations continue, the inspectors obtain evidence which is placed before the State Creamery Examining Board. The operator against whom the evidence is obtained is requested to appear before the Board to show cause why the license should not be revoked. After a careful consideration of all the evidence presented, the Board recommends to the Purdue University Agricultural Experiment Station the action to be taken.

During the past year the following testers' licenses were revoked in accordance with the recommendation of the Examining Board:

Mr. Russel Moore, Indianapolis, Marion County, Indiana, tester for Model Creamery, Indianapolis, Indiana.

Mr. J. M. Hopewell, Farmersburg, Vigo County, Indiana, independent buyer for Johnson Butter Company, Terre Haute, Indiana.

Mr. James L. Conder, Jasonville, Greene County, Indiana, tester for Highland Creamery Company, Terre Haute, Indiana.

Mrs. Mary R. Smith, Fountain City, Wayne County, Indiana, tester for Wayne County Produce Association, Richmond, Indiana.

Mr. Earl Daugherty, Hagerstown, Wayne County, Indiana, tester for Red 73 Creamery Company, Union City, Indiana.

One prosecution was made during the year. An operator was found guilty of testing without a license and paid the costs of prosecution which amounted to $12.00.

Licensed Manufacturing Plants in Indiana

1932

E. C. Adams Products Company	Fairmount	Butter, Milk and Ice Cream
Adler Milk Company	Fort Wayne	Milk
Oscar Adler Dairy	Fort Wayne	Milk
Ahles Edgewood Dairy	Evansville	Milk
Alexandria Pure Milk Company	Alexandria	Milk
Albin Dairy	Greencastle	Milk
Alspaugh Ice Cream Company	Newcastle	Ice Cream
American Dairy Company	Evansville	Butter, Milk
Angola Co-operative Dairy Products Co.	Angola	Butter, Ice Cream
Anthony Dairy	Fort Wayne	Milk
Armour Creameries	Rochester	Butter
Associated Dairies Company	Fort Wayne	Milk
Auburn Dairy	Auburn	Milk

Babybrand Dairy Company	Fort Wayne	Milk
Chas. C. Baker	Muncie	Butter
Ballard Ice Cream Company	Danville	Milk
Ballard Ice Cream Company	Indianapolis	Milk, Ice Cream
Banner Farms Dairy	Indianapolis	Milk
Banquet Ice Cream and Milk Company	Indianapolis	Milk, Ice Cream
Barnett Bros. Sunlight Creamery	Logansport	Butter, Milk
Beatrice Creamery Company	Muncie	Butter, Ice Cream
Beaver Ridge Dairy Company	South Bend	Milk
Bedford Dairy Company	Bedford	Milk, Ice Cream
Belcher-Hinkle Dairy	Bloomington	Milk
Berkes Dairy	Auburn	Milk
Bettenbrock Dairy	Terre Haute	Milk, Butter
Betty Lou Farms	Kokomo	Milk
Chas. Bishop	Rose Lawn	Butter
Blue Bell Creamery	Mishawaka	Butter
Blue Bell Milk & Ice Cream Company	Vincennes	Milk, Ice Cream
Blue Ribbon Dairy	Gary	Milk
Blue Valley Creamery Company	Indianapolis	Butter
Boonville Pure Milk Company	Boonville	Butter, Milk, Ice Cream
Bordens Farm Prod. Co. of Illinois	Akron	Milk
Bordens Farm Prod. Co. of Illinois	Lowell	Milk
Bosstick Pure Milk and Ice Cream Co.	Sullivan	Milk, Ice Cream
Bowman Dairy Company	Francesville	Milk
Bowman Dairy Company	Kouts	Milk
O. A. Bowne	Terre Haute	Milk, Butter
Brandywine Creamery	Fountaintown	Milk, Butter
Breyer Ice Cream Company	Kendallville	Condensed
Browder Ice Cream Company	Indianapolis	Milk, Ice Cream
Bunker Hill Creamery Company	Bunker Hill	Butter

Calvert's Dairy	Edinburg	Milk
Capitol Dairies, Inc.	Indianapolis	Milk
Carey & Sons	Indianapolis	Milk
Center City Dairies	Indianapolis	Milk
Center Lake Dairy	Angola	Milk
Central Dairy	Ossian	Milk
Chamberlain Ice Cream Company	Lafayette	Milk, Ice Cream
Chapman & Sons	Frankfort	Milk
Cicero Country Butter Company	Cicero	Butter
City Dairy Company	Connersville	Milk, Butter
City Dairy Company	Kendallville	Milk
City Dairy Company	South Bend	Milk, Butter
Clover Farms	Fishers	Milk
Cloverleaf Creameries, Inc.	Decatur	Butter, Ice Cream
Cloverleaf Creameries, Inc.	Huntington	Butter, Ice Cream
Cloverleaf Dairy	Culver	Milk, Butter
Cloverleaf Dairy	Elkhart	Milk
Cloverleaf Dairy	Gary	Milk, Butter
Collier Bros.	Martinsville	Butter, Milk, Ice Cream
Collier Bros. Creamery	Spencer	Milk
Columbia Dairy	Columbia City	Milk
Compton Dairy	Edinburg	Milk
Cook Bros. Dairy	Elkhart	Milk
County Line Cheese Factory	Auburn	Cheese
Covalt Dairy Company	Muncie, R. R.	Milk
Craigville Cheese Company	Craigville	Cheese
Crescent Creamery	Fort Wayne	Milk
Crescent Dairy Company	Kokomo	Milk, Butter
Crystal Dairy	Warsaw	Milk
Daisy Dairy Prod. Company	Gary	Milk
Dale Creamery Association	Dale	Butter
Daum Dairies	Connersville	Milk, Ice Cream, Condensed
Davis Dairy Farm	Anderson	Milk
Walter M. Denehie	Terre Haute	Milk
O. V. Dimmit Dairy	West Middletown	Milk
Dixie Dairy	Gary	Milk
Douglas-Skidmore Milk Company	Frankfort	Milk
East Central Coop	Rushville	Butter
East Chicago Dairy Company	East Chicago	Milk
East End Dairies	Indianapolis	Milk
East Side Jersey Dairy	Anderson	Milk, Butter
Economy Creamery Company	Economy	Butter
Eel River Creamery Company	North Manchester	Butter
Elkhart Dairy	Elkhart	Milk
Ellsworth Ice Cream Company	Huntingburg	Milk, Butter, Ice Cream
Ellsworth Ice Cream Company	Oakland City	Milk
Elmore's Creamery	Elwood	Milk, Ice Cream

Elwood Creamery Company	Elwood	Ice Cream
English Lake Creamery	English Lake	Butter
Eskay Dairy	Fort Wayne	Milk, Butter
Evans Milling Company	Indianapolis	Milk
Excelsior Dairy	Wabash	Milk
Fairview Dairy Company	Anderson	Milk
Farm Bureau Creamery	Portland	Butter
Farmers Dairy	Carlos	Butter
Farmers Marketing Association	Columbus	Butter
Farmers Produce Association	Crawfordsville	Butter
Fertig Dairy	Franklin	Ice Cream
Fertile Acres Dairy	Lakeville	Milk
Forest Dairy	Fort Wayne	Milk
Paul B. Forgey	Logansport	Milk
Ft. Wayne Pure Milk Company	Fort Wayne	Milk
Franklin Pure Milk Company	Franklin	Milk, Butter, Ice Cream
Fraziers Dairy	Frankfort	Milk
Geo. Freese's Sons	Nappanee	Butter, Ice Cream
French Lick Hotel Company	French Lick	Butter
R. W. Furnas Ice Cream Company	Fort Wayne	Ice Cream
R. W. Furnas Ice Cream Company	Indianapolis	Milk, Ice Cream
R. W. Furnas Ice Cream Company	Morristown	Condensed
R. W. Furnas Ice Cream Company	South Bend	Ice Cream
Gary Milk Company	Gary	Milk
F. H. George and Company	Fort Wayne	Butter
Gingrich Dairy	Lafayette	Milk, Butter
Frederick Glass	Madison	Milk, Ice Cream
Glen Echo Dairy Company	Evansville	Milk
Glen Park Dairy Company	Gary	Milk
Gnau Bros. Dairy	Tell City	Milk
Gold Medal Dairy Company	Evansville	Milk
Golden Guernsey Dairy	Frankfort	Milk
Golden Rule Creamery	Kokomo	Butter
Golden Rule Creamery Company	Monticello	Milk, Butter
Gordon Baking Company	LaGrange	Condensed
Goshen Milk Condensing Company	Goshen	Butter, Milk, Condensed
E. S. Grady Milk Depot	Elkhart	Milk
Graham Farms	Elnora	Cheese
Graham Farms	Washington	Cheese, Butter
Greek Candy Kitchen	Jasper	Ice Cream
Greendale Ice Cream Company	Lawrenceburg	Ice Cream
Greenfield Creamery Company	Greenfield	Milk
Green and Son	Shelbyville	Milk
Greensburg Creamery Company	Greensburg	Milk
Grocers Dairy Products Company	Kokomo	Milk, Butter, Ice Cream, Condensed
Guernsey Milk and Ice Cream Company	Lebanon	Milk, Ice Cream

Hagerstown Dairy	Hagerstown	Milk
Hall Dairy	Bloomington	Milk
H. V. Hamilton	Terre Haute	Milk
Hammond Milk Company	Hammond	Milk
Handy's Dairy	Greencastle	Milk, Butter
Hartley's Dairy	Portland	Milk
Haxson Dairy Company	Gary	Milk
Haxton Pure Milk Company	Hobart	Milk
Haynes Dairy	Garrett	Milk
Heckaman Dairy	Nappanee	Milk
Hedges Dairy Prod. Inc.	Terre Haute	Milk, Butter
Highland Creamery Company	Terre Haute	Butter
Hillcrest Farm	Windfall	Milk
Hill's Dairy	Winchester, R. R. 4	Milk
Himes Bros. Dairy	Richmond	Milk
Holland Creamery Association	Holland	Butter
Holland Custard and Ice Cream Co.	Holland	Ice Cream
Fred Holle and Sons	Fort Wayne	Milk
Home Creamey Company	Morocco	Butter
Homestead Farm Creamery Company	Milan	Butter
Hoosier Condensed Milk Company	Bluffton	Condensed
Hoosier Dairy Products Company	Noblesville	Ice Cream
Hoosier Dairy Products Company	Rushville	Milk, Ice Cream
Hoosier State Creamery	Rensselaer	Butter
Hoovens Dairy	Goshen	Milk
Hornaday Milk Company	Indianapolis	Milk, Butter
R. B. Hough Dairy	Richmond	Milk
Huff's Creamery	Bremen	Butter
Hunding Dairy Company	Wellsboro	Milk
Hungerford Dairy	Rushville	Milk
Huntington Pure Milk Company	Huntington	Milk, Butter
Hy-Grade Dairy Products Company	Crawfordsville	Milk Butter, Ice Cream
Ideal Pure Milk Company	Evansville	Milk, Butter, Ice Cream, Condensed
Indiana Condensed Milk Company	Lebanon	Condensed
Indiana Condensed Milk Company	Sheridan	Condensed
Indiana Condensed Milk Company	Veedersburg	Butter
Indiana Dairy Company	South Bend	Milk, Butter
Indiana Dairy Marketing Ass'n.	Muncie	Milk, Butter, Condensed
Indiana Ice and Dairy Company	Anderson	Milk, Butter, Condensed
Indiana Milk Transportation Co.	Dyer	Milk
Indiana Produce Company	Huntingburg	Butter
International Dairy Company	Deep River	Milk
Iselman's Dairy	LaPorte	Milk
Jacobi Dairy	Greenville	Milk, Butter

Jersey Creamery Company	Newcastle	Milk, Butter, Ice Cream
Jersey Maid Dairy Company	Hammond	Milk
Jessup and Antrim Ice Cream Company	Indianapolis	Ice Cream, Condensed
Jessup Milk Company	Plainfield	Milk
Johnson Butter Company	Terre Haute	Butter, Milk, Ice Cream
Johnson Creamery Company	Bedford	Milk
Johnson Creamery Company	Bloomington	Milk, Butter, Ice Cream
Keener Township Dairy	DeMotte	Cheese
Kimmel Farms, Inc.	Kendallville	Milk
A. W. King's Dairy	Richmond	Milk
King's Sanitary Dairy	Terre Haute	Milk, Butter
Kline's Dairy	Logansport	Milk
Knispel Dairy	Fort Wayne	Milk
Koch Dairy Company	Evansville	Milk, Butter, Ice Cream
Kosanke Bros.	Argos	Butter
Kraft-Phenix Cheese Corporation	Bloomfield	Cheese
Kraft-Phenix Cheese Corporation	Dale	Cheese
Kraft Cheese Company	Marshall	Cheese
Kraft Cheese Company	Paoli	Cheese
Kraft Cheese Company	Salem	Cheese
Kraft Cheese Company	Sharpsville	Cheese
Kraft Cheese Company	Shirley	Cheese
Kraft Cheese Company	Sullivan	Cheese
Kraft Cheese Company	Summitville	Cheese
Kraft Cheese Company	Sweetsers	Cheese
Kroger Grocery and Baking Company	Indianapolis	Milk
Kyle Creamery Association	Aurora, R. R.	Butter
Lafayette Ice Cream Company	Lafayette	Milk, Ice Cream
Lake Shore Dairy	Indiana Harbor	Milk
Lake View Dairy	Gary	Milk
Lanesville Creamery Company	Lanesville	Butter
Lemont Dairy	Brook	Milk
Lenicks Dairy	LaPorte	Milk, Ice Cream
Leonard Creamery Company	Paoli	Ice Cream
Liberty Creamery Company	Liberty	Milk, Butter
Lima Creamery Company	Howe	Butter
Linsmith Milk Company	Columbus	Milk
Linton Ice & Cold Storage Company	Linton	Ice Cream
Linton Milk Company	Linton	Milk
Longfield Creamery	Wakarusa	Butter
Mack & Company	Monon	Ice Cream
Madison Creamery Company	Madison	Butter
Maplehurst Farms	Indianapolis	Milk
Marion Pure Milk Company	Marion	Milk

Marley Dairy	Monterey	Milk
Marten's Dairy	Fort Wayne	Milk
A. R. Mathews Dairy	Logansport	Milk
Mathews Dairy	South Bend	Milk
Maywood Milk Company	Maywood	Milk
Med-O-Bloom Dairy	Kokomo	Milk
Meadow Brook Farms	Hicksville, O.	Butter
Elmer Mennen	Lafayette	Milk
Middlebury Co-operative Creamery	Middlebury	Butter
Milk Producers Corp.	Garrett	Condensed
Miller Bros. Dairy	Goshen	Milk
Fred Miller Bakery & Ice Cream Co.	Evansville	Ice Cream
J. M. Miller	Culver	Milk, Butter
Miller Ice & Dairy Company	Cambridge City	Milk
Miller Yarling Dairy	Shelbyville	Milk
Mishawaka Farmers Dairy Company	Mishawaka	Milk
Model Creamery	Indianapolis	Milk
Model Milk & Ice Cream Company	Terre Haute	Butter, Milk, Ice Cream
Modern Dairy	Mexico	Milk
Morfis Dairy	Indiana Harbor	Milk
Mt. Vernon Creamery Company	Mt. Vernon	Butter, Milk, Ice Cream
Muldoons Pure Milk Company	Fort Wayne	Milk
Muncie Pure Milk Company	Muncie	Milk
Murfield Creamery	Mishawaka	Butter
Mutual Milk Company	Indianapolis	Milk

Nance's Creamery	Brazil	Butter, Milk, Ice Cream
Napoleon Creamery	Napoleon	Butter
Nappanee Dairy	Nappanee	Milk
National Dairy	Whiting	Milk
New Paris Creamery	New Paris	Butter, Milk
Northwestern Milk Company	Indianapolis	Milk

Oak Ridge Dairy	Mishawaka	Milk
Orchard Hill Creamery	Mitchell	Milk
Orchard Knoll Farm Creamery	Moores Hill	Butter
Osterhaus Dairy	Fort Wayne	Milk
Owen Dairies	Noblesville	Milk

Page Milk Company	Shelbyville	Milk, Butter, Condensed
Pango Milk Chocolate Company	Warsaw	Condensed
Parlor City Creamery	Bluffton	Butter
V. C. Pelton	Fremont	Butter
Pendleton Creamery	Pendleton	Milk, Butter, Ice Cream
People's Dairy	Fort Wayne	Milk
Phend Dairy Company	Goshen	Milk

Pinecrest Dairy	LaGrange	Milk
Pleasant Hill Dairy Company	Fort Wayne	Milk
Polk Sanitary Milk Company, No. 1	Indianapolis	Milk
Polk Sanitary Milk Company, No. 2	Indianapolis	Butter
Prairie View Dairy	East Chicago	Milk
Prange-Flaugh Dairy	Fort Wayne	Milk
Producers Creamery	Hartford City	Cheese
Producers Creamery	Kewanna	Butter
Producers Creamery	Marion	Butter, Milk, Condensed
Producers Dairy Company	South Bend	Milk
Producers Dairy Market Ass'n	Orleans	Butter, Ice Cream
Producers Dairy Prod. Company	Crawfordsville	Milk
Purdue University Creamery	Lafayette	Milk, Butter, Ice Cream
Pure Cream Products Company	Tell City	Butter, Ice Cream
Purity Dairy	North Manchester	Milk
Purity Dairy Company	Huntington	Milk
Purity Dairy Products Company	Evansville	Milk, Ice Cream
Purity Maid Products Company	New Albany	Butter, Milk, Ice Cream
Purity Milk Company	Columbus	Milk
Quality Dairy Company	Boonville	Milk, Butter, Ice Cream
Ray & Arnold	Logansport	Butter, Milk
Reid's Creamery	Vincennes	Milk
Reliable Dairy Company	South Bend	Milk, Butter
Rensselaer Creamery and Prod. Co	Rensselaer	Butter
Rea Riggin & Sons	Muncie, R. R.	Milk, Butter
Richmilk Dairy	Fort Wayne	Milk
Rising Sun Creamery	Rising Sun	Butter
W. F. Ritzman	Lawrenceburg	Butter, Ice Cream
Riverside Dairy	Columbia City	Milk
Riverside Dairy Company	Mishawaka	Milk
Roanoke Creamery Company	Roanoke	Butter
W. H. Roberts and Sons	Indianapolis	Milk
Rock Bottom Dairy Farm	Flat Rock	Butter
Salem Creamery	Salem	Butter, Milk
Samples Dairy	Connersville	Milk
Sanitary Dairy	Crown Point	Milk
Sanitary Dairy Company	Michigan City	Milk, Ice Cream
Sanitary Milk and Ice Cream Company	Peru	Milk, Butter, Ice Cream, Condensed
Sausaman Dairy Company	Peru	Milk
Schaper's Dairy	Fort Wayne	Milk
Schlosser Bros.	Bremen	Milk
Schlosser Bros.	Frankfort	Butter

Schlosser Bros.	Fort Wayne	Butter, Ice Cream
Schlosser Bros.	Indianapolis	Butter
Schlosser Bros.	Plymouth	Butter, Ice Cream
Schlosser Bros.	South Bend	Milk
Frank Schnaitter's Dairy	Madison	Ice Cream
Scholl Dairy Company	LaPorte, R. R.	Milk, Ice Cream
Shannon Dairy	Jeffersonville	Milk, Butter
Sherman White & Company	Fort Wayne	Butter
Sherman White & Company	Goodland	Butter
Shideler's Dairy	Roanoke	Milk
Shiveley Bros.	Greenfield	Milk
Shortle Dairy Farms	Kokomo	Milk
Snyder Dairy	Seymour	Milk
South Bend Pure Milk Company	South Bend	Milk
South Side Dairy	Mishawaka	Milk
Spring Brook Dairy	Bremen	Milk
Standard Dairy	Evansville	Milk
Suabedissen Wittner Dairy	South Bend	Milk
Sugar Creek Creamery Company	Evansville	Butter
Sugar Creek Creamery Company	Indianapolis	Butter
Summers & Son	Elwood	Milk
Sunrise Dairies	Laketon	Butter
Sunshine Dairy	Fort Wayne	Milk
Sunshine Farms	Lafayette	Milk, Butter, Condensed
Superior Dairy	Garrett	Milk
Superior Milk and Ice Cream Company	Lafayette	Milk, Ice Cream
Swift & Company	Alexandria	Cheese
Swift & Company	Evansville	Butter
Swift & Company	Logansport	Butter
Swift & Company	Marion	Butter
Swift & Company	Wabash	Cheese
Tansy Milk Company	Indianapolis	Milk
Teegarden Dairy Corp.	Teegarden	Milk
Terre Haute Pure Milk and Ice Cream Co.	Terre Haute	Milk, Ice Cream
Iola Terry	Orland	Butter
Thayer Dairy	Delphi	Milk
Thomas Dairy	Elkhart	Milk
Thompson Dairy Company	North Vernon	Milk
Thompson Dairy Company	Seymour	Milk, Ice Cream
Thompson Sanitary Dairy	Richmond	Milk
Tipton Ice Cream Company	Tipton	Ice Cream, Milk
Tip Top Creamery Company	Princeton	Milk, Ice Cream
Tip Top Creamery Company	Vincennes	Butter, Milk, Ice Cream, Condensed
Tip Top Creamery Company	Washington	Milk, Ice Cream
Tonne Dairy	Fort Wayne	Milk
Toto Cheese Company	Knox	Cheese
Turner Creamery Company	Paoli	Milk, Ice Cream

United Milk Products Corporation	Berne	Condensed
United Milk Products Corporation	Butler	Condensed
United Milk Products Corporation	Wolcottville	Condensed
United Milk Products Corporation	Yorktown	Condensed
Valparaiso Home Ice Company	Valparaiso	Milk, Ice Cream
VanCamp Milk Company	Angola	Condensed
The Wadley Company	Indianapolis	Butter
Wagner & Sons	Logansport	Milk
Wakarusa Co-operative Creamery	Wakarusa	Butter, Milk
Walnut Street Dairy	Hartford City	Milk
Wambaugh Sanitary Dairy	Elkhart	Milk
Sidney Wanzer & Sons	Monterey	Milk
Sidney Wanzer & Sons	Servia	Milk
Warsaw Milk Company	Warsaw	Milk
Wayne Creamery, Inc.	Fort Wayne	Milk
Wayne Dairy Products Company	Richmond	Butter, Milk, Condensed
L. H. Weaver	Indianapolis	Milk
Weber Milk Company	Indianapolis	Milk, Butter
West End Milk Company	Newcastle	Milk
Western Reserve Creamery	Kokomo	Butter
White Eagle Dairy	Indiana Harbor	Milk
White Lily Milk and Ice Cream Co.	Evansville	Milk, Butter, Ice Cream
Wiggam Milk Company	Indianapolis	Milk
Williams Dairy	Richmond	Milk
Willida Dairy	South Bend	Milk
Winamac Dairy	Winamac	Milk
Winona Dairy	Winona Lake	Milk
Wittner Dairy	South Bend	Milk
O. J. Wittner Dairy	South Bend	Milk
Wyandotte Dairy	Fort Wayne	Milk
Zanesville Creamery	Zanesville	Butter
Zapp's Dairy	New Albany	Milk, Butter

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UNIVERSITY OF ARIZONA

Circular No. 199 October, 1933

INSPECTION OF AGRICULTURAL SEEDS

Buckhorn seeds are often found in improperly cleaned clover, timothy and lawn grass seed.

UNIVERSITY OF ARIZONA LIBRARY

Agricultural Experiment Station
Purdue University
Lafayette, Indiana

This circular is a report of the agricultural seed inspection work for the year ending June 30, 1933. The inspectors visited seed dealers in all sections of the state and collected 1,043 official seed samples. In addition to these, 2,852 free test samples of seed were tested during the year.

In accordance with the ruling of the State Seed Commissioner, wholesale seedsmen are required to attach at least one state label to each package of seed delivered to the retail seedsmen, who are then required to attach sufficient additional labels to cover the net weight of the package.

Since it is impossible to test all seed promptly during the rush season, directions are given for making germination tests at home.

Shipments of seed seriously misbranded were withdrawn from sale until dealers relabeled such seed correctly.

Proper use of this publication will enable purchasers to discriminate between seedsmen who handle good seed and those who handle poor seed. Before buying seed, farmers are urged to examine Table 7, "Summary of Seed Inspection."

Due to lack of funds, the table giving the analyses of individual samples is omitted from the report this year. It is the intention to resume publication of this table in future reports as soon as funds are available.

INSPECTION OF AGRICULTURAL SEEDS

H. R. Kraybill, *State Seed Commissioner*

O. S. Roberts, P. B. Curtis, Regina B. Schulte*, Pauline Balbach

The Indiana Seed Law is essentially a correct labeling law. The law does not prevent the sale of poor seed. It merely requires that definite information be placed on the label in order that the purchaser may decide for himself whether he wishes to use good seed or poor seed. In order that the necessary information may be available the law requires that the seed be labeled with official Indiana State Labels showing the minimum percentage of purity and of germination and the maximum number of each of the noxious weed seeds per pound. The purpose of the law is to give the purchaser sufficient information to enable him to buy good seed and also to protect the honest and reliable seed dealer and farmer from the practices of the unscrupulous, dishonest and careless seedsman.

This circular contains the results of the inspection of agricultural seeds for the period from July 1, 1932, to June 30, 1933. The inspectors visited the seed dealers in all sections of the state and collected 1,043 official samples of seed. Complete analyses of these samples were made and reports were sent to the retail dealers as well as to the distributors of the seed. In addition 2,852 free test samples and 22 Custom House samples were analyzed. The testing of these samples entailed the making of 2,656 purity tests, 12,748 germination tests, 105 examinations and 224 identifications.

Responsibilities of the Wholesale Seedsman

The wholesale seedsman is required to attach at least one Indiana State Label to each package of seed delivered to the retail seedsman.

Responsibilities of the Retail Seedsman

The retail seedsman is required to attach sufficient state labels properly filled out to each package of seed to cover the total weight of the seed before the seed is offered or exposed for sale. These labels can be chosen of such denominations of weight so that they may be removed and attached to a portion of the seed which may be sold from the original package. It should be remembered that every package of seed of one pound or more when sold for seeding purposes must have attached to it sufficient state labels properly filled out to cover the total weight of the package. It should also be remembered that it is just as much a violation of the state law to offer or expose seed for sale for seeding purposes without tagging to full weight as it is to sell the same without tagging.

Responsibilities of the Purchaser

The purchaser should examine the official label carefully before purchasing seed and ascertain whether the seed is of the quality he desires. He should insist that all seed which he purchases be tagged properly with official state labels. Attention should be paid to the date of germination on the seed tag. If the germination test was made more than six months before, in many cases it will be well to insist upon a more recent germination test. Table 7 gives the standing of the distributors as determined by the 1933 inspection. A study of this table will enable you to determine whether or not the seed which they sold met their guarantee. The seed law is designed to offer you protection but it will not give you that protection unless you make use of the opportunity which the law provides for you.

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* In cooperation with the Seed Laboratory, Bureau of Plant Industry, U. S. D. A.

Farmers' Exemption

A farmer is exempt from the provisions of the seed law when the seed is grown, sold, and delivered by that farmer on his own premises to the purchaser himself. If, however, the seed is advertised for sale by the public press, circular or catalogue, or if the seed is delivered by a common carrier, the farmer is considered as a vendor and must comply with the provisions of the act. **Seed taken to community sales for sale must be labeled in accordance with the law.**

Free Testing of Seeds

During the past year 2,852 samples of seed were tested free of charge for farmers and seedsmen. The privilege of having these tests made is one of much value to the farmer and the smaller seed dealers who do not have facilities for testing seeds. Not all of the tests requested can be made promptly during the busy season from January to March. For that reason it is important that you send your samples in as early as possible, preferably from September to December.

Satisfactory tests may be made of the larger field seeds at home, leaving the laboratory facilities of the Experiment Station available for the grasses and clovers which are more difficult to analyze.

Directions for Making Your Own Germination Tests

The seed to be germinated should be mixed thoroughly and the required number of seeds (100 seeds of grains and 200 of clovers and other small seeds) counted out just as they come.

The plate germinator is satisfactory and very simple to operate. Place the seeds to be germinated between two thicknesses of folded blotting paper or cloth (heavy grade of muslin or canton flannel). This should be moistened and placed between ordinary tin or porcelain plates and kept in a warm room where the range in temperature is from approximately 85 degrees during the day to 65 degrees at night. Select a place for the test not too near a window, stove or register.

The time required for germination tests differs with different kinds of seed. Under favorable conditions grass and clover seeds begin to sprout in three or four days. Continue your tests ten days or two weeks.

Examine your tests every two days, making a record of the number of seeds that have sprouted. Also keep the blotting paper or cloth sufficiently moist. The number of seeds which germinate out of the 100 seeds will give the percentage of germination.

Directions for Taking of Samples

1. The minimum weight of seed forwarded for test should be approximately:
   - (a) Two ounces (cupful) of grass seed of any kind or of white and alsike clover;
   - (b) Five ounces (cupful) of red and crimson clover, alfalfa, millet, flax or seed of like size;
   - (c) One pound (pint) of cereals or seed of like size.

2. They may be drawn:
   - (a) With seed triers;
   - (b) With long stickers;
   - (c) By hand, taking approximately equal parts of the sample from at least three different places in the sack, including the top and opposite sides as near the bottom as practicable.

3. Samples should be drawn from each bag when there are not more than five bags in the lot, from every fifth bag when there are more than five bags, but never from less than five bags. Each sample so drawn is combined into one composite sample.

Tolerance

Under the most perfect and approved conditions of testing seeds variations will occur in purity and germination tests. For this reason the Association of Official Seed Analysts has adopted tolerances or allowances for purity and germination tests. Samples of seed with a guarantee within the tolerances are not considered to be seriously misbranded under the provisions of the Indiana Seed Law, but seed dealers will be expected to change the guarantee on the unsold portion to correspond to the analysis found by the Seed Commissioner.

Table of Tolerances for Germination Tests

Percentage of Germination	Percentage of Allowable Variation
90 or over	6
80 or over and less than 90	7
70 or over and less than 80	8
60 or over and less than 70	9
50 or over and less than 60	10
40 or over and less than 50	10
30 or over and less than 40	9
20 or over and less than 30	8
10 or over and less than 20	7
0 or over and less than 10	6

Tolerance for Purity Test

In determining the tolerance for purity the sample shall be considered as being made up of two parts: (1) pure seed and (2) everything not pure seed. The tolerance allowed shall be two-tenths of 1 per cent plus 20 per cent of the lesser part. Example: Seed marked 98 per cent pure, the lesser part is 100 minus 98, or 2. Twenty per cent of 2 equals 0.4. Therefore, the tolerance allowed would be 0.2 plus 0.4, or 0.6.

Violation of the Law

It is a violation of the State Seed Law to offer, expose for sale or sell seed without having it tagged to full weight with official labels or to misbrand the seed. During the past year two cases of non-tagging of seed and four cases of misbranding were called to the attention of prosecuting attorneys. Of the six cases three resulted in convictions while three of them have not been reported by the prosecuting attorneys to date.

Filling Out Official Label

Purity

The minimum purity means the percentage of pure seed of the kind and variety given on the official label. Statements of purity, as 97 per cent, including 2 per cent crop seeds, or 95 per cent and 2 per cent crop seeds, will not be permitted. In cases where the seed contains two or more kinds of agricultural seed, each present in excess of 5 per cent, the seed should be labeled with the green colored mixture labels, Style C.

The percentage of purity on the large seeds such as soy beans, corn, wheat, vegetable seeds, etc., must be given on the official label the same as on any other seed.

The filling out of the column "per cent of seed" on the mixture labels can be best explained by an example. For instance, if a mixture is composed of 60 per cent Kentucky Blue Grass with a purity of 80 per cent and 40 per cent of

Red Top with a purity of 90 per cent, the per cent of Blue Grass should be given as 48 per cent, obtained by taking 80 per cent of 60. The Red Top should be given as 36 per cent, obtained by taking 90 per cent of 40.

Germination

There still appears to be some misunderstanding as to the method of stating the percentage of germination on the official label. The term minimum germination means the percentage of sprouts obtained in the prescribed time for the test. If the seed contains hard seeds this percentage should be stated after the term "hard seed" on the official label. In no case should the sum of the percentage of sprouts and of hard seeds be given as percentage of minimum germination.

Distributors should not ship seed until the germination test is completed. The statement "In Test" on the official label does not meet the provisions of the seed law. Further, if there is a demand for the seed the dealer may be tempted to sell the seed before he receives a report on the germination, thus placing himself liable to prosecution.

Noxious Weed Seeds

The number per pound of each of the noxious weed seeds present must be listed on the reverse side of the tag irrespective of the number present. The term "trace" is not permissible. The statement of the noxious weed seeds in terms of per cent or in terms of proportion will not be permitted.

Place Where Grown

The official tag must give the name of the state, territory or foreign country where the seed was grown. Terms such as Domestic, U. S. A., Northwestern, and Central States do not meet the requirements of the law, and seed found so labeled will be immediately removed from sale until the tags have been corrected.

Certified, Verified and Affidavit Seed

Certified seed is seed whose purity, germination, and variety is certified to by some state certifying agency or an agency closely associated with some state office or department. The seed is shipped in sealed sacks with a certified seed tag attached. During the growing season the fields are inspected to ascertain trueness to variety of crop, and after the harvest the seed is tested to determine whether it meets the prescribed standards of the certifying agency. In Indiana the Indiana Corn Growers' Association certifies corn, wheat, oats, lespedeza, and soy beans. The other most commonly certified seed found in the state is Grimm Alfalfa.

Verified-Origin seed is seed whose origin is attested to by certain government approved seed dealers. Seed verification service deals with origin only, meaning Place Where Grown, and gives no guarantee as to the variety, purity or viability of the seed. At the present time red clover and alfalfa are the only seeds verified as to origin. Verified seed is tagged with tags bearing the official verification emblem.

Affidavit Grimm is alfalfa seed for which the grower has made affidavit at to its being Grimm Alfalfa. This affidavit seed is not regulated by either State or Federal Government.

Bargain Seed

A considerable quantity of unclean, weedy, so-called pasture mixtures of low viability has been shipped into the state by certain mail order seedhouses. By means of extensive advertising in leading farm papers many unsuspecting buyers have been influenced in purchasing these dangerous and, in many cases, worthless lots of seed. These mixtures appear to consist of screenings, tailings, and low grade seed mixed together in order to disguise their real quality. The low price attracts the buyers who forget that good seed is not sold below the prevailing market price and that good seed is the cheapest in the end. Most of these cheap seeds lead to poor stands and infestation of the soil with many troublesome weeds.

Summary of 1933 Inspection

A majority of the samples examined during 1933 met their guarantee very closely. Table 1 shows that there has been a marked improvement in the correct labeling of seeds in the last four years. In 1925, 36.4 per cent of the samples were seriously misbranded while in 1933, 19.9 per cent were seriously misbranded. The per cent of samples seriously misbranded increased slightly over that for 1932.

Examination of Table 4 shows clearly that the quality of much of the seed could be improved by more thorough cleaning. Tables 5 and 6 show the percentages of official samples of red clover, alfalfa, sweet clover, alsike clover and timothy which contained some of the various noxious weed seeds. Compared with 1923 there is a decrease in the percentage of samples of alfalfa which contain curled dock, dodder and red sorrel while there is an increase in the percentage of samples of alsike clover and timothy showing buckhorn and common plantain.

Table 1—Progress in Seed Inspection

Year	Number of Samples Examined	Number Seriously Misbranded	Percent Seriously Misbranded
1925	745	271	36.4
1928	969	289	29.6
1929	1,230	403	32.7
1930	1,044	184	17.6
1931	1,122	201	17.9
1932	926	157	17.0
1933	698	139	19.9

Table 2—Average Analysis of Samples in 1922 Seed Inspection

	Number of Samples	Purity per cent	Inert Matter per cent	Germ. per cent	Hard Seeds per cent	Number Weed Seeds per Pound	Number Noxious Weed Seeds per Pound
Alfalfa	33	99.19	0.33	81.42	10.44	1,228	128
Blue Grass	20	66.35	28.51	58.50	....	33,001	2,566
Alsike Clover	70	94.27	1.05	78.97	12.94	4,757	2,214
Red Clover	195	98.05	0.54	88.00	6.72	7,358	1,722
Sweet Clover	27	96.40	2.63	66.91	11.87	2,370	387
White Clover	7	95.28	0.62	79.30	14.68	15,650	10,843
Cowpeas	17	97.86	1.88	70.94	....	38	3
Millet	12	98.03	1.55	75.54	....	2,211	15
Oats	47	97.62	1.52	85.97	....	213	51
Orchard Grass	13	82.36	15.83	74.33	....	32,308	28,847
Rape	11	99.59	0.31	83.23	....	263	16
Red Top	19	83.69	12.56	81.37	....	75,163	3,810
Soy Beans	12	97.55	2.24	84.04	2.20	37	1
Sudan Grass	8	95.21	2.38	72.50	....	974	....
Timothy	85	98.90	0.55	86.72	....	2,792	1,278
Mixtures	11	76.79	11.97	57.55	11.19	81,833	26,825
Garden Seed	35	98.08	....	71.65	....	....	....
Miscellaneous	13	96.08	2.46	65.15	3.20	3,368	845

Table 3—Average Analysis of Samples in 1932 Seed Inspection

	Number of Samples	Purity per cent	Inert Matter per cent	Germ. per cent	Hard Seeds per cent	Number Weed Seeds per Pound	Number Noxious Weed Seeds per Pound	Range in Number Noxious Weed Seeds per Pound
Alfalfa.......	130	99.52	0.21	80.33	12.22	563	9	0- 90
Blue Grass...	48	82.93	16.57	74.61	....	6,887	858	0- 4,500
Alsike Clover	70	97.42	0.63	81.47	13.46	2,729	1,746	0-33,975
Japan Clover	53	97.19	1.37	79.88	7.05	6,158	399	0- 4,680
Red Clover..	214	98.01	0.52	87.21	6.90	2,927	1,129	0-20,610
Sweet Clover	140	99.46	0.29	79.68	5.35	613	38	0- 396
White Clover	7	96.29	0.84	71.89	16.46	11,821	2,308	0- 6,300
Cowpeas.....	4	98.97	0.97	88.75	....	42	....	....
Orchard Grass......	7	81.87	16.28	79.71	....	7,542	5,120	0-15,525
Rape........	3	99.63	0.20	82.67	....	420	300	0- 900
Red Top.....	48	91.49	5.48	87.95	....	116,209	859	0-10,800
Soybeans..	27	98.78	0.98	86.67	0.11	39	....	0- 4
Timothy.....	123	99.53	0.32	92.27	....	988	426	0-12,006
Mixtures ..	38	82.49	12.98	77.93	15.48	28,897	2,769	0-10,800
Miscellaneous	14	97.08	2.48	77.11	....	2,919	7	0- 45

Table 4—Average Analysis of Samples in 1933 Seed Inspection

	Number of Samples	Purity per cent	Inert Matter per cent	Germ. per cent	Hard Seeds per cent	Number Weed Seeds per Pound	Number Noxious Weed Seeds per Pound	Range in Number Noxious Weed Seeds per Pound
Alfalfa.......	71	98.90	0.24	78.58	12.09	897	19	0- 198
Blue Grass..	34	81.89	17.62	77.31	....	6,263	588	0- 2,340
Alsike Clover	64	98.38	0.50	81.89	13.27	1,742	575	0- 8,325
Japan Clover	67	98.03	1.22	79.27	13.13	2,260	452	0- 7,470
Red Clover..	130	99.13	0.24	89.03	6.53	1,543	1,069	0-27,270
Sweet Clover	121	99.53	0.25	78.99	6.03	491	21	0- 198
White Clover	5	98.68	0.42	75.55	17.95	3,343	1,318	0- 2,700
Corn........	5	99.96	0.04	97.40	....	....	....	....
Millet.......	4	98.96	0.65	90.13	....	1,881	14	0- 36
Orchard Grass......	2	78.93	20.19	81.25	....	3,600	3,263	2,925-3,600
Red Top.....	39	90.59	6.20	88.64	....	51,677	1,014	0-17,100
Soybeans....	29	98.59	1.12	90.59	0.28	35	1	0- 8
Sudan Grass.	5	97.93	1.79	79.20	....	47	....	....
Timothy.....	69	99.42	0.32	91.03	....	1,622	732	0-27,225
Mixtures.....	19	84.23	11.70	80.43	15.35	28,559	2,303	0-15,300
Garden Seed.	21	99.92	0.07	91.33	....	9	....	....
Miscellaneous	13	96.40	2.89	64.92	....	6,510	1,902	0-18,450

Table 5—Percentage of Samples Showing the Presence of Each of the Noxious Weed Seeds

Noxious Weed Seeds	Red Clover			Alfalfa			Sweet Clover		
	1923 per cent	1932 per cent	1933 per cent	1923 per cent	1932 per cent	1933 per cent	1923 per cent	1932 per cent	1933 per cent
Bracted plantain	17.98	14.49	13.08	1.58	1.54	0.00	0.00	1.43	0.82
Buckhorn	68.70	65.89	83.08	11.11	5.38	4.23	15.78	8.57	4.91
Canada thistle	2.51	2.34	0.00	0.00	0.00	1.41	13.15	5.00	4.10
Chicory	1.79	1.87	0.00	1.58	0.00	0.00	0.00	0.00	0.00
Common plantain	71.22	40.19	53.85	0.00	0.00	9.86	2.63	4.29	0.82
Corn cockle	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Curled dock	49.28	57.48	44.62	30.15	17.69	7.04	13.15	11.43	18.03
Dodder	18.70	34.58	20.77	47.61	17.69	21.13	0.00	0.00	1.64
Horse nettle	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mustard	3.23	3.27	1.54	0.00	0.77	2.81	18.40	53.57	38.52
Oxeye daisy	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Prickly lettuce	5.75	4.21	3.08	1.58	0.00	0.00	0.00	0.00	0.82
Quack grass	0.00	0.00	0.00	0,00	0.00	0.00	0.00	0.71	1.64
Red sorrel	15.82	29.44	19.23	7.93	1.54	2.81	0.00	2.14	0.82
White top	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Wild carrot	18.34	14.48	20.77	0.00	1.54	7.04	2.63	0.71	2.46
Wild garlic or onion	0.00	0.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Yellow trefoil	5.75	25.70	4.62	4.76	2.31	5.63	7.89	2.14	1.64

Table 6—Percentage of Samples Showing the Presence of Each of the Noxious Weed Seeds

Noxious Weed Seeds	Alsike Clover			Timothy		
	1923 per cent	1932 per cent	1933 per cent	1923 per cent	1932 per cent	1933 per cent
Bracted plantain	2.46	5.71	3.13	1.29	13.01	10.14
Buckhorn	13.58	37.14	34.38	11.03	38.21	36.23
Canada thistle	3.70	4.29	6.25	0.64	1.63	0.00
Chicory	0.00	0.00	0.00	0.00	0.00	0.00
Common plantain	22.22	27.14	26.56	43.50	41.46	65.22
Corn cockle	0.00	0.00	0.00	0.00	0.00	0.00
Curled dock	59.25	54.29	57.81	22.00	25.20	10.14
Dodder	0.00	0.00	1.56	0.00	0.00	0.00
Horse nettle	0.00	0.00	0.00	0.00	0.00	0.00
Mustard	0.00	4.29	6.25	0.00	0.81	0.00
Oxeye daisy	1.23	4.29	0.00	1.94	6.50	15.94
Prickly lettuce	0.00	1.43	0.00	0.00	4.07	2.99
Quack grass	0.00	0.00	0.00	0.00	0.00	1.45
Red sorrel	34.56	54.29	39.06	28.57	44.72	39.13
White top	0.00	0.00	0.00	0.00	0.00	0.00
Wild carrot	0.00	5.71	0.00	0.64	2.44	1.45
Wild garlic or onion	0.00	0.00	0.00	0.00	0.00	0.00
Yellow trefoil	19.75	55.72	62.50	0.00	1.63	0.00

Table 7—Summary of Seed Inspection, July 1, 1932 to June 30, 1933

Name and Address of Certifier	Number of Samples Examined	Number of Samples Passed	Number Technically Misbranded	Number Seriously Misbranded	Number Unlabeled
Ainsworth-Boone Co., Kentland, Ind.	2	2			
American Field Seed Co., Chicago, Ill.	1			1	
Anderson & Morgan, Dunkirk, Ind.	1	1			
Armacost, J. M., Campbellstown, Ohio	1	1			
Associated Seed Growers, Inc., New Haven, Conn.	1	1			
Atlanson, A. C., Lebanon, Ind.	1				1
Baldwin, Veril, McGuffey, Ohio	1	1			1
Bash, C. E., Huntington, Ind.	1		1		
Bash Seed Co., S. D., Indianapolis, Ind.	1	1			
Berne Equity Exchange, Berne, Ind.	2	1	1		
Berry Seed Co., Chicago, Ill.	2			2	2
Berry Seed Co., Clarinda, Iowa	3			1	2
Boone Co. Farm Bureau Coop. Ass'n, Inc., Lebanon, Ind.	2	1	1		
Bottorff, D. M., Columbus, Ind	3			3	
Bourbon Elevator & Feed Mill, Bourbon, Ind.	1	1			1
Bowman Seed Co., Concordia, Kan.	1	1			1
Branch Grain Co., Martinsville, Ind.	1	1			
Broadway Hardware Co., Gary, Ind.	1				1
Brown Seed Co., Alfred J., Grand Rapids, Mich.	1			1	
Brown, Dietch, Bargersville, Ind.	1				1
Brown Supply Co., Valparaiso, Ind.	2	1	1		1
Bruns Seed Store, Davenport, Iowa	1			1	
Burk Elevator Co., Monroe, Ind.	1	1			
Busenbark Grain Co., Crawfordsville, Ind.	4	2	2		
Byers Seed Co., Franklin, Ind.	1	1			1
Chambers & Sons, E. F., Lebanon, Ind.	3	3			
Chambers Seed Co., Louisville, Ky.	3	1		2	
Chance Bros., Connersville, Ind.	2	2			
Clark, Walter, Greensburg, Ind.	1				1
Clements, W. G., Morganfield, Ky.	1		1		1
Condon Bros., Seedsmen, Rockford, Ill.	7	3		3	1
Cooperative Elevator Co., Winamac, Ind.	2	2			1
Couch & Sons, Geo., West Salem, Ill.	1		1		
Crabbs Reynolds Taylor Co., Crawfordsville, Ind.	34	25	5	4	
Crabbs Reynolds Taylor Co., Francesville, Ind.	1	1			
Crabbs Reynolds Taylor Co., Lafayette, Ind.	1	1			
Crawfordsville Seed Co., Crawfordsville, Ind.	30	29	1		1
Culver & Son, T. E., Morganfield, Ky.	1			1	
Culver City Grain & Coal Co., Culver, Ind.	1			1	
Davis, Inc., Geo. A., Chicago, Ill.	1			1	
Decatur Co. Cooperative Co., Greensburg, Ind.	3	3			
Demoret Grain Co., Bath, Ind.	1		1		
Dickinson Co., The Albert, Chicago, Ill.	15	13	1	1	3
Early & Daniel Co., The, Cincinnati, Ohio	2	2			2
Eberts Grain Co., Louisville, Ky.	1	1			
Eberts Grain Co., Scottsburg, Ind.	1	1			
Edon Farmers Cooperative Co., Edon, Ohio	2	2			
Eikenberry Bros. Co., The, Hamilton, Ohio	1		1		
Ernst Nurseries, Eaton, Ohio	2				2
Fairmount Grain Co., Fairmount, Ind.	1			1	
Farmers Equity Exchange, Van Buren, Ind.	4	2	1	1	
Farmers Grain Co., Markle, Ind.	1		1		
Farmers Grain & Supply Co., Oak, Ind.	1	1			
Farmers National Grain Corp., Chicago, Ill.	3		2	1	

Table 7—Summary of Seed Inspection, July 1, 1932 to June 30, 1933—Continued

Name and Address of Certifier	Number of Samples Examined	Number of Samples Passed	Number Technically Misbranded	Number Seriously Misbranded	Number Unlabeled
Fayette Co. Farm Bureau Coop. Ass'n, Inc., Connersville, Ind.	3	2	1	......	....
Finch & Weisel, Portland, Ind.	2	1	......	1	....
Fishers Grain Co., Fishers, Ind.	3	1	......	2	....
Flournoy, P. F., Lebanon, Ind.	1	......	......	1	1
Fortville Grain Co., Fortville, Ind.	2	......	1	......	1
Foster-Kendall Co., Carmel, Ind.	25	19	3	3	....
Fountain Co. Farm Bureau Coop. Ass'n, Inc., Veedersburg, Ind.	2	1	1	......	....
Funk Bros. Seed Co., Bloomington, Ill.	3	......	1	2	3
Gibson Co. Shipping Ass'n, Princeton, Ind.	1	......	......	1	....
Goldblatt Bros., Inc., Hammond, Ind.	1	1	......	......	....
Gold Medal Flour & Feed Store, Muncie, Ind.	1	......	......	1	....
Goodrich Bros. Co., Winchester, Ind.	19	13	1	5	....
Gunson & Co., L. P., Rochester, N. Y.	3	3	......	......	3
Hallawell's Feed Store, North Vernon, Ind.	1	1	......	......	....
Hall Seed Co., Louisville, Ky.	1	1	......	......	....
Hammond, H. L., Twin Falls, Idaho	2	......	......	2	....
Hardin & Lewman, Louisville, Ky.	1	1	......	......	....
Hartman & Dotterer, Bluffton, Ind.	4	......	......	4	....
Haynes Milling Co., Portland, Ind.	1	......	1	......	....
Heldt Co., The, Evansville, Ind.	5	5	......	......	....
Heldt & Voelker Co., The, Evansville, Ind.	3	3	......	......	....
Hinshaw Grain Co., Summitville, Ind.	1	......	......	1	....
Hirsch & Sons, Henry, Toledo, Ohio	2	1	1	......	....
Holser, B. I., Walkerton, Ind.	1	......	......	......	1
Hoosier Grain & Supply Co., Bluffton, Ind.	6	2	......	4	....
Hoosier Grain & Supply Co., Keystone, Ind.	2	......	......	2	....
Hoosier Grain & Supply Co., Montpelier, Ind.	4	......	3	1	....
Hooton-Davis Seed Corp., Lebanon, Ind.	26	22	2	2	1
Indiana Farm Bureau Coop. Ass'n, Inc., Indianapolis, Ind.	40	27	11	2	....
Indiana Seed Co., Indianapolis, Ind.	46	33	7	6	1
Jackson, Will, Greensburg, Ind.	1	1	......	......	....
Jansen-Overman Co., Indianapolis, Ind.	1	......	1	......	....
Johnson, Inc., J. Oliver, Chicago, Ill.	1	......	1	......	....
K. & A. Seed Co., Fort Wayne, Ind.	33	23	4	5	2
Kellogg-Kelly Seed Co., St. Joseph, Mo.	2	1	1	......	....
Kiefer Feed & Supply Co., Elwood, Ind.	3	3	......	......	1
Lafayette Cooperative Elevator Co., Lafayette, Ind.	2	1	......	1	....
Lake & Reagan, Colfax, Ind.	3	2	1	......	1
Larrowe Buckwheat Flour Corp., Cohocton, N. Y.	1	1	......	......	1
Levy Grain Co., Ben, Ossian, Ind.	1	......	1	......	....
Lewis Implement & Seed Co., Louisville, Ky.	3	1	2	......	....
Louisville Seed Co., Louisville, Ky.	1	......	1	......	....
McCarty Seed Co., J. A., Evansville, Ind.	8	3	2	3	....
McCullough Seed Co., The J. Chas., Cincinnati, Ohio	25	16	4	5	....
McMahan Seed Co., Valparaiso, Ind.	7	3	2	2	....
Mangelsdorf & Bro., Edw. F., St. Louis, Mo.	3	3	......	......	2
Market Gardeners' Seed Co., The, Cincinnati, Ohio	19	7	3	9	....
Martin, Ross, Lafayette, Ind.	3	1	2	......	....
Martin Hardware Co., Clayton, Ind.	1	1	......	......	....
Mayer Grain Co., Mentone, Ind.	2	1	1	......	....
Mayer Grain Co., South Whitley, Ind.	4	4	......	......	....
Monroeville Equity Union Exchange, Monroeville, Ind.	1	1	......	......	....

Table 7—Summary of Seed Inspection, July 1, 1932 to June 30, 1933—Continued

Name and Address of Certifier	Number of Samples Examined	Number of Samples Passed	Number Technically Misbranded	Number Seriously Misbranded	Number Unlabeled
Nathan Grain Co., Topeka, Ind.	1	......	1	......	....
New Castle Elevator Co., New Castle, Ind.	8	8	......	......	....
Northern Field Seed Co., Winona, Minn.	1	......	......	1	....
O. & M. Seed Co., Green Springs, Ohio	1	......	1	......	....
Ohio Valley Seed Co., Evansville, Ind.	5	1	1	3	....
Ort & Co., Churubusco, Ind.	1	1	......	......	1
Owen Co. Farm Bureau Coop. Ass'n, Inc., Spencer, Ind.	3	2	......	......	3
Paulding Equity Exchange Co., Paulding, Ohio	1	......	......	1	....
Preble Equity Exchange, Preble, Ind.	2	2	......	......	....
Purcell Seed Co., Evansville, Ind.	20	12	3	5	1
Quinlan Seed Store, Terre Haute, Ind.	5	4	1	......	....
Quirk, John B., North Madison, Ohio	7	7	......	......	....
Ragsdale & Owen, Bedford, Ind.	1	......	......	......	....
Risinger Coal & Feed Co., Montpelier, Ind.	1	......	......	......	1
Ross Seed Co., Louisville, Ky.	12	3	6	3	....
Rush Service Co., Inc., The, Rushville, Ind.	1	1	......	......	....
Rychener, S., Pettisville, Ohio	1	......	......	1	....
Schmocker, John, Batesville, Ind.	1	......	......	1	....
Schultheis, A. M., Haubstadt, Ind.	2	......	1	1	....
Schultz, J. M., Dieterich, Ill.	10	3	1	6	....
Scott & Sons, O. M., Marysville, Ohio	4	1	1	1	1
Scott Seed Co., New Albany, Ind.	31	14	6	11	....
Seberger Seed Co., Crown Point, Ind.	1	......	1	......	....
See & Son, Macy, Ind.	1	1	......	......	....
Shanklin Hardware Co., Frankfort, Ind.	2	2	......	......	....
Shelby Co. Farm Bureau Coop. Ass'n, Inc., Shelbyville, Ind.	1	1	......	......	....
Sholes & Co., H. A., Chicago, Ill.	1	......	1	......	....
Shultz Seed Co., Olney, Ill.	1	1	......	......	....
Southwick & Co., C. S., Kendallville, Ind.	1	1	......	......	....
Spears & Sons, Woodford, Paris, Ky.	1	......	......	1	1
Spears-Kiser Co., Fairfield, Ill.	2	......	1	......	1
Standard Seed Co., Chicago, Ill.	12	5	3	3	1
Steuben Co. Farm Bureau Coop. Ass'n, Inc., Angola, Ind.	1	1	......	......	1
Stroh Bros., Fremont, Ind.	1	......	......	......	1
Sunfield Seed Service, Chicago, Ill.	1	......	1	......	....
Syler & Syler, Nappanee, Ind.	1	......	......	1	....
Syler & Syler, Plymouth, Ind.	1	1	......	......	....
Teweles Seed Co., L., Milwaukee, Wis.	7	2	1	4	....
Thomson, Dr. J. A., Richmond, Ind.	1	......	1	......	....
Vannatta Seed Co., D. R., Cincinnati, Ohio	1	1	......	......	....
Varner, J. S., Butler, Ind.	1	1	......	......	....
Vaughan Seed Store, Chicago, Ill.	5	4	1	......	3
Veedersburg Grain Co., Veedersburg, Ind.	1	......	1	......	....
Wayne Co. Farm Bureau Coop. Ass'n, Inc., Richmond, Ind.	2	2	......	......	....
Weer, F. W., Anderson, Ind.	1	......	1	......	....
Whitney-Eckstein Seed Co., Buffalo, N. Y.	11	2	4	5	1
Wilson, John, Roachdale, Ind.	3	3	......	......	....
Wilson & Son, Russellville, Ind.	1	1	......	......	....
Wolf Seed Co., Fort Wayne, Ind.	8	4	3	1	....
Woodruff & Sons, F. H., Milford, Conn.	3	3	......	......	....
Wyatt Seed & Feed Store, Petersburg, Ind.	5	5	......	......	....

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Circular No. 200 October, 1933

ASTER CULTURE

Asters growing commercially under cloth enclosure. This construction aids greatly in insect control, particularly the leaf hopper, the carrier of Aster Yellows, and reduces to some extent the severity of Fusarium wilt. Asters grown under cloth are superior to those grown in the open.

UNIVERSITY OF ARIZONA LIBRARY

Purdue University
Agricultural Experiment Station
Lafayette, Indiana

SUMMARY

1. The aster is deserving of more consideration than is commonly given it. The demand for aster flowers for commercial purposes far exceeds production in Indiana.
2. The importance of securing good disease-free seed of the best varieties can not be over-emphasized.
3. Aster plants should be kept growing in a vigorous manner. Plants once stunted, from any cause, are seldom profitable.
4. Asters are shallow rooted, therefore, successful culture under field conditions is often dependent on irrigation.
5. Greenhouse grown asters are generally superior to field grown. They deserve more consideration as a greenhouse subject.
6. Artificial light supplementing daylight, five hours at night using lamps of as low as 15 to 100 watts (one lamp per 30 feet of bench space) made possible the production of a mid-winter crop of greenhouse asters of excellent quality.
7. Artificial lighting on aster seedlings immediately after germination for from seven to 26 days increased earlier flowering under field conditions as much as two weeks. All varieties do not respond in a like manner to light treatment.
8. Flowers grown for the market should be carefully graded and standardized. This decreases to the minimum the quantity to be handled. Better prices are generally secured.
9. Investigational work for the last six years, with more than 300 aster varieties and strains, reveal that none are immune to Fusarium wilt, although some may show high resistance for one or more years.
10. It is apparent that there are several strains of Fusarium wilt of asters. An aster strain which is highly resistant in one locality may be very susceptible in another.
11. Experimental work substantiates the belief that asters can be grown commercially in specially constructed cloth houses which aid in insect control. Asters grown in cloth houses are superior in quality to those grown in the open.
12. Disease and insect control through prevention is most effective and less costly.

ASTER CULTURE

E. R. Honeywell
Department of Horticulture

INTRODUCTION

Few ornamental plants have been introduced into the United States which have gained greater universal popularity than the China Aster. The main reasons for its popularity are its wide range of color, variety of form, decorative value both as a cut flower and for garden plantings, and its comparative ease of culture. Unfortunately, recent manifestations of disease and insect pests have made the culture of asters a trying problem in many regions. The number of asters now being grown in Indiana by amateur and commercial growers is much less than in preceding years, although the demand for good cut blooms for commercial purposes far exceeds production. The keen interest of amateur and commercial aster growers has aided much in stimulating investigational work to determine ways and means of combating aster diseases and insect pests. More consistent effort is needed, but it is believed that asters can still be produced commercially at a profit if careful attention is given to cultural practices.

EARLY HISTORY

The China Aster (Callistephus chinensis), a native of China, was introduced into Europe about 1731 by R. P. d'Incarville, a Jesuit missionary. At the time of introduction the flowers were single, that is, the rays or ligulate florets were of only two to four rows, which were blue, violet or white. The aster became well known to American gardens about 1800, but it was not until about 1837 that numerous varieties of specified colors were available. In about 1850 development of the central florets became common and varieties of the full-quilled types were highly esteemed. Later developments brought about further changes in form of flower and plant habit until at the present time there are many well-marked races or types, each of which has a wide range of colors.

CLASSIFICATION

Many attempts have been made to organize all aster varieties into definite classes or horticultural groups. However, changes have and are still coming about with such rapidity that it is impossible to construct a satisfactory classification, especially if an attempt is made to include all the recognized groups of the trade. Asters, like many other plants, do not always come true to variety. Oftentimes some hybridization takes place between varieties, thus resulting in hybrids of slight variations in color, form of flower and plant habit. It has also been noted that characteristics in certain varieties change due to environmental conditions such as soil, temperature and moisture; such variations are seldom permanent. It is hoped that the following classification may prove helpful:

Based on Habit of Growth

1. **Tall Pyramidal Asters.**—Plants of dense, vigorous pyramidal habit, flowers borne horizontally; well suited as garden subjects.

2. **Tall Branching Asters.**—Plants of upright spreading habit, flowers borne on long stiff stems, unexcelled for commercial use.

3. **Dwarf Asters.**—Plants may be branching or pyramidal in habit. Flowers are generally small and borne on short stems. Commonly used for dwarf bedding. Many varieties are early flowering and well suited for commercial use.

Based on Season of Flowering

1. **Early Asters.**—Require a short growing season. Should be planted early (March 1) in greenhouse or specially prepared hotbed. Flower about July 15 to August 1. Example: var. Queen of the Market.

2. **Midseason Asters.**—Generally require from three to four weeks longer to flower than the early varieties. More robust in growth, easy to grow. Should be used to extend the period of bloom instead of making later sowing of early kinds. Flower August and September. Example: var. Heart of France.

3. **Late Asters.**—Require a long season to flower. Are very desirable for they bloom when flowers of other species are lacking. Seeds are generally sown somewhat later than for earlier flowering varieties. Flower about September 1 to October 1. Example: var. Ball's White.

CULTURE

The aster is deserving of more intelligent management. No longer is it possible to carelessly sow a package of seed and be assured of excellent rewards for such limited effort. To grow good asters at a profit requires skill and close attention to modern practices. This involves more consideration to improved varieties, soil preparation and planting, cultivation, irrigation, marketing, and insect and disease control.

Seed

The importance of securing good seed cannot be over-emphasized. It is very essential that flowers come to marketable maturity early, that they be uniform in size and character, and that they be as free from disease as possible. The small saving made by investment in cheap or inferior seed is usually lost many times over in lessened value of the crop. No one can afford to risk his crop for so small a saving.

Early Asters

Early asters are generally considered to be more profitable than later sorts providing greenhouse or hotbed facilities are available for starting the plants. Under these conditions the seeds are generally sown in a shallow flat or in a specially prepared bench or heated frame. Early March is considered the best time for seed sowing providing the plants can be kept growing in a vigorous manner. Asters allowed to become pot-bound or stunted in any way are useless. They may flower early, but will be of little commercial value.

Soil for Seed Sowing.—As a rule aster seeds germinate freely and are viable; nevertheless, it is economy to have the soil finely pulverized and in the best physical condition. A sandy loam is very suitable; however, humus in the form of peat or well decayed manure often proves beneficial. Organic matter which is not well decayed is usually detrimental to the seed. A soil mixture composed of one part sand, three parts loam and one part peat or leaf mold has given excellent results.

Sowing.—The commercial practice among most growers is to sow aster seeds in flats, although many prefer the bench method. The most satisfactory method largely depends on available facilities. In either case the principles of planting are similar. Good drainage is essential. Proper drainage may be secured by placing a layer of coarse soil, sand or gravel in the bottom of the flat or bench before the prepared soil is added. The planting soil must be perfectly level and slightly compacted. The advisability of sowing seeds in rows or scattering them uniformly in the flat or bench and covering to an even depth of one-fourth inch is a matter of opinion. In most cases it seems best to sow seeds in rows two to three inches apart rather than broadcast. By this method they are more easily weeded and cultivated and are generally planted at a more uniform depth.

The soil should be thoroughly watered after seed planting and at intervals when needed, care being taken that seeds are not washed about. Frequent light waterings are undesirable as they cause crust formation of the soil which will interfere with the ease of germination and will later cause shallow root formation.

The optimum temperature for seed germination is about 65° F. Some bottom heat is helpful. As soon as germination is complete the young seedling will respond best to a temperature of about 60° F. The lowering of the temperature at this stage of development greatly stimulates the plant to a stronger, healthier growth. The required time for germination will largely depend on culture, season, variety and atmospheric conditions. Germination should be complete in seven to 10 days.

Transplanting.—As soon as two true leaves have formed the seedlings should be pricked off into flats or potted. Under proper cultural conditions about two or three weeks are required for the plants to reach this stage of development. It is really a critical stage in their growth for at this time they are very susceptible to the damping-off fungus.

The soil used for transplanting should be somewhat richer than that used for seeding and may contain more well decomposed organic matter without injury. The soil should be thoroughly moist, but not sticky. Plants set in flats should be placed about 1½ inches apart in rows 2 inches apart. The flats should be at least 2½ inches deep and of a convenient size. All plants should be pressed down firmly and evenly. As soon as the flat is filled it should be placed on a level bench or prepared bed and the plants thoroughly watered. The plants should be shaded during bright days until they become well established. Proper watering and air circulation are important factors. A temperature of 55 to 60° F. is most desirable at this stage.

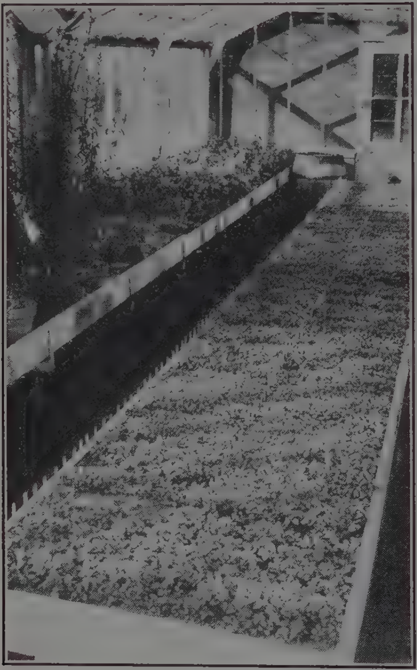


Figure 1. Many growers prefer to start aster seedlings in benches rather than in flats, as it is more economical of space, time and labor and more uniform conditions are assured. This is especially true if many varieties are grown. In the above illustration 175 varieties are being grown for experimental purposes.

A few commercial growers make it a practice of potting asters for field culture. Two and one-half inch pots generally provide sufficient soil to nourish a healthy growth for field planting. It is generally preferred to grow asters in flats rather than in pots for it conserves time, labor and space.

Hardening. — Asters grown in flats or pots should be well hardened off before transplanting to the field. The most satisfactory way to do this when the plants are grown under greenhouse conditions is in cold frames. The temperature should be lower and the plants should be watered less frequently. This change should be gradual until the plants become accustomed to outdoor conditions. A few hours prior to setting the plants in the field they should be watered heavily so that the plant tissue will contain all the water possible. Plants which have been hardened off properly become sturdier and will endure the sudden check due to transplanting.

Preparation of Field Soil.—Asters are not considered as being particular to soil type as long as the soil is kept in good mechanical condition. Early asters, however, have a short growing season; therefore, it is important that conditions be made as favorable as possible for their rapid growth. A medium sandy loam with an abundance of well decomposed humus and thorough preparation gives best results. Moderate applications of barnyard manure (10-16 tons per acre) applied the previous year and supplemented with chemical fertilizers are known to give good yields. It is important that no fresh manure be applied just previous to planting. The commercial fertilizers required depend largely on the character of the soil, previous fertilization and crop rotation. On sandy loam soils a 5-10-5 or 4-8-4 fertilizer mixture, or any similar mixture high in phosphorous, applied shortly before planting at the rate of 500 pounds per acre should give good results.

The advisability of liming aster soils is a matter of question. Excellent yields of asters have been known to grow equally well on slightly acid and on sweet soils. It is true that lime has a beneficial effect in making plant foods available, but the practice of dusting lime about the plants during their growing period is not believed necessary. In general, a soil which is congenial for asters is one that contains abundant plant food and organic matter and is well drained. Frequent cultivation and weeding are points which should not be overlooked.

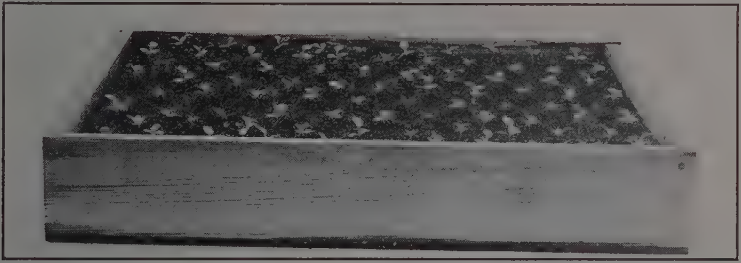


Figure 2. Aster seedlings should be pricked off (transplanted) into flats of convenient size as soon as two true leaves have formed.

Planting.—Early flowering asters should be transplanted to the field as soon as all danger of heavy frost is past and the soil is properly prepared. Under normal conditions May 1 to 20 is considered safe in Indiana. Regardless of whether the plants are grown in flats or pots it should be remembered that transplanting is more or less of a checking operation and the check is directly proportional to the root injury. The advisability of having the soil about the plants moist when removed from the pots or flat is a desirable feature. Watering the newly set plants and firming them well is also extremely important. Plants should be set in the field but slightly deeper than they grew in the pot or flat. Special care should be given that the crown is not deeply covered. A trowel is the most satisfactory tool for planting. Plants respond best if set out in late evening or during cloudy weather.

Planting Distance.—The distance and method of setting plants largely depends on varieties grown, method of cultivation and available area or size of field. Many of the early flowering strains, as Queen of the Market, require less room than plants of the larger flowering varieties. Many growers prefer close planting and rely on hand cultivation. The most common practice in field culture is to set the plants six to 12 inches apart in rows 18 inches apart.

Where plenty of land is available some growers prefer to plant in rows three feet apart, making it possible to use a horse or motor power for cultivation. Another method in common use is to plant in rows about one foot apart, omitting each sixth or seventh row to be used as a walk. Such a method utilizes small areas to best advantage but makes hand cultivation necessary.

Recommended Varieties and Strains (Early)*

Variety Name or Strain	Plant and Flower Characteristics	Colors
Lavender Gem	Full double flowers, borne on strong stems of medium length. The petals are gracefully curled and twisted. 20 inches.	True lavender.
The Royal	Plants are vigorous and very productive. Low branching habit. Stems medium to long. A good general purpose aster. 24 inches.	White, scarlet, white and lavender.
Queen of the Market	The leading early strain of asters. Used extensively for greenhouse culture. Stems are of medium length. Plants are of graceful habit. 18 inches.	Pink, scarlet, lavender and white.
Early Wonder	Very early flowering. Flowers large and full, of the Comet type. Plants medium vigorous. 20 inches.	White, rose, light blue and lavender.

*Varieties which have given good results under experimental conditions.

Midseason and Late Asters

Although early flowering asters of good quality are greatly prized when cut flowers of many other species are lacking the importance of later flowering sorts should not be overlooked. The midseason and late varieties of asters are generally larger flowering and of better quality with longer stems than the early strains and should be used to extend the flowering season instead of making later sowings of the early kinds. Under ordinary cultural conditions more satisfactory results are obtained from the later sorts because they require less attention and are easier to grow.

Seed Sowing and Planting.—Seeds of the midseason and late flowering asters are generally sown during the latter part of March and early April under greenhouse conditions or in specially prepared seed beds such as hotbeds or well protected cold frames. In case manure is used to furnish the necessary heat in hotbed preparation it is important that the manure be well packed and covered with at least three inches of good rich loam. A prepared soil consisting of one part sand, two parts loam and one part peat or leaf mold placed one inch deep on the rich loam soil and properly firmed and leveled will provide a good medium in which to sow the seed. It is essential that the soil be of sufficient depth to prevent the roots of the seedlings coming in immediate contact with fresh manure. Asters planted in hotbeds and cold frames should be planted deeper than in seed flats under greenhouse conditions. Seeds planted in drills three to four inches apart to a depth of one-half inch should give good results. One ounce of seed should be sufficient to plant from 100 to 150 feet of drills. There are approximately 10,000 seeds per ounce.

The seed bed should be well protected from wind and cold and should be kept as near the optimum growing temperature as possible. During warm days when weather permits the sash should be partly removed so that plenty of air may be available thus enabling the plants to become accustomed to gradual changes.

Under favorable weather conditions seeds of asters may be sown in the open ground during the latter part of April and early May. Usually, however, it is more desirable to sow all kinds of aster seeds in specially prepared seed beds in suitable soil and transplant the seedlings once before planting them in the garden or field.

Recommended Varieties and Strains (Midseason and Late)*

Variety Name or Strain	Plant and Flower Characteristics	Colors
American Astermum	An attractive aster of the Comet type. Plants are of upright growth, free branching. 24 inches.	White, rose, pink and dark lavender.
Ball's White	A splendid large flowering aster of good shipping quality.	Pure white.
California Giant	Very late flowering. Plants unusually vigorous, flowers large. 30 to 36 inches.	White, deep rose, light blue and purple.
Giant Crego	Flowers of immense size borne on long strong stems. The petals are attractively twisted and curled. Plants are strong branching. 24 to 30 inches.	Shell pink, crimson and lavender.
Heart of France	A striking color of ruby red. Shows high resistance to aster wilt. 24 inches.	Ruby red.
Ostrich Feather	A desirable large feather type aster which produces in great abundance. The flowers are borne on long stems which makes them excellent for cutting. 24 to 30 inches.	White, soft pink, crimson, light and dark blue.
Peerless Pink	Strong, sturdy habit of growth. The flowers are of enormous size. Globular in shape. 24 to 30 inches.	Shell pink.
Sensation	Flowers double and incurved, resembling a dahlia. The plants are of free branching habit. 18 to 24 inches.	Cardinal red.
Moreton Pink	Plants of the giant branching type. The flowers are large, well formed and freely produced on long stems. 24 to 30 inches.	Clear pink with a salmon sheen.

*Varieties which have given good results under experimental conditions.

Planting is best done during the cooler portion of the day or when cloudy. Plants which are set out dry during the heat of the day are often permanently injured. During hot dry weather all plants should be properly watered when set. The water should be applied about the plant before all the soil is added. After an interval of perhaps one hour the remaining soil should be drawn in about the plants and firmed; this will prevent excess baking of the soil.

Midseason and late flowering asters are generally planted 12 to 15 inches apart; this is especially true of the late branching types which require more space than the early flowering kinds.

Preparation of Field Soil.—The soil and its preparation for midseason and late flowering asters should be similar to that described for early asters. It is of common belief, however, among commercial growers that the later flowering asters will respond best to soils which are somewhat heavy since they are cooler and more retentive of moisture. The amount of manure and commercial fertilizers required to produce a good crop will be less for the later asters because of their longer and more favorable growing season. The necessity of stimulating quick, rapid growth and maturity is of less importance in the late flowering kinds. The importance of early plowing and frequent cultivation to destroy weeds and to put the soil in the best physical condition before planting are factors of major importance.

IRRIGATION

Asters do not have a deep root system; therefore, successful culture under field conditions is often dependent on irrigation. The most profitable method of applying water largely depends on source of supply and available equipment. Uniformity of water distribution is very important. For this reason the overhead sprinkling system is preferred by most growers.

Irrigation may be used to good advantage as an aid in transplanting. The soil should be thoroughly moist before planting and gently watered afterwards. This enables the plants to become well established during their early growing period. Under conditions where the overhead irrigation system is used it is important that all aster plants be well mulched as soon as the plants become well established and that cultivation be discontinued. A clean straw mulch is considered best. If a straw mulch containing considerable manure is used it should not come in direct contact with the plants. Under ordinary conditions evening or night waterings promote best growth. Under no condition is it advisable to apply water during the heat of the day in full sunlight. Watering during midday results in scalding and promotes a weak, soft growth and flowers of inferior substance and quality.

GREENHOUSE CULTURE

Although asters are commonly grown to maturity under greenhouse conditions they are not in the usual sense considered as a forcing crop. The time or season of flowering is not greatly influenced by the time of seed sowing. Under experimental conditions asters planted during the months of March and April come into bloom and produce flowers of more uniform size and quality than those planted at monthly intervals from October to February. Thus, sowing earlier than March or April does not seem advisable.

Commercial florists who have greenhouse space available during the summer months can grow asters at a profit providing special attention is given to cultural methods. Greenhouse grown asters are generally superior to field grown plants. They are less likely to be damaged by insects. They are less susceptible to injury due to dust and rains; the stems are usually longer and the flowers are larger and of better lasting quality.

Sowing

Asters grown for greenhouse culture should be started in late March or April depending on the availability of greenhouse space. Method of seed sowing and general culture should be followed as described for early asters (page 5). Irrespective of the source of seed or variety grown all seed should be thoroughly disinfected before planting (page 15).

Soil Preparation

There is a wide difference of opinion regarding the comparative merits of raised benches and solid beds for greenhouse asters. In general, solid beds are preferred.

A naturally deep, well drained, friable soil is considered best. Many growers have had profitable results growing asters in soil in which other crops such as carnations, snapdragons, sweet peas and calendulas have been grown. It should be remembered, however, that to produce asters of good quality a congenial environment is essential, including a soil of excellent physical condition and well supplied with readily available plant food, so that a rapid and uninterrupted growth is assured.

Planting

Long narrow beds or benches not exceeding five feet in width are most desirable for asters. The plants should be set as soon as they have developed to a convenient size. About six or eight weeks after seed planting is required to have good vigorous plants for setting. Plants grown in flats are equally as good as those grown in pots providing they have been properly cared for and carefully removed from the flats.

Aster plants are sometimes set 10 x 12 or 12 x 12 inches apart and some growers prefer setting them 10 x 10 or 6 x 10 inches. Most growers use a planting distance of 10 x 10 inches. The type or varieties of plants grown should be the determining factor; early asters may be set much closer than the late branching sorts. Care should be exercised to firm the soil uniformly about each plant and water thoroughly.

Temperature and Ventilation

Asters prefer a cool temperature; therefore, the house temperature should be as carefully regulated as possible. The vigor of aster plants depends largely on correct temperature. It requires some shading to keep the house temperature to the minimum during the summer months. The atmosphere should be fresh and sufficiently moist. Syringing the foliage and dampening the walks on sunny days should be practiced. Asters not supplied with an abundance of fresh air are likely to make weak, soft growth, be of poor quality and color and be more susceptible to insect and disease attack.

Cultivation

Thorough preparation of the soil before the plants are set is the most important part of the cultivation of greenhouse asters. During the growing season, however, the surface soil should be stirred frequently. This keeps the weeds in check and also provides for aeration of the soil and assists in regulating proper moisture conditions. Deep cultivation is unnecessary and should be avoided as there is great danger of disturbing the roots. Cultivation should cease as soon as flower buds appear. A light mulch of well decayed manure or peat applied during the early growing season generally gives good results.

Watering

Asters require considerable water, but it must be applied with care. Excessive applications of water cause unfavorable plant growth and the plants are more susceptible to disease. This is especially true of plants grown in ground beds. Watering in early forenoon seems to give most satisfactory results. At no time during their growth should the plants be allowed to become dry.

Recommended Varieties and Strains* (Greenhouse)

Variety Name or Strain	Plant and Flower Characteristics	Colors
American Astermum	An attractive aster of the Comet type. Plants are strong, of upright growth, free branching, medium early.	White, rose, pink and dark lavender.
Purity (Improved purity)	A good commercial strain of symmetrical habit. Early.	White
The Royal	Plants are vigorous and very productive. Low branching habit. Stems medium to long. Medium early.	White, lavender and deep rose.
Queen of the Market	The leading early strain of aster. Used extensively for greenhouse culture. Stems of medium length. Plants are of graceful habit. Early.	White, pink, lavender and scarlet.
Early Wonder	Very early flowering. Flowers large and full, of the Comet type. Plants medium vigorous.	White, rose, light blue and lavender.

*Varieties which have given good results under experimental conditions.

Artificial Illumination

Midwinter crops of asters of excellent quality have been grown with artificial light supplementing daylight. Five hours of added light from 15 to 100 watt lamps per 30 feet of bench space gave excellent results. Indications are, with the variety Heart of France, that it is necessary to light the plants from an early stage until the flower buds appear in order to produce good quality blooms. Although lighting for a shorter period (40 days) immediately after germination has been successful in inducing very early flowers, the blossoms were often abnormally formed and the stems short.

With a number of other varieties of asters, including Early Royal, Queen of the Market, Comet, King and American Branching types, earlier flowering was general, and large, long stemmed flowers were produced as contrasted with small dwarf blossoms from plants grown without additional light. It may be noted especially in this connection that different varieties of asters give different responses to the same conditions of lighting. Therefore, it is difficult to predict the exact degree of success that may be obtained without using artificial light over any particular variety.

By using artificial light over seedlings for field planting for from 7 to 26 days immediately after germination an earlier crop was produced. Results of this investigation indicate that the crop was on two weeks earlier, the flowers commanding a higher price by reason of their earliness and the cost of cultivation being reduced since disbudding, watering and insect control measures were materially lessened. Early Royal Purple and Shell Pink were the varieties used for experimentation.

MARKETING

To grow a good crop of asters is not sufficient. They must be marketed at a profit before they can be considered as a paying investment. The ability of a grower to properly market this product requires judgment and skill. It is not an uncommon sight to see asters of the very best quality bunched and handled in a way that they have little or no sale value, while flowers of inferior quality attractively bunched meet with ready sale. It is true that asters vary greatly in shape, color, size and quality; nevertheless, grading reduces the cost of marketing by decreasing to the minimum the quantity of flowers that are to be handled. Graded and standardized flowers also bring higher returns and generally make satisfied customers.

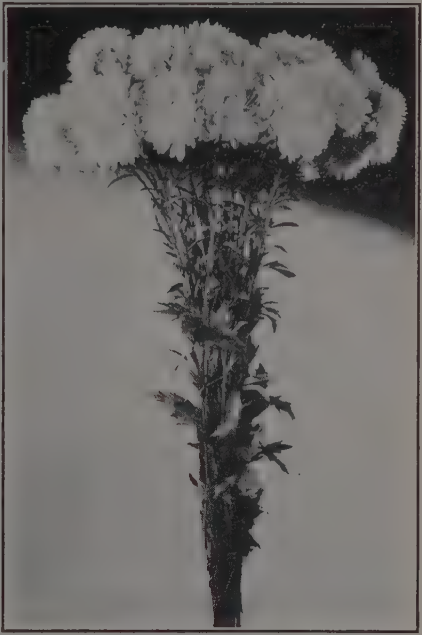


Figure 3. A commercial bunch of 25 asters. Grading reduces the cost of marketing by decreasing to the minimum the quantity of flowers to be handled. Graded and standardized flowers bring higher returns.

Asters should be graded according to length of stems, color of flowers and quality of blooms. It is considered good commercial practice that each bunch contain 25 blooms. The leaves on the lower six or eight inches of the stems should be removed and each bunch be neatly tied. The flowers should be cut early in the morning or late evening when the stems are turgid. Flowers that are about two-thirds open are in the proper stage of development for cutting. As soon as the flowers are cut they should be placed in deep containers of fresh water and stored in a dark cool room free of drafts for a period of several hours before being used or packed for shipping. Flowers packed for shipping should be turgid, but free of all excess moisture. The best colors for commercial use are white, light and dark pinks and light lavenders.

DISEASES

Aster Wilt (*Fusarium conglutinans*, Wr. *var. callistiphi* Beach).

In geographical distribution aster wilt has been reported throughout the main aster growing sections of the United States, Canada and several other countries. It is probably the most widespread and destructive disease known to asters. The disease is caused by a soil-inhabiting fungus, which gains entrance through the roots and continues growth upward through the vascular system, thus causing a sudden wilting and dying of the plants. The disease is seed-borne and is able to live saprophytically in trash and soil for a period of many years even in the absence of the host plant. Asters in all stages of growth are susceptible to attack.

Symptoms.—The most conspicuous symptom on seedling plants is very similar to and hardly distinguishable from the ordinary "damping-off" disease. Damping-off, however, attacks the plant at the surface of the soil while the wilt organism attacks just below the soil surface.

The first distinguishable characteristic common to plants after the seedling stage is the greatly reduced and blackened root system. Upon examination it may be found that the cortex of the main root is nearly rotted away. A reduction of the roots generally occurs before there is any symptom of wilting or stunting of the plant.

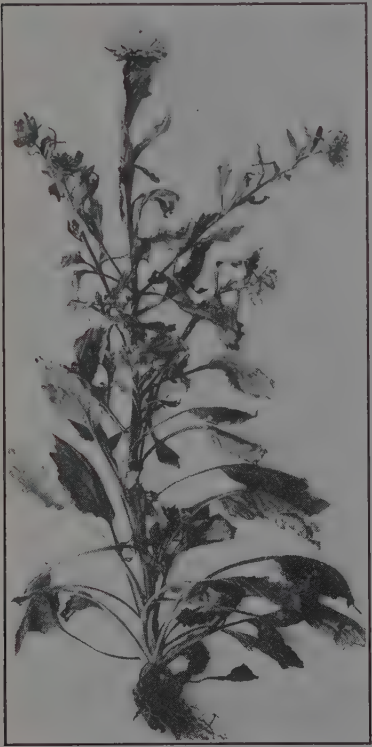


Figure 4. Aster wilt. The fungus first attacks the roots of the plant and advances up the stem, frequently causing the entire plant to suddenly wilt from top to bottom. The root system is greatly reduced and blackened. Plants succumb more rapidly during hot dry weather.

Plants which have been able to endure the disease or have not been attacked until they have gained considerable size show a peculiar type of leaf wilting. The lower leaves wilt but remain attached to the plant. The diseased area is not evenly distributed over the leaf but generally shows effect of wilting on one side. The diseased area becomes darkened and increases in size, causing the leaves to curl. Leaf wilting generally first occurs on one side of the stem, but soon encircles the plant.

The disease progresses very rapidly after once gaining entrance. The first symptom on the stem is an irregular brownish streak generally on one side, which later develops around the entire circumference. This peculiar darkened or black streak may first appear just above the soil surface or it may develop on some of the larger branches or stems. The entire stem becomes blackened during the later stage of development. In case of excessive shade and dampness, either under field or greenhouse conditions, the blackened area of the stem may become covered with a grayish-pink growth with masses of spores.

CONTROL

Prevention is the best method of control. Inasmuch as the disease is known to be transmitted by the seed and through the soil it is obvious that seed disinfection, crop rotation and soil treatment should be practiced.

Seed Treatment.—Aster seed should not be planted until first treated with some well known disinfectant. This simple but neglected operation is often the limiting factor in successful aster culture. Mercuric chloride (corrosive sublimate) in solution used as follows has proved satisfactory:

1. Place the seed in a cloth bag and soak in clean water at a temperature of 100° F. for 30 minutes. Allow excess water to drain from bag.

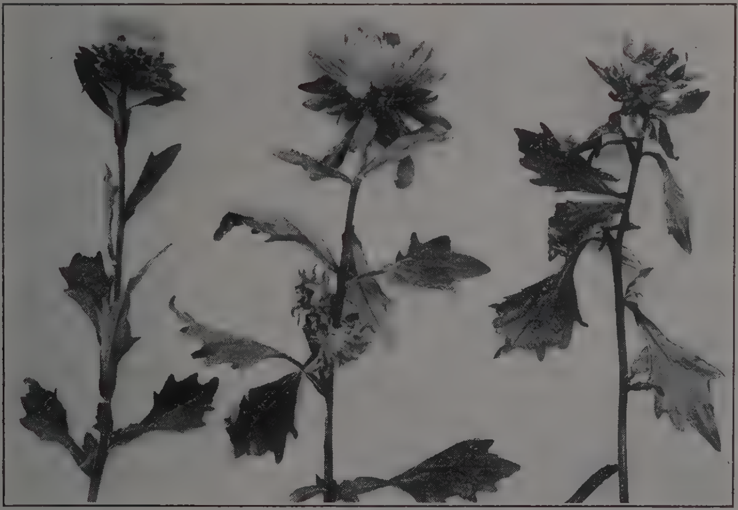


Figure 5. Aster wilt. The leaves first become a sickly yellowish green, wither, curl and finally become black. They generally remain attached to the stem. The flowers are ill-formed and blackened, having a burnt appearance.

2. The bag, containing seed, is then immersed in a 1 to 1000 solution of mercuric chloride (equivalent to one ounce to seven and one-half gallons of water) for 30 minutes at a temperature of 100° F. Allow excess water to drain from bag.
3. The seed is then washed for several minutes in cold running water, immediately removed from bag and spread out on paper or cloth in an ordinary heated room for a period of 24 hours to dry.
4. Plant seed immediately or store in a dry place.

Soil Treatment.—*Crop Rotation*—Asters should not be grown continuously in the same soil. The disease organism is known to live over in infested soil for many years. Change of seed beds and crop rotation are important means of control. The addition of fresh manure or heavy applications of nitrogenous fertilizers greatly increase the severity of the disease regardless of soil types.

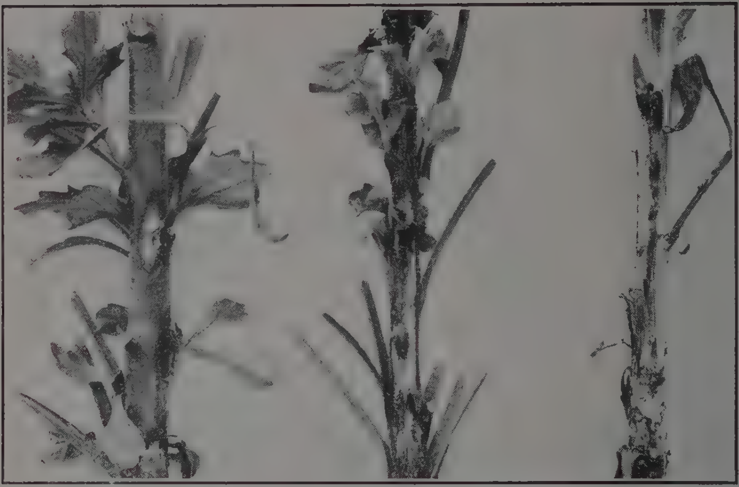


Figure 6. Aster wilt. The first manifestation on the stems is the appearance of a dark brown irregular streak. In case of excessive shade and dampness, the blackened area may become covered with a grayish-pink growth with masses of spores.

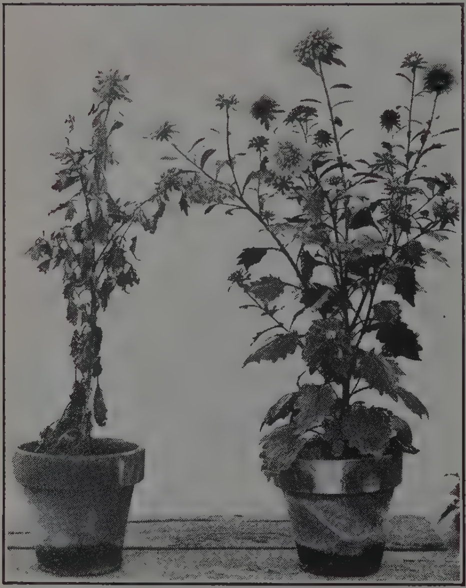


Figure 7. Aster wilt. Diseased and normal aster plants showing the effect of steam soil sterilization. The soil in which the normal plant was grown was sterilized for five hours at 180° F. Soil in each pot was similarly treated except for sterilization.

Steam Sterilization.—Steam sterilization of seed beds, flats and greenhouse soils is an effective and satisfactory method of control providing proper equipment is available and precaution is taken to eliminate all danger of reinoculation. In order to avoid reinoculation only treated seed should be sown and care taken to avoid tracking soils which may be diseased. Uniform steaming of soil for five hours at a temperature of 180° F. has given satisfactory results.

Formaldehyde. — Formaldehyde used at the strength of one pint (40 per cent formaldehyde) in 15 gallons of water, applied at the rate of one gallon per square foot of soil, will give good results. It is important that the soil be in good physical condition before the solution is applied. The soil should then be covered with paper or burlap for one week in order that the fumes may be retained. The soil should be permitted to dry out, then loosened and thoroughly aerated for a week before planting. Seed flats and pots may be treated with formaldehyde by thoroughly soaking. All tools should be treated with the same solution in order to prevent spreading of the disease.

Shading.—Severity of attack is greatly stimulated by high soil temperature. Aster plants grown in alternate rows with corn or some other tall growing crop are less severely attacked during periods of high temperature than plants grown in plots to themselves. Greenhouse and cloth house grown plants that receive some shade are also generally less severely affected than those that receive no shade.

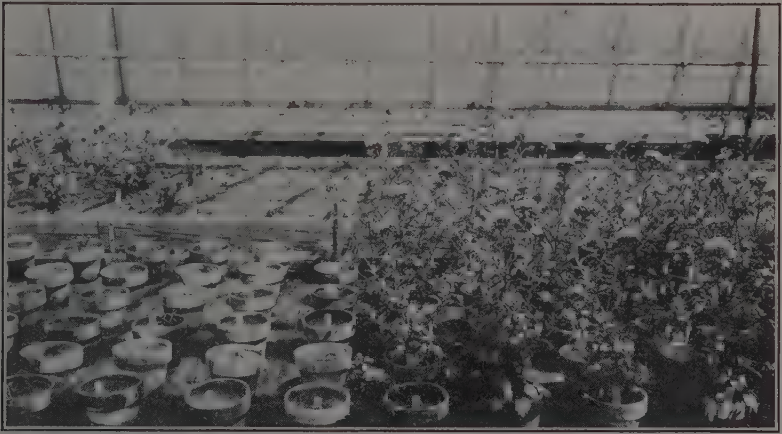


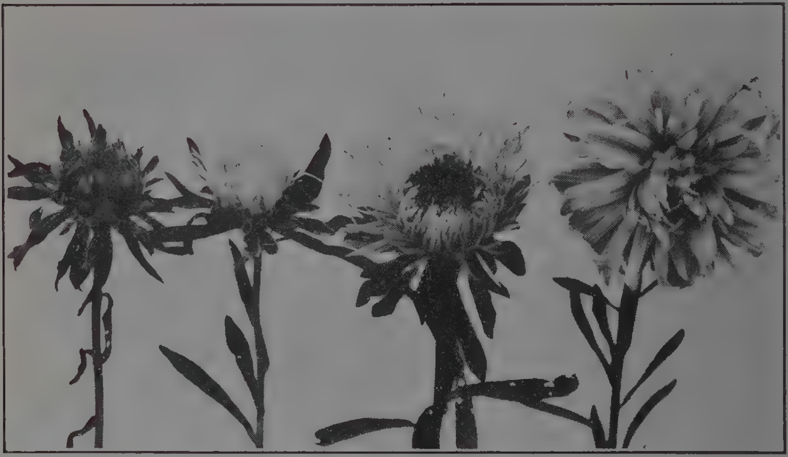
Figure 8. Aster wilt. Seed selections from plants that show resistance to aster wilt is an important means of control. Plants in pots to the right were of a selected strain of Queen of the Market. In the pots to the left were plants of an unselected strain of Queen of the Market. All plants were potted in infested soil.

Seed Selection.—Although all varieties of asters are susceptible to aster wilt, individual plants often show considerable resistance. It is apparent that progress is being made in selecting strains that are highly resistant in many localities, although there are none on the market at the present time that are immune. Aster strains which show high resistance in one locality may be very susceptible in another. It has also been noted that a strain which is resistant in a certain locality for one or more years may be very susceptible the following year. Recent investigational work substantiates the theory that there are several strains of the Fusarium wilt organism. Seed selection from plants that show high resistance is an important means of control. All aster growers should practice seed selection.

ASTER YELLOWS (Virus).

Next to aster wilt, yellows is the most destructive disease of the aster. Although "aster yellows" and "aster wilt" are entirely different they are often confused. The yellows disease is known to be transmitted from plant to plant by a small leaf hopper, *Cicadula sexnotata*. The virus overwinters in many common biennial and perennial host plants and is spread each spring from these plants by the leaf hopper.

Symptoms.—The first common symptom to be observed on young infected plants is a slight yellowing along the veins of the leaves. This symptom is commonly referred to as "clearing of the veins." As the disease becomes more severe the entire plant becomes stunted and yellow and an unusual number of secondary shoots develop causing the plant to become very bushy and upright. The secondary shoots are generally spindling. The flowers are abnormal and curiously deformed. Irrespective of the normal color of the variety, the flowers are often a sickly yellowish green.



(Courtesy E. B. Mains)

Figure 9. Aster flowers affected with "yellows" are often dwarfed and curiously formed. Irrespective of the normal color of the variety the flowers are generally a pale green color, although a portion of the flowers may be of normal color. In the above illustration the flowers are all of the same variety. A normal flower is at the right.

Control.—It is obvious that this disease can best be checked by controlling the leaf hopper and destroying the host plants. All weeds in close proximity to aster plantings should be destroyed. Periodically spraying with some form of nicotine or Pyrethrum dusts or sprays will aid greatly in leaf copper control. (See page 20.) All infected aster plants should be destroyed by burning as soon as discovered.

Recent experimental work indicates the possibility of growing asters satisfactorily in specially constructed cloth houses which eliminate the attack of the leaf hopper, the carrier of aster yellows. In some localities these houses have been constructed and asters grown successfully and profitably on a commercial basis. These houses not only aid in insect control but aid greatly in reducing the soil temperature, thus lessening to some extent the severity of aster wilt.

RUST *(Coleosporium solidaginis)*.

Symptoms.—This disease, although common, rarely causes serious injury in Indiana excepting in cloth houses. It is easily recognized by the orange-colored pustules on the under sides of the leaves.

Control.—All infected plants should be pulled out and burned as soon as discovered. Spraying the plants with a good fungicide such as Bordeaux mixture or dusting with special dusting sulfurs are probable means of control.

DAMPING-OFF *(Pythium de Baryanium).*

This disease affects plants during the seedling stage, causing the stem to collapse and rot off at the soil surface. The disease usually occurs in seed beds and flats where the soil is wet, the temperature high and where plants are crowded.

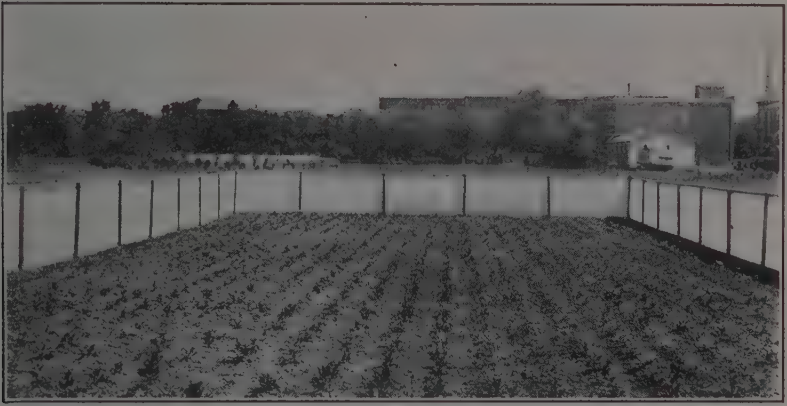


Figure 10. Cloth barriers constructed to a height of 40 inches are not sufficient to give full control of aster yellows. Such a construction, however, aids greatly in the control of blister beetles and tarnish plant bugs.

Control.—The seed bed should be watered only when needed. Soil sterilization by heat before planting is a good method of control. Formaldehyde dust used three ounces per square foot of soil in seed beds, thoroughly incorporated into the soil to a depth of three inches and seeds planted immediately, gives good control. Prepared soil for filling seed flats treated with six ounces of formaldehyde dust to each cubic foot of soil thoroughly incorporated and seeds planted immediately has given good results.

Another good control measure is to mix red oxide of copper with the seed using sufficient dust to thoroughly cover each seed. This dust is very fine and sticky and relatively small quantities will suffice. Plant the seed when desirable after treatment.

INSECTS AND ALLIED PESTS

Blister Beetles.—Many garden plants, particularly the aster, are attacked by blister beetles. These beetles are a half to three-quarters inch long, long-legged, very active and varying from black to gray or black and yellow striped. They frequently appear in large numbers the latter part of June and during July and are usually destructive to the flowers, but frequently destroy the foliage as well.

Control.—Dust plants when dry, preferably during the warm parts of the day, with dusting grade of calcium or barium fluosilicate diluted with equal parts of flour.

Tarnished Plant Bug.—The tarnished plant bug is an active, rather inconspicuous, brownish insect not over 1/5 inch long. It is a sucking insect which attacks the young shoots and especially the buds of flowering plants such as aster and chrysanthemum. The attack, especially when directed at the buds, results in deformed or dwarfed flowers. The insect passes the winter as an adult and breeds primarily on weeds, especially whitetop.

Control.—Clean cultivation and the elimination of the weed hosts are among the most important practices in the control of this pest. Contact sprays are of little value against the adult because of its activity and hardiness against insecticides. A cheesecloth cover over the plants is recommended. In the home garden plants should be dusted with tobacco or pyrethrum dust.

Root Aphids.—Asters are frequently attacked by root aphids or plant lice which may cause the plants to die outright, but usually results in a stunting or yellowing of the plants. Two species of aphids may be responsible, one a bluish-green aphid clustered on the roots or aphids with a covering of white floculent material. The presence of ants, which care for aphid eggs during the winter and carry the aphids from plant to plant during the growing season, is a good indication of aphid infestation.

Control.—Ground to be planted to asters should be plowed or spaded early in the season and the ground kept thoroughly cultivated between the time of plowing and planting of asters. If aphids appear in spite of these precautions the only control is the use of a nicotine sulphate solution (1¼ teaspoonfuls to a gallon of water in which a cubic inch of soap has been dissolved), applying a half teacup to plant, first cupping out the soil around the base of the plant to hold the liquid.

White Grubs.—The curled white worms with brown heads are the immature stage of the common May beetle or June bug. These larvae feed on the roots, cutting them off so that the plants can be easily lifted from the soil.

Control.—Avoid grassy and weedy ground for asters. Where a rotation is practiced use clover the year preceding asters. Carbon bisulphide injected into the soil will protect individual plants.

Red Spider.—These are tiny mites, varying in color from yellow to red, which infest the under leaf surfaces and frequently become destructively abundant on garden and greenhouse asters. They are sucking animals and cause a whitening of the surface, especially along the leaf veins. Later the leaves turn yellow and drop.

Control.—Frequent and forceful syringing with water is an excellent preventive. Colloidal sulphur or selenium sulphide used as directed by manufacturers are excellent controls.

Thrips.—The adult is pale to dark brown and 1/16 inch in length when mature. The young are yellow and usually remain in a concealed place. They have rasping and sucking mouth parts and cause a whitening or russeting of the foliage.

Control.—In greenhouses regular fumigation with calcium cyanide or nicotine is effective in controlling this pest. Where spraying is necessary, weekly applications, using one ounce of 40 per cent nicotine sulphate to four gallons of water in which four cubic inches of soap have been dissolved, is effective. A forceful spray is essential and treatment should be made early and before conspicuous injury is observed.

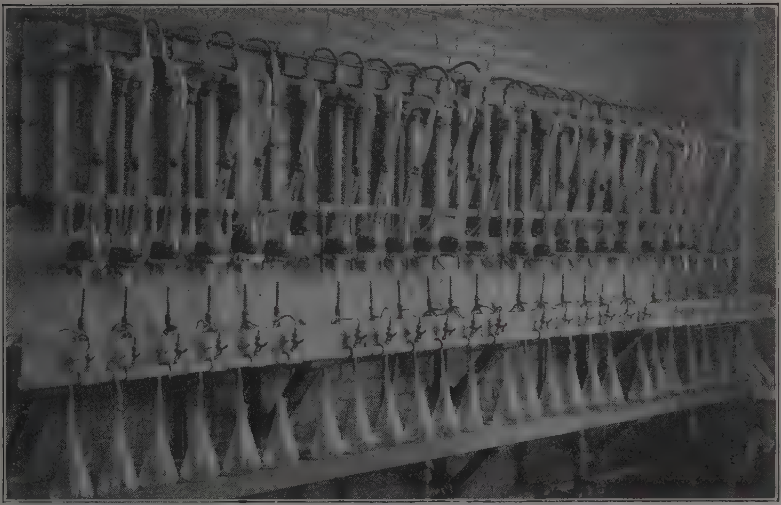
Leafhoppers.—Very small greenish insects which jump and fly about when disturbed. They live on the undersurfaces of the leaves and the immature individuals run quickly to seek the shaded side of the leaf when the leaf is turned over. It is not likely that these sucking insects are directly important, but indirectly they are serious pests since the species commonly occurring on aster (*Cicadula sexnotata*) is the carrier of aster yellows.

Control.—We have no positive evidence that spraying with Bordeaux mixture will control this leafhopper as it does the potato leafhopper. Spraying with one of the standard pyrethrum extracts or dusting with pyrethrum dust should be effective. Clean cultivation of areas around the aster plantings, eliminating such important carriers of aster yellows as fleabane (*Erigeron* sp.), will be a great aid. Screening of aster plants as for the tarnished plant bug will also protect the plants.

UNIVERSITY ARIZONA

Circular No. 201 March, 1934

COMMERCIAL FEEDING STUFFS



Protein Analysis is of prime importance in determining the value of commercial feeding stuffs.

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Purdue University
Agricultural Experiment Station
Lafayette, Indiana

This circular contains a condensed report of commercial feed inspection in Indiana for the year 1933 and includes additional information pertaining to the Indiana Feeding Stuffs Law and to the composition of feeding stuffs.

Based on the sale of tags it is estimated that 322,318 tons of commercial feeding stuffs with a retail value of $10,373,772 were sold in Indiana in 1933. The inspectors of the State Chemist Department secured 2,592 samples, or approximately one sample for each 124 tons of feed sold in the state.

Of the 2,592 samples collected 461 were found to be incorrectly guaranteed and 296 were classed as being seriously deficient or misbranded. Shipments not tagged or seriously deficient were withdrawn from sale; manufacturers relabeled such feeds correctly and made refunds to the agents and consumers.

Amendment of the State Feeding Stuffs Law.

Table 1—Calcium and phosphorus content of feeding stuffs.

Explanation of terms used in the analysis of feeds.

Table 2—Average analyses of the common cereals and by-product feeds.

Definitions of feeding stuffs.

Table 3—Summary of withdrawals of feed from sale.

Table 4—Estimated sales of various classes of feeding stuffs in 1933.

Table 5—Summary of the total annual tonnage and expenditures for commercial feeding stuffs since 1911.

Table 6—Summary of inspection giving the standing of each feed manufacturer.

COMMERCIAL FEEDING STUFFS

H. R. KRAYBILL, *State Chemist*

P. B. CURTIS, *Assistant Chemist* O. S. ROBERTS, *Chief Inspector*
Assistant Chemists, C. C. YUND, G. E. HALLIDAY, D. M. DOTY
Inspectors, C. M. COHEE, J. W. JACKMAN

The Indiana Feeding Stuffs Law is primarily a correct labeling law. It requires the manufacturer to state on the label minimum percentage guarantees for crude protein and crude fat, a maximum percentage guarantee for crude fiber and the specific name of each ingredient used in preparing the feed. Mineral feeds containing no organic ingredient do not require the usual chemical feed guarantee but do require a declaration of each ingredient contained therein and the minimum percentages of lime (CaO), phosphoric acid (P_2O_5), iodine (I) and the maximum percentage of salt (NaCl).

Amendment of Feeding Stuffs Law

The Indiana Feeding Stuffs Law as amended in 1933 permits the manufacturer or agent desiring to sell any concentrated commercial feeding stuff in packages of five pounds or less to register such feeding stuff under an annual registration fee of $20.00. If this method of registration is chosen it is not necessary for the manufacturer to attach Indiana state labels to the packages of feed of five pounds or less. However it is necessary for the manufacturer to print on his private label the following information: (1) The number of net pounds of concentrated commercial feeding stuff in the package; (2) the name, brand name or trade mark under which the concentrated commercial feeding stuff is sold; (3) the name of the manufacturer; (4) the location of the principal office of the manufacturer; (5) the guaranteed analysis stating the minimum percentages of crude protein and crude fat, the maximum percentage of crude fiber and the ingredients from which the concentrated commercial feeding stuff is compounded. This annual registration fee method applies only to feeding stuffs sold or offered for sale in packages of five pounds or less. Appropriate Official Indiana State Chemist tags or labels must be attached to all packages over five pounds. Copies of this amendment together with the law may be secured by making application to the State Chemist.

Results of Inspection

During the year 1933, 2,592 samples of commercial feeding stuffs were collected from manufacturers, dealers and consumers in the various sections of the state. One inspection sample was secured from approximately each 124 tons of commercial feed sold in Indiana. All of the 2,592 samples were examined microscopically and 2,311 of them were analyzed chemically for moisture, crude protein, crude fat, crude fiber and ash content. Fifty-two samples of mineral feed were analyzed for lime (CaO), phosphoric acid (P_2O_5), iodine (I) and salt (NaCl) content.

The results of inspection show that 82 per cent of the samples were equal to or better than the guarantee of the manufacturer as compared to 85 per cent in 1932. Of the 461 samples incorrectly guaranteed, 296 of them were classed as being seriously deficient or misbranded and not sold in accordance with the Indiana Feeding Stuffs Law.

Refunds

Shipments or batches of feed found to be seriously deficient were removed from sale immediately and the manufacturers were required to replace or rebuild such deficient lots to meet their guarantees or relabel them with correct guarantees. Refunds totaling $446.35 were made to dealers and consumers by 44 different feed manufacturers on 74 deficient lots of feed.

All refunds are required to be distributed to the consumer wherever possible and receipts for the same must be filed with the State Chemist. In case there are no records as to the consumer the refunds may be turned over to a local charitable organization but receipts for the same must be filed with the State Chemist.

The payment of a refund by the manufacturer to the consumer does not remove the violation but it does indicate good intentions on the part of the manufacturer and shows his willingness to do what he can to correct the violation. However, the payment of the refund does not nullify the right of anyone in the state to call a deficiency of analysis to the attention of the prosecuting attorney.

The most frequent violation of the Feeding Stuffs Law is in the matter of non-tagging (Table 3). Of the 554.8 tons of commercial feed withdrawn from sale 433.4 tons were removed because of the absence of Indiana State Chemist tags. While occasional unintentional errors may occur in tagging shipments of feed there is on the whole too much carelessness on the part of the manufacturer or distributor in attaching proper Indiana tags to their lots of feed sold or offered for sale in Indiana. Neglect on the part of the manufacturer, distributor or dealer may lead to serious violations of the Indiana Feeding Stuffs Law. On conviction, the penalty of such violations is fifty dollars for the first offense and one hundred dollars for each subsequent offense.

Estimated Sales of Commercial Feeding Stuffs in 1933

Computed from the sale of official state tags it is estimated that 322,318 tons of commercial feed with a retail value of $10,373,772 were sold in Indiana during the year 1933 (Table 4). From Table 5 it may be seen that the tonnage sold was approximately the same as was sold in each of the years 1931 and 1916. However, the retail value of the feed sold was slightly less than that of 1931. Compared with the sales of 1932 there was an increase of 31.5% in tonnage and a corresponding increase of 51% in expenditures. There were greater tonnages sold in practically all classes of feed but the principal increases in tonnage were for hominy feed, mill by-products, poultry mash and proprietary feeds.

Attention Manufacturers, Dealers and Consumers

The Official State Tag required by the Indiana Feed Law bears the facsimile signature of the State Chemist and states the manufacturer's guarantee. Manufacturers and dealers should not neglect to attach these Official Indiana Tags to each and every bag of feed sold or offered for sale in Indiana. Furthermore, the Official Tag must not be mutilated or altered in any way whatsoever.

Dealers and consumers should become acquainted with the definitions and terms used in the analysis of feeding stuffs. This information is included in this circular. Table 6 entitled "The Summary of Feed Inspection" may also be of value to the purchasers of commercial feeds.

If information regarding formulas is desired, the various Departments of the Purdue University Agricultural Experiment Station should be consulted. After certain feed formulas have been devised or selected, Table 2, entitled "Average Analyses of Cereals and By-Products," may be helpful to those who wish to calculate safe guarantees for their formulas.

Manufacturers of mineral feeds having difficulty in computing minimum percentage guarantees of lime (CaO) and phosphoric acid (P_2O_5) for their products should refer to Table 1, entitled "Calcium and Phosphorus Content of Feeding Stuffs." Poultrymen and others interested in maintaining a definite calcium and phosphorus ratio in their feeds will also find valuable information in this table. Since minimum percentages of lime expressed as (CaO) and phosphoric acid expressed as (P_2O_5) are required in the guarantee of mineral feeds these values are stated rather than the actual percentages of calcium and phosphorus. If the percentage of calcium is desired the percentage of lime (CaO) must be multiplied by 0.7. If the percentage of phosphorus is desired the percentage of phosphoric acid (P_2O_5) must be multiplied by 0.44.

Table 1.—Calcium and Phosphorus Content of Feeding Stuffs

Material	Lime (CaO) %	Phosphoric Acid (P_2O_5) %
Alfalfa meal	1.70	0.53
Brewers' dried grains	0.22	1.03
Buttermilk dried	3.40	2.20
Corn	0.02	0.65
Corn gluten feed	0.35	0.62
Cottonseed meal	0.37	2.89
Cowpeas	0.14	1.02
Distillers' grain corn	0.06	0.67
Fish meal (20.0% ash)	9.30	8.00
Hominy feed	0.04	1.03
Linseed oil meal	0.51	1.65
Malt sprouts	0.21	1.61
Meat and bone scraps (30.0% ash)	15.14	11.21
Oats	0.14	0.85
Skimmed milk dried	1.80	2.20
Soy beans	0.29	1.37
Soy bean oil meal	0.38	1.75
Tankage digester (20.0% ash)	9.00	7.25
Wheat	0.06	0.86
Wheat bran	0.13	2.74
Wheat middlings	0.10	2.06
Wheat red dog flour	0.17	1.95
Bone meal steamed	40.00	30.00
Bone black	40.00	30.00
Dicalcium phosphate	32.00	40.00
Rock phosphate	40.00	30.00
Super phosphate 16%	24.00	16.00
Super phosphate 20%	25.00	20.00
Phosphatic limestone	50.00	10.00
Limestone (95% calcium carbonate)	53.00	
Oyster shells (95% calcium carbonate)	53.00	
Wood ashes	30.00	
Gypsum	35.00	

Explanation of Terms Used in the Analysis of Feeding Stuffs

Moisture is the varying quantity of water occurring in feeding stuffs which can be driven off by heat at the temperature of boiling water. The amount of water present varies with the temperature, moisture content of the air, processes of manufacture and the character of the substance. In most concentrates this value ranges from 5 to 15 per cent.

Crude Fat consists mainly of fats and oils with small amounts of waxes, resins, coloring matter and similar substances, dissolved from feeding stuffs by dry ether. In calculating the heat and energy value of a feed, the fat is considered 2.25 times greater than that of either carbohydrates or protein.

Crude Protein is the term applied to the nitrogenous constituents of a feeding stuff. It is obtained by multiplying the total nitrogen by 6.25. Protein is the most important as well as the most costly constituent in a feed. Plants have the power of building up protein from the inorganic elements of the soil and air while animals must secure their protein from the plants or other animals. The plant proteins contain varying amounts of the essential amino acids, therefore it is necessary to carefully select a variety of feeds which will furnish the essential amino acids economically.

Crude Fiber is the woody portion of a feeding stuff, for the most part cellulose, and is insoluble in dilute acids and alkalis. Most of the common seeds and grains contain very little fiber while the hulls, husks and stems are high in this constituent. In poultry and swine, crude fiber when present in considerable quantities exerts a retarding influence on the digestion of nutrients present.

Ash, the mineral matter of plants, is the residue left after burning a feeding stuff at low redness. It consists chiefly of the phosphates, sulphates, chlorides and carbonates of sodium, potassium, calcium and magnesium. The calcium and phosphorus are absolutely essential for the proper nutrition of the animal.

Nitrogen Free Extract consists of sugars, starches, pentoses, non-nitrogenous organic acids, etc., and is determined by subtracting the sum of moisture, crude fat, crude protein, crude fiber and ash from 100.

Carbohydrates is the sum of the crude fiber and nitrogen-free extract.

Table 2.—Average Analysis of Cereals and By-Products

Material	Description of	Pounds in One Hundred		
		Crude Fat	Crude Protein	Crude Fiber
Alfalfa meal	Entire ground hay	1.5	13.0	33.0
Alfalfa leaf meal	Largely alfalfa leaves	2.5	20.0	18.0
Barley	Whole or ground	1.8	11.0	6.0
Beet pulp	Dried	0.9	8.5	18.0
Blood (dried)	Blood meal	0.5	80.0	none
Bone (raw)	Raw bone	3.0	20.0	1.0
Bone (steamed)	Steamed bone	0.5	6.0	1.0
Brewers' dried grains	From manufacture of beer	6.0	26.0	15.0
Buckwheat	Whole or ground	2.2	10.0	10.0
Buckwheat mixed feed	Entire product from manufacture of buckwheat flour	3.2	12.0	28.0
Buckwheat middlings	Entire product from manufacture of buckwheat flour, except the hulls	7.3	28.8	6.4
Buttermilk (dried)	Dried buttermilk	5.0	30.0	none
Buttermilk (condensed)	Condensed buttermilk	2.0	10.0	none
Cane seed	(Sorghum) removed from head and cleaned	2.5	9.0	2.5
Charcoal	Charcoal	none	none	90.0
Cob meal	Ground corn cob	0.5	2.0	31.0
Cocoanut oil meal	Dried cocoanut meats with partial extraction of oil	8.0	22.0	9.0
Corn	Old corn No. 2	4.0	9.5	2.0
Corn and cob meal	Ear corn (old)	3.5	8.0	8.0
Corn bran	Containing little corn germ	2.5	7.0	10.0
Corn mill feed	Corn bran germ and some meal from manufacture of meal or corn flour	7.4	11.0	4.2
Corn feed meal	Manufacture of cracked corn	3.5	9.0	2.0
Corn germ oil meal	Corn germ with part of the oil removed	8.0	20.0	8.0
Corn gluten feed	Remains after the larger part of starch and germ is removed	2.0	25.0	7.0
Corn gluten meal	From manufacture of corn starch and glucose	1.0	42.0	2.0
Corn screenings	Small and broken grains of corn, small pieces cob, etc., removed from shelled corn	2.7	8.6	8.6
Cottonseed meal (prime quality)	Sold as 36 per cent protein	6.0	36.0	14.0
Cottonseed meal (prime quality)	Sold as 41 per cent protein	6.0	41.0	12.0
Cottonseed meal (prime quality)	Sold as 43 per cent protein	6.0	43.0	10.0
Cottonseed feed	Below 36 per cent protein	4.0	22.8	22.0
Cottonseed hulls	Contains trace of lint and meal adhering	1.8	4.6	38.0
Cowpea	Seeds, pods removed	1.4	20.8	4.1
Distillers' grain (dried)	From corn or rye	9.0	27.0	12.0
Emmer	Often called spelt	2.0	11.5	10.0
Fish meal	Dried ground tissues of fish with or without the extraction of part of the oil	6.0	55.0	2.0
Flaxseed	Whole grain or meal without extraction of oil	32.0	22.0	7.0
Flax plant by-product	Shives, pods, etc.	2.1	15.0	31.0
Flaxseed screenings	Small and broken grains, flaxseed, weed seed and other foreign material cleaned from flaxseed	8.0	14.0	14.0
Hominy feed, meal or chop	Manufacture of hominy grits or meal by degerminator process	6.0	11.0	6.0
Kaffir corn	Milo	2.5	10.0	2.5
Kelp (dried)	Ground dried kelp	1.0	6.0	10.0
Linseed meal (old process)	Oil extracted by pressure	6.0	34.0	8.0
Malt sprouts	Sprout of the barley grain	1.3	27.9	12.1

Meat scraps or meat and bone scraps	Ground dry rendered residue from animal tissues	6.0	50.0	3.0
Millet	Italian millet seed	3.9	10.3	9.4
Milo	Whole or ground	2.5	10.7	2.5
Molasses	From beets	none	3.0	....
Molasses	Blackstrap from cane	none	3.0	....
Oats	Ground or whole	4.0	11.0	11.0
Oat-clipped by-product	Clippings	2.0	9.0	30.0
Oat-groats	Kernels of oat berry	6.5	15.0	2.0
Oat hulls	Oat hulls	1.5	4.0	32.0
Oat meal mill by-product	Oat hulls and oat shorts	1.5	6.0	28.0
Oat middlings	Floury portion of oat groat	5.0	15.0	5.0
Peanut oil feed	Peanut meats and peanut hulls	6.0	30.0	25.0
Peanut oil meal	Residue after the extraction of part of the oil from peanut kernels	6.0	40.0	6.0
Peanut shells	Whole or finely ground	1.2	5.5	70.9
Rice bran	Cuticle layer beneath hull	12.0	12.0	12.0
Rye	Rye	1.5	11.0	2.0
Rye feed	Rye feed	3.5	16.0	5.0
Skimmed milk (dried)	Dried skimmed milk	0.5	30.0	none
Soybean	Seed pods removed	19.0	35.0	5.0
Soybean oil meal	Ground	6.0	40.0	6.0
Sunflower seed	Whole or ground	19.0	16.0	30.0
Tankage (digester)	60 per cent reinforced with concentrated tank water or dried blood	6.0	60.0	3.0
Unscreened flaxseed oil feed	Flaxseed meal and flaxseed screenings	6.0	30.0	9.0
Velvet bean feed	Velvet beans and pods	4.0	19.0	17.0
Wheat	Whole or ground	1.9	11.9	2.4
Wheat bran (soft)	Wheat bran	3.5	14.5	8.0
Wheat bran (hard)	Wheat bran	4.0	16.0	10.0
Wheat middlings	Wheat middlings	3.5	15.5	6.0
Wheat standard middlings	With and without screenings	4.0	16.0	9.5
Wheat red dog flour	Red dog flour	3.5	15.0	4.0
Wheat mixed feed and mill run screenings	Bran, middlings, red dog flour and screenings	3.5	15.0	8.0
Whey (dried)	Dried whey	0.5	12.0	none

Table 3.—Withdrawals From Sale

Number of Shipments Withdrawn From Sale	Number of Manufacturers Represented	Reasons for Withdrawal From Sale	Amount Withdrawn Tons
230	148	Not tagged	433.4
51	37	Misbranded	41.5
13	9	Deficient in crude protein	59.1
10	8	Mutilated tags	8.4
3	3	Condensed buttermilk deficient in total solids	10.9
2	2	Mineral feed deficient in phosphoric acid	0.3
2	1	Mineral feed deficient in phosphoric acid and iodine	0.8
1	1	Mineral feed deficient in iodine	0.4
312	......	Totals	554 8

DEFINITIONS OF FEEDING STUFFS*

Alfalfa Products

1. **Chopped Alfalfa** is the entire alfalfa hay, chopped and not ground finely enough to become a meal. It must not contain an admixture of alfalfa straw or other foreign material. (Adopted prior to 1928.)

2. **Alfalfa Meal** is the product obtained from the grinding of the entire alfalfa hay, without the addition of any alfalfa stems, alfalfa straw or foreign material, or the abstraction of leaves. It must be reasonably free from other crop plants and weeds, and must not contain more than 33 per cent of crude fiber. (Adopted 1928.)

3. **Alfalfa Leaf Meal** is the ground product consisting chiefly of leafy materials separated from alfalfa hay. It must be reasonably free from other crop plants and weeds and must not contain more than 18 per cent of crude fiber. (Adopted 1928.)

4. **Alfalfa Stem Meal** is the ground product remaining after the separation of the leafy material from alfalfa hay or meal. It must be reasonably free from other crop plants and weeds. (Adopted 1928.)

Animal Products

5. **Blood Meal** is ground, dried blood. (Adopted 1926.)

6. **Blood Flour** is dried blood, prepared by special processes and reduced to a fine powder. (Adopted prior to 1928.)

7. **Digester Tankage, Meat Meal Tankage or Feeding Tankage** is the residue from animal tissues exclusive of hoof, horn, manure and stomach contents, except in such traces as might occur unavoidably in good factory practice, especially prepared for feeding purposes by tanking under live steam or by dry rendering or a mixture of the products made suitable by drying and grinding. It must not contain more than 10% of phosphoric acid (expressed as P_2O_5). If it bears a name descriptive of its kind, composition or origin, the material must correspond thereto. (Adopted 1928—Amended 1933.)

8. **Digester Tankage with Bone, Meat and Bone Meal Digester Tankage, Meat and Bone Meal Tankage, or Feeding Tankage with Bone** is the residue from animal tissues exclusive of hoof, horn, manure and stomach contents, except in such traces as might occur unavoidably in good factory practice, especially prepared for feeding purposes by tanking under live steam or by dry rendering or a mixture of the products made suitable by drying and grinding, and containing more than 10% of phosphoric acid (expressed as P_2O_5). If it bears a name descriptive of its kind, composition or origin, it must correspond thereto. (Adopted 1928—Amended 1933.)

9. **Meat Scraps** is the ground, dry-rendered residue from animal tissues exclusive of hoof, horn, manure and stomach contents, except in such traces as might occur unavoidably in good factory practice. When this product contains more than 10% of phosphoric acid (expressed as P_2O_5), it shall be desig-

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* These definitions have been adopted by the Association of American Feed Control Officials.

nated Meat and Bone Scrap. If it bears a name descriptive of its kind, composition or origin it must correspond thereto. (Adopted 1928.)

10. **Raw Bone Meal** is the dried, ground product suitable for animal feeding, obtained by cooking in water at atmospheric pressure, undecomposed bone, just enough to remove excess fat and meat. It must not contain less than 23 per cent of protein. (Adopted 1929.)

11. **Steamed Bone Meal** is the dried, ground product suitable for animal feeding obtained by cooking bones with steam under pressure. (Adopted 1929.)

12. **Special Steamed Bone Meal** is the dried, ground product suitable for animal feeding obtained by cooking dried bone after the removal of grease and meat fiber with steam under pressure in the process of obtaining gelatine or glue. (Adopted 1929.)

Apple Products

13. **Dried Apple Pomace** is the sound, dried residue obtained by the removal of cider from apples. (Adopted 1929.)

14. **Dried Apple Pectin Pulp** is the sound, dried residue obtained by the removal of pectin from apple products. (Adopted 1929.)

Barley Products

15. **Barley Hulls** is the product consisting of the outer coverings of the barley. (Adopted prior to 1928.)

16. **Barley Feed** is the entire by-product resulting from the manufacture of pearl barley from clean barley. (Adopted prior to 1928.)

17. **Barley Mixed Feed** is the entire offal from the milling of barley flour from clean barley and is composed of barley hulls and barley middlings. (Adopted prior to 1928.)

18. **Ground Barley** is the entire product obtained by grinding clean sound barley, containing not less than 90 per cent of pure barley and not more than 10 per cent of other grains, weed seeds and other foreign material and not more than 6 per cent of crude fiber; provided that no portion of this stated 10 per cent of other grains, weed seeds or other foreign material shall be intentionally added. (Adopted prior to 1928.)

19. **Mixed Feed Barley** is the entire product obtained by grinding country run barley containing not less than 75 per cent of pure barley and not more than 25 per cent of other grains, weed seeds and other foreign material; provided that no portion of this stated 25 per cent of other grains, weed seeds or foreign material shall be intentionally added. The ingredients must be stated as barley, other grains, weed seeds and foreign material. (Adopted prior to 1928.)

Beet Products

20. **Dried Beet Pulp** is the dried residue from sugar beets which have been cleaned and freed from crowns, leaves and sand, and from which the sugar has been extracted. (Adopted prior to 1928.)

Brewers' and Distillers' Products

21. **Brewers' Dried Grains** is the dried residue obtained in the manufacture of beer. (Adopted prior to 1928.)

22. **Distillers' Corn Dried Grain or Distillers' Rye Dried Grains** is the dried residue obtained in the manufacture of alcohol and distilled liquors. The product must bear the designation indicating the cereal predominating. (Adopted prior to 1928.)

23. **Distillers' Corn Solubles** is a by-product from the manufacture of alcohol from corn solids obtained by the evaporation of the mash liquor after the removal of the alcohol and wet grains. (Adopted prior to 1928.)

24. **Distillers' Rye Solubles** is a by-product from the manufacture of alcohol from rye solids obtained by the evaporation of mash liquor after the removal of the alcohol and wet grains. (Adopted prior to 1928.)

25. **Distillers' Corn and Rye Solubles** is a by-product from the manufacture of alcohol from corn and rye solids obtained by the evaporation of mash liquor after the removal of the alcohol and wet grains. (Adopted prior to 1928.)

26. **Malt Sprouts** are the sprouts of the barley grain obtained from malted barley. Sprouts derived from any other malted cereal must be designated by the name of that cereal. (Adopted prior to 1928.)

27. **Yeast Dried Grains or Vinegar Dried Grains** is the properly dried residue from the mixture of cereals, malt and malt sprouts (sometimes cottonseed meal) obtained in the manufacture of yeast or vinegar, and consists of corn or corn and rye from which most of the starch has been extracted together with malt added during the manufacturing process to change the starch to sugars, and malt sprouts (sometimes cottonseed meal) added during the manufacturing process to aid in filtering the residue from the wort and to serve as a source of food supply for the yeast. (Adopted prior to 1928.)

Buckwheat Products

28. **Buckwheat Shorts or Buckwheat Middlings** are the portions of the buckwheat grain immediately inside the hull secured after separation from the flour. (Adopted prior to 1928.)

Chop

29. **Chop** is a ground or chopped feed composed of one or more different cereals or by-products thereof. If it bears a name descriptive of the kind of cereals, it must be made exclusively of the entire grains of those cereals (Adopted prior to 1928.)

Cocoanut Products

30. ....**Per Cent Protein Cocoanut Oil Meal or....Per Cent Protein Copra Oil Meal** is the ground residue from the extraction of part of the oil from the dried meat of the cocoanut. (Adopted prior to 1928.)

Corn Products

31. **Corn Meal** (Feeding) is finely ground, unbolted corn. (Adopted prior to 1928.)

32. **Corn Bran** is the outer coating of the corn kernel, with little or none of the starchy part or germ. (Adopted 1931.)

33. **Corn Feed Meal** is the fine siftings obtained in the manufacture o screened corn chop, screened ground corn or screened cracked corn, with o without its aspiration products added. (Adopted 1931.)

34. **Corn Chop, Ground Corn or Cracked Corn** is the entire product mad by grinding, cutting or chopping the grains of sound Indian corn, and may b fine, medium or coarse, and must not contain more than 4 per cent of foreign material. (Adopted 1931.)

35. **Screened Corn Chop, Screened Ground Corn, or Screened Cracke Corn** is the coarse portion of corn chop, ground corn or cracked corn from which most of the fine particles have been removed, and must not contain more than 4 per cent of foreign material. (Adopted 1931.)

36. **Corn Grits or Hominy Grits** is the product consisting of the fine o medium sized, hard flinty portions of sound Indian corn containing little o none of the bran or germ. (Adopted 1931.)

37. **Ear Corn Chops** is corn and cob chopped, without the husk, with n greater proportion of cob than occurs in the ear corn in its natural state (Adopted prior to 1928.)

38. **Corn Gluten Meal** is that part of commercial shelled corn that remain after the separation of the larger part of the starch, the germ and the bran by the processes employed in the manufacture of corn starch. It may or ma not contain corn solubles. (Adopted prior to 1928.)

39. **Corn Gluten Feed** is that part of commercial shelled corn that remain after the separation of the larger part of the starch and the germs by th processes employed in the manufacture of corn starch. It may or may no contain corn solubles. (Adopted prior to 1928.)

40. **Maltose Process Corn Gluten Feed** is the dried residue from degerme corn, after removal of starch in the manufacture of malt syrup. (Adopte prior to 1928.)

41. **Hominy Feed, Hominy Meal or Hominy Chop** is the kiln-dried mixtur of the mill-run bran coating, the mill-run germ, with or without a partial extraction of the oil, and a part of the starchy portion of the white corn kernel obtained in the manufacture of hominy, hominy grits, and cornmeal by the degerming process. (Adopted prior to 1928.)

42. **Yellow Hominy Feed, Yellow Hominy Meal or Yellow Hominy Chop** is the kiln-dried mixture of the mill-run bran coating, the mill-run germ, with or without a partial extraction of the oil, and a part of the starchy portion of the yellow corn kernel obtained in the manufacture of yellow hominy grits and yellow corn meal by the degerming process. (Adopted prior to 1928.)

43. **Corn Oil Cake** consists of the corn germ from which part of the oil has been pressed and is the product obtained in the wet milling process of manufacture of corn starch, corn syrup, and other corn products. (Adopted prior to 1928.)

44. **Corn Oil Meal** is ground corn oil cake. (Adopted prior to 1928.)

45. **Corn Germ Cake** consists of corn germ with other parts of the corn kernel from which part of the oil has been pressed, and is the product obtained in the dry milling process of manufacture of corn meal, corn grits, hominy feed, and other corn products. (Adopted prior to 1928.)

46. **Corn Germ Meal** is ground corn germ cake. (Adopted prior to 1928.)

47. **Corn Screenings** is the product consisting of the small light grains of corn, part of grains of corn and/or other cereals, and other materials having feed value, obtained by screening shelled corn, excluding sand, dirt and other similar inert materials. (Adopted 1931.)

Cottonseed Products

48. **Cottonseed Meal** is a product of the cottonseed only, composed principally of the kernel with such portion of the hull as is necessary in the manufacture of oil; provided that nothing shall be recognized as cottonseed meal that does not conform to the foregoing definition and that does not contain at least 36 per cent of protein. Cottonseed meal shall be graded and classed as follows: (Adopted prior to 1928.)

49.....**Per Cent Protein Cottonseed Meal, Prime Quality.** Cottonseed meal, prime quality, must be finely ground, not necessarily bolted, of sweet odor, reasonably bright in color, yellowish, not brown or reddish, free from excessive lint, and shall contain not less than 36 per cent of protein. It must be designated and sold according to its protein content. Cottonseed meal with 36 per cent of protein must be termed "36 per cent Protein Cottonseed Meal, Prime Quality," and higher grades similarly designated (as "43 per cent Protein Cottonseed Meal, Prime Quality"), etc. (Adopted prior to 1928.)

50.....**Per Cent Protein Cottonseed Meal, Off Quality.** Cottonseed meal not fulfilling the above requirement as to color, odor and texture must be graded "36 per cent Protein Cottonseed Meal, Off Quality," and higher grades similarly designated. (Adopted prior to 1928.)

51. **Cottonseed Feed** is a mixture of cottonseed meal and cottonseed hulls, containing less than 36 per cent of protein. (Adopted prior to 1928.)

52.....**Per Cent Protein Whole Pressed Cottonseed,** Prime Quality, is the product resulting from subjecting the whole, sound, mature, clean undecorticated cottonseed to pressure for the extraction of oil, and includes the entire cottonseed less the oil extracted and the lint removed. It must be designated and sold according to its protein content. (Adopted 1932.)

53.....**Per Cent Protein Ground Whole Pressed Cottonseed,** Prime Quality, is whole pressed cottonseed, ground. It must be designated and sold according to its protein content. (Adopted 1932.)

Garbage

54. **Processed Garbage** is composed of dried animal and vegetable waste from garbage collected sufficiently often that harmful decomposition has not set in, and separated from material such as crockery and glass. Its odor must not be suggestive of the presence of decomposition and it must contain less than one per cent of glass. None of it shall contain knife-like or needle-like particles, and the maximum percentage of glass should be stated on the label when present in excess of one-fifth of one per cent. (Adopted prior to 1928.)

Ivory Nut Products

55. **Ivory Nut Meal** is the ground waste material resulting from the manufacture of buttons and similar articles from the vegetable ivory nut. (Adopted prior to 1928.)

Linseed and Flax Products

56.....**Per Cent Protein Linseed Cake or Linseed Meal** is the product obtained in the removal of the oil from flaxseed; provided that the final product contains less than 6 per cent of weed seeds and other foreign materials; and provided, further, that no portion of the stated 6 per cent of weed seeds and other foreign materials shall be deliberately added. It shall not contain more than 0.5 per cent of acid insoluble ash. (Adopted 1933.)

57.....**Per Cent Protein Old Process Oil Meal or....Per Cent Protein Old Process Linseed Meal** is oil meal as defined below, produced by crushing, cooking and hydraulic pressure. (Adopted prior to 1928.)

58.....**Per Cent Protein New Process Oil Meal or....Per Cent Protein New Process Linseed Meal** is oil meal as defined below, produced by crushing, heating and the use of solvents. (Adopted prior to 1928.)

59. **Flax Plant By-Product** is that portion of the flax plant remaining after the separation of the seed, the bast fiber and a portion of the shives, and consists of flax shives, flax pods, broken and immature flax seeds, and the cortical tissues of the stem. (Adopted prior to 1928.)

60. **Ground Flaxseed or Flaxseed Meal** is the product obtained by grinding flaxseed which has been screened and cleaned of weed seeds and other foreign materials by the most improved commercial process; the final product must contain less than 4 per cent of weed seeds and other foreign materials, and no portion of the stated 4 per cent of weed seeds and other foreign materials shall be intentionally added. (Adopted prior to 1928.)

61. **Unscreened Flaxseed Oil Feed Cake** is the product obtained by extraction of part of the oil from unscreened flaxseed by crushing, cooking and hydraulic pressure, or by crushing, heating and the use of solvents. The ingredients must be stated as "partially extracted flaxseed and foreign seeds (wheat, wild buckwheat, pigeon grass, wild mustard, etc.)." (Adopted prior to 1928.)

62. **Ground Unscreened Flaxseed Oil Feed** is the ground unscreened flaxseed oil feed cake. (Adopted prior to 1928.)

63. **Screenings Oil Feed** is the ground product obtained after extraction of part of the oil by crushing, cooking and hydraulic pressure, or by crushing, heating and the use of solvents from the smaller imperfect flaxseed, weed seeds and other foreign materials having feeding value, separated in cleaning flaxseed. The name of the grain from which the screenings are separated must be prefixed to "screenings oil feed." (Adopted prior to 1928.)

64.....**Per Cent Protein Oil Cake** is the product obtained after the extraction of part of the oil by crushing, cooking, and hydraulic pressure, or by crushing, heating and the use of solvents, from flaxseed which have been screened and cleaned of weed seeds and other foreign materials by the most improved commercial process. When used alone the term "Oil Cake" shall be understood to designate linseed cake as defined. When used to cover any other products the name of the seed from which it is obtained must be prefixed to the words "Oil Cake." (Adopted prior to 1928.)

65.....**Per Cent Protein Oil Meal or .... Per Cent Protein Ground Oil Cake** is oil cake ground to a meal. (Adopted prior to 1928.)

Marine Products

66. **Fish Meal** (Feeding) is clean, dried, ground tissues of undecomposed whole fish and/or fish cuttings with or without the extraction of part of the oil, and contains not more than 3 per cent of salt (NaCl). If it contains more than 3 per cent of salt (NaCl) the amount of salt must constitute a part of the brand name, provided that in no case shall the salt content of this product exceed 7 per cent. (Adopted 1933.)

67. **Fish Residue Meal** (Feeding) is the clean, dried, undecomposed residue from the manufacture of glue from non-oily fish, and contains not more than 3 per cent of salt (NaCl). If it contains more than 3 per cent of salt (NaCl) the amount of salt must constitute a part of the brand name, provided that in no case shall the salt content of this product exceed 7 per cent. (Adopted 1933.)

68. **Crab Meal** (Feeding) is prepared from the undecomposed dried waste of the crab industry and contains the shell, viscera and part or all of the flesh. It contains not less than 25 per cent of protein and not more than 3 per cent of

salt (NaCl). If it contains more than 3 per cent of salt (NaCl) the amount of salt must constitute a part of the brand name, provided that in no case shall the salt content of this product exceed 7 per cent. (Adopted 1933.)

69. **Shrimp Meal** (Feeding) is prepared from the undecomposed dried waste of the shrimp industry and contains the heads, hull and/or the whole shrimp and not more than 3 per cent of salt (NaCl). If it contains more than 3 per cent of salt (NaCl) the amount of salt must constitute a part of the brand name, provided that in no case shall the salt content of this product exceed 7 per cent. (Adopted 1933.)

70. **Whale Meal** (Feeding) is prepared from the clean, dried undecomposed flesh of the whale, after part of the oil has been extracted. It contains not more than 3 per cent of salt (NaCl). If it contains more than 3 per cent of salt (NaCl) the amount of salt must constitute a part of the brand name, provided that in no case shall the salt content of this product exceed 7 per cent. (Adopted 1933.)

71. **Cod Liver Oil** is the product obtained by extraction of part of the oil from cod livers. (Adopted 1932.)

72. **Sardine Oil or Pilchard Oil** is the product obtained by extraction of part of the oil from the whole Pacific sardine or pilchard or from cannery refuse of this species of fish. (Adopted 1932.)

73. **Salmon Oil** is the product obtained by extraction of part of the oil from the cannery refuse of salmon. (Adopted 1932.)

74. **Tuna Oil** is the product obtained by extraction of part of the oil from the cannery refuse of tuna. (Adopted 1932.)

75. **Menhaden Oil** is the product obtained by extraction of part of the oil from whole Menhaden. (Adopted 1932.)

76. **Herring Oil** is the product obtained by extraction of part of the oil from the whole herring or part of the herring. (Adopted 1933.)

77. **Salmon Liver Oil** is the product obtained by extraction of part of the oil from salmon livers. (Adopted 1933.)

Milk Products

78. **Dried Buttermilk** (Feeding) is the product resulting from the removal of water from clean, sound buttermilk derived from natural cream to which no foreign substances have been added, excepting such as are necessary and permitted in the manufacture of butter. It contains not more than 8 per cent of moisture, not more than 13 per cent of mineral matter (ash), and not less than 5 per cent of butterfat, as determined by the Roese-Gottlieb method. (Adopted 1932.)

79. **Evaporated Buttermilk** (Feeding), **Concentrated Buttermilk** (Feeding) or **Condensed Buttermilk** (Feeding) is the product resulting from the removal of a considerable portion of water from clean, sound buttermilk derived from natural cream to which no foreign substances have been added excepting such as are permitted and necessary in the manufacture of butter. It contains not less than 27 per cent of total solids, not less than 2 per cent of butterfat, and not more than .14 per cent of ash for each per cent of solids. This definition does not prohibit the use of a distinctive trade name, provided it is followed by one of the names given. (Adopted prior to 1928.)

80. **Dried Skimmed Milk** (Feeding) is the product resulting from the removal of water from clean, sound skimmed milk. It contains not more than 8 per cent of moisture. (Adopted 1930.)

81. **Dried Soured Skimmed Milk** (Feeding) is the product resulting from the removal of water from clean, sound skimmed milk which has been soured by a suitable culture of lactic bacteria. It contains not more than 8 per cent of moisture. (Adopted 1932.)

82. **Evaporated Soured Skimmed Milk** (Feeding), **Concentrated Soured Skimmed Milk** (Feeding) or **Condensed Soured Skimmed Milk** (Feeding) is the product resulting from the removal of a considerable portion of water from clean, sound skimmed milk which has been soured by a suitable culture of lactic bacteria. It contains not less than 27 per cent of total solids. (Adopted 1932.)

83. **Condensed Skimmed Milk** (Feeding) is the product resulting from the removal of a considerable portion of water from clean, sound skimmed milk. It contains not less than 27 per cent of total solids. (Adopted 1930.)

84. **Milk Sugar Feed or Dried Whey** (Feeding) is the by-product from the manufacture of cheese and should contain at least 70 per cent of lactose (milk sugar). (Adopted 1932.)

Mineral Feeds

85. Mixed feeds containing both feed and more than 5 per cent of mineral ingredients requires, in addition to the usual declaration of the chemical feed analysis, a declaration of each ingredient contained therein and the minimum percentages of lime expressed as CaO, phosphoric acid expressed as P_2O_5, iodine (I), and the maximum percentage of salt (NaCl) if same be present. If minerals predominate in the mixture, the usual declaration of the chemical feed analysis, with the exception of protein, may be omitted.

In mineral feeds containing no organic ingredient, the usual chemical feed guarantee need not be made. A declaration should be made of each ingredient contained therein and the minimum percentage of lime expressed as CaO, phosphoric acid expressed as P_2O_5, iodine (I), and the maximum percentage of salt (NaCl) if same be present.

The mineral ingredients should be stated in the common English terms, if any such terms exist.

It being impossible to classify separately the drug ingredients and the mineral ingredients, be it resolved:

(a) That all mixtures containing mineral ingredients generally regarded as dietary factors essential for the normal nutrition of animals and which are sold or represented for the primary purpose of supplying these minerals as additions to rations in which these same mineral factors may be deficient, be classified as mineral feeds.

(b) That all other preparations which are sold or represented primarily for the cure, mitigation or prevention of disease be classified by this Association as drugs, medicines or specifics. (Adopted prior to 1928.)

Oat Products

86. **Oat Hulls** is the product consisting of the outer covering of the oat. (Adopted prior to 1928.)

87. **Oat Middlings** is the product consisting of the floury portions of the oat groat obtained in the milling of rolled oats . (Adopted prior to 1928.)

88. **Oat Shorts** is the product consisting of the covering of the oat grain lying immediately inside the hull, being a fuzzy material carrying with it considerable portions of the fine floury part of the groat obtained in the milling of rolled oats. (Adopted prior to 1928.)

89. **Oat Chop, Ground Oats, Pulverized Oats, Crushed Oats, or Crimped Oats** consists of the entire product made by chopping, cutting, grinding, crushing, or crimping whole oats. (Adopted 1931.)

90. **Oat Groats** are the kernels produced from cleaned and dried oats in the process of manufacturing oat meal. (Adopted 1931.)

91. **Hulled Oats, or Undried Oat Groats** are the kernels produced from the undried grain in the process of hulling oats. (Adopted 1931.)

92. **Oat Meal, or Ground Oat Groats** is the product produced by cutting, cracking or grinding oat groats. (Adopted 1931.)

93. **Rolled Oat Groats or Rolled Oats** is the product obtained in the process of rolling oat groats. (Adopted 1931.)

94. **Clipped Oat By-Products** is the by-product obtained in the manufacture of clipped oats. It may contain the light chaffy material broken from the end of the hulls, empty hulls, light immature oats and dust. It must not contain an excessive amount of oat hulls. (Adopted prior to 1928.)

95. **Oat Mill Feed** (Oat Hulls, Oat Shorts and Oat Middlings) is the entire by-product produced in the manufacture of oat groats and consists of oat hulls, oat shorts and oat middlings. If used in a mixed feed, it shall be called Oat Mill Feed (oat hulls, oat shorts and oat middlings). (Adopted 1932.)

Palm Products

96. **Palm Kernel Oil Meal** is the ground residue from the extraction of part of the oil by pressure or solvents from the kernel of the fruit of Elaeis guineensis or Elaeis molanococco. (Adopted prior to 1928.)

Peanut Products

97.....**Per Cent Protein Peanut Oil Cake** is the residue after the extraction of part of the oil by pressure or solvents from peanut kernels. (Adopted prior to 1928.)

98.....**Per Cent Protein Peanut Oil Meal** is ground peanut oil cake. (Adopted prior to 1928.)

99. **Unhulled Peanut Oil Feed** is the ground residue obtained after extraction of part of the oil from whole peanuts, and the ingredients must be designated as **Peanut Meal and Hulls.** (Adopted prior to 1928.)

Rice Products

100. **Rice Bran** is the pericarp or bran layer of the rice, with only such quantity of hull fragments as is unavoidable in the regular milling of rice. (Adopted prior to 1928.)

101. **Rice Hulls** is the product consisting of the outer coverings of the rice. (Adopted prior to 1928.)

102. **Rice Polish** is the finely powdered material obtained in polishing the kernel. (Adopted prior to 1928.)

103. **Rice Meal** is ground brown rice or ground rice after the hull has been removed. (Adopted prior to 1928.)

104. **Ground Rough Rice** is ground rice from which the hull has not been removed or ground paddy rice. (Adopted prior to 1928.)

105. **Rice Stone Bran** is the siftings from the materials secured in removing hulls from rice and contains rice germs, broken rice and some rice hulls. (Adopted prior to 1928.)

106. **Rice Huller Bran** is a product secured by the huller and cones from brown rice and consists mostly of the bran and germs. (Adopted prior to 1928.)

Rye Products

107. **Rye Bran** is the coarse outer covering of the rye kernel as separated from the cleaned and scoured rye. (Adopted prior to 1928.)

108. **Rye Feed** is a by-product obtained in the usual process of the milling of rye flour from cleaned and scoured rye grain, consisting principally of the mill-run of the outer covering of the rye grain and the germ with small quantities of flour and aleurone. (Adopted prior to 1928.)

109. **Rye Red Dog** is a by-product obtained in the usual process of the milling of rye flour, consisting principally of aleurone with small quantities of flour and fine bran particles and must not contain more than 3.5 per cent of crude fiber. (Adopted prior to 1928.)

110. **Rye Low-Grade Feed Flour** consists principally of dark rye flour and small quantities of aleurone and fine bran particles and must not contain more than 1.5 per cent of crude fiber. (Adopted prior to 1928.)

111. **Rye Middlings** consists of rye feed and rye red dog combined in the proportions obtained in the usual process of milling rye flour. (Adopted prior to 1928.)

112. **Rye Flour Middlings** consist of rye feed, rye red dog and pure dark rye flour combined in the proportions obtained in the milling of rye flour and must not contain more than 5 per cent of crude fiber. (Adopted prior to 1928.)

Sorghum Products

113. **Head Chops** is the product consisting of the entire heads of the grain sorghums chopped, and should bear the name of the sorghum from which it is made. This includes, among others, kaffir head chops, milo head chops, feterita head chops, and sorghum head chops. (Adopted prior to 1928.)

114. **Head Stems** is the product consisting of the stems from the heads of the grain sorghums after the grain has been removed, and should bear the name of the sorghum from which it is made. (Adopted prior to 1928.)

Soybean Products

115. **Ground Soybeans** is the product obtained by grinding whole soybeans without cooking or removing any of the oil. (Adopted 1933.)

116.....**Per Cent Protein Soybean Oil Cake or Soybean Oil Chips** is the product obtained by crushing, cooking and removing part of the oil from soybeans. (Adopted 1933.)

117.....**Per Cent Protein Soybean Oil Meal** is ground soybean oil cake or ground soybean oil chips. (Adopted 1933.)

Velvet Bean Products

118. **Velvet Bean Meal** is ground velvet beans containing only an unavoidable trace of hulls or pods. (Adopted prior to 1928.)

119. **Ground Velvet Bean and Pod** is the product derived by grinding velvet beans with the pod. It contains no additional pods or other materials. (Adopted prior to 1928.)

Wheat Products

120. **Wheat Bran** is the coarse outer covering of the wheat kernel as separated from cleaned and scoured wheat in the usual process of commercial milling. (Adopted prior to 1928.)

121. **Standard Middlings** consists mostly of fine particles of bran, germ, and very little of the fibrous offal obtained from the "tail of the mill." This product must be obtained in the usual commercial process of milling and must not contain more than 9.5 per cent of crude fiber. (Adopted prior to 1928.)

122. **Flour Middlings** shall consist of standard middlings and red dog flour combined in the proportions obtained in the usual process of milling and must not contain more than 6.0 per cent of crude fiber. (Adopted prior to 1928.)

123. **Wheat Red Dog** is a by-product obtained in the usual commercial process of flour milling, consisting principally of aleurone with small quantities of flour and fine bran particles and must not contain more than 4.0 per cent of crude fiber. (Adopted prior to 1928.)

124. **Wheat Low-Grade Feed Flour** is a by-product obtained in the usual commercial process of flour milling, consisting principally of flour with small quantities of aleurone and fine bran particles and must not contain more than 1.5 per cent of crude fiber. (Adopted prior to 1928.)

125. **Wheat Bran and Standard Middlings** consists of the two commodities as defined above, mixed in the proportions obtained in the usual process of commercial milling. (Adopted prior to 1928.)

126. **Hard Wheat Mixed Feed** (mill-run wheat feed) consists of pure wheat bran and flour middlings combined in the proportions obtained in the usual process of commercial milling. This product must not contain more than 9.5 per cent of crude fiber. (Adopted prior to 1928.)

127. **Brown Shorts** (Red Shorts) consists mostly of the fine particles of bran, germ and very little of the fibrous offal obtained from the "tail of the mill." This product must be obtained in the usual commercial process of milling and must not contain more than 7.5 per cent of crude fiber. (Adopted prior to 1928.)

128. **Gray Shorts** (Gray Middlings or Total Shorts) consists of the fine particles of the outer bran, the inner bran or bee-wing bran, the germ and the offal or fibrous materials obtained from the "tail of the mill." This product must be obtained in the usual process of commercial milling and must not contain more than 6.0 per cent of crude fiber. (Adopted prior to 1928.)

129. **White Shorts or White Middlings** consists of a small portion of the fine bran particles and the germ and a large portion of the fibrous offal obtained from the "tail of the mill." This product must be obtained in the usual process of flour milling and must not contain more than 3.5 per cent of crude fiber. (Adopted prior to 1928.)

130. **Wheat Mixed Feed** (Mill-run wheat feed) consists of pure wheat bran and the gray or total shorts combined in the proportions obtained in the usual process of commercial milling. This product must not contain more than 8.5 per cent of crude fiber. (Adopted prior to 1928.)

131. **Screenings** consists of the smaller imperfect grains, weed seeds, and other foreign materials, having feed value, separated in cleaning the grain. (Adopted prior to 1928.)

132. **Scouring** consists of such portions of the cuticle, brush, white caps, dust, smut and other materials as are separated from the grain in the usual commercial process of scouring. (Adopted prior to 1928.)

(NOTE) If to any of the wheat or rye by-product feeds there should be added screenings or scourings—as above defined, either ground or unground, bolted or unbolted, such brand shall be so registered, labeled and sold as clearly to indicate this fact. The word "Screenings" or "Scourings" as the case may be, shall appear as part of the name or brand and shall be printed in the same size and face of type as the remainder of the brand name. When the word "Screenings" appears it is not necessary to show also on the labeling the word "Scourings." (Adopted prior to 1928.)

TENTATIVE DEFINITIONS

These definitions have received favorable consideration, but are not official. They are subject to revision before final adoption.

T-1 **Dried Whey** (Feeding) is the by-product from the manufacture of cheese and/or casein. This product shall contain at least 65 per cent of lactose (milk sugar).

T-2 **Spent Bone Black** is the product resulting from the repeated charring of bone black or animal charcoal after use in clarifying sugar solutions. It shall contain at least 11.50 per cent of phosphorous (P).

T-3 **Animal Charcoal or Bone Black** is the product obtained by charring bones in closed retorts, containing not less than 14.75 per cent of phosphorus (P).

T-4 **Stearine** (Feeding) is the solid material obtained by filtration from an oil after chilling or freezing in the process of refining. When this product is sold as a feed, the term shall be prefixed by the name of the oil from which it is obtained.

T-5 **Anti-rachitic Oil** is an oil recognized as a satisfactory source of vitamin D obtained from fish or parts thereof. This term will be recognized only in the declaration of ingredients in a proprietary feed. The name of the specific oil may be used in lieu of this name if desired.

T-6 **Cane Molasses** (Feeding) is a by-product of the manufacture of sugar from cane, and contains 51 per cent or more of sugar expressed as invert sugar, and not more than 8 per cent of ash.

T-7 **Beet Molasses** (Feeding) is a by-product of the manufacture of sugar from sugar beets and contains 52 per cent or more of sugar expressed as invert sugar, and not more than 10 per cent of ash.

T-8 **Iodized Salt** (Feeding) is common salt (NaCl) containing not less than 0.015 per cent of iodine, uniformly distributed.

T-9 **Hominy Feed** is a mixture of corn bran, corn germ and a part of the starchy portion of either white or yellow corn kernels or mixture thereof as produced in the manufacture of pearl hominy, hominy grits or table meal, and shall contain not less than 5 per cent of crude fat. If prefixed with the words "white" or "yellow," the product must correspond thereto.

Resolutions Adopted

1. Resolved that it is the sense of this Association that we understand the term "Nitrogen Free Extract" to cover the product indicated by the percentage obtained by subtracting from 100 per cent the sum of the percentages of Ash, Moisture, Protein, Fat and Fiber. (Adopted prior to 1923.)

2. Resolved that the term "carbohydrates" be interpreted to cover the product indicated by the percentage obtained by the addition of the percentages of crude fibre and nitrogen free extract. (Adopted prior to 1923.)

3. Resolved that it is the sense of this Association that a ton of feed be 2,000 pounds, net. (Adopted prior to 1923.)

4. Resolved that this Association go on record as opposing the use of second hand bags unless they are turned wrong side out so that the original stenciling will not be displayed. (Adopted prior to 1923.)

5. Resolved that the Association go on record to the effect that the term cracked corn does not apply to degermed cracked corn. (Adopted prior to 1923.)

6. Resolved that this Association go on record as condemning the practice of packing feedings stuffs in bags containing 99 pounds net and billing and charging for 100 pounds net. (Adopted 1923.)

7. Whereas, Linseed Oil Meal is sold more or less on the basis of the protein content, as in the case of cottonseed meal, therefore,

Be it Resolved, that the percentage of protein should be prefixed to linseed cake or meal, as is done with cottonseed meal, for example 34 per cent Protein Linseed Meal. (Adopted 1923.)

8. Resolved that it is the sense of this Association that no product sold under a trade or proprietary name be recognized for the purpose of formulating definitions, standards, etc. (Adopted 1927.)

9. Resolved that this Association go on record as condemning the use of the word vitamin in a brand name, and as opposing the acceptance of registration of feeds with this word in the brand name. (Adopted 1929.)

10. Resolved: (a) That it is the sense of this Association that the names of feed materials or their combinations must not be misleading as to the kind, character and nature of the material or materials.

(b) That the name of each feed material should be stated in its simplest form and in the common English term, if such term exists, omitting all superflous or ambiguous words.

(c) That if a descriptive name is used, the material must correspond thereto. (Adopted 1930.)

11. Resolved that this Association go on record as disapproving any use of artificial colors in the manufacture of feedstuffs. (Adopted 1931.)

12. Resolved that this Association go on record as condemning the use of any contraction of the word "vitamin," or any word suggesting vitamin in a brand name, and as opposing the acceptance of registrations of feeds under names which are in conflict with this resolution. (Adopted 1932.)

13. Resolved that any material sold primarily as a vitamin D supplement for poultry shall be labeled with a minimum guarantee of anti-rachitic potency, specifying the minimum percentage level at which normal calcification is produced, according to the tentative method of analysis as adopted by the Association of Official Agricultural Chemists. (Adopted 1933.)

14. Resolved that all tentative definitions should not be used until adopted as official, unless specified action of the Association is taken. (Adopted 1933.)

Table 4.—Estimated Sales of Commercial Feeding Stuffs in Indiana

KIND OF FEED	Estimated Tons			Estimated Retail Values, Dollars	
	1931	1932	1933	1932	1933
Alfalfa meal and leaf meal	3,906	2,906	3,125	86,599	89,688
Animal by-products (Tankage, meat scraps, etc.)	32,719	35,656	38,531	1,030,458	1,392,896
Brewers', distillers' and yeast dried grains	63	94	1,750	1,880	40,513
Condimental poultry and stock feeds*	1,156	594	625	63,855	90,625
Corn feed meal	1,031	750	1,313	13,725	29,674
Corn germ meal	563	219	188	3,942	4,794
Corn gluten meal and feed	781	1,313	1,969	22,846	56,313
Corn and oats chop and miscellaneous chops	2,781	2,563	3,219	47,928	72,749
Cottonseed meal	6,750	5,563	5,875	126,836	150,988
Dried buttermilk, dried skimmed milk, condensed, etc.	8,813	6,531	8,375	484,600	798,137
Hominy meal and hominy feed	16,188	2,750	28,000	42,900	649,600
Linseed oil meal	4,938	3,656	3,782	119,186	126,697
Mill by-products—wheat bran, middlings, rye feeds, etc. with and without screenings	84,719	69,781	94,438	1,221,168	2,167,352
Mineral feeds	5,062	3,063	3,719	169,078	245,454
Oat meal by-products—oat shorts, oat hulls, oat middlings, oat groats, etc.	1,625	719	1,313	11,504	27,967
Poultry scratch feed—with and without grit	19,187	14,375	14,938	391,000	448,140
Poultry mash	88,344	72,125	82,938	2,322,425	2,952,593
Proprietary feeds—total ready mixed	39,905	18,782	24,188	586,447	925,697
Cattle and dairy feeds†	23,719	10,563	12,906	273,582	362,659
Hog and pig meals†	10,687	5,438	7,406	180,542	294,018
Horse and mule feeds†	2,281	750	719	17,925	18,478
Small animal and pet feeds (rabbit, dog, etc.)†	2,437	1,656	2,656	93,398	220,182
Calf meals†	781	375	438	21,000	28,470
Sheep feeds†	....	....	63	....	1,890
Soybean oil meal	2,281	2,000	938	48,200	26,545
Miscellaneous—beet pulp, rice bran, processed garbage, cocoanut oil meal, kelp, peanut oil meal, etc.	1,313	1,469	3,094	58,466	77,350
Totals‡	322,125	244,909	322,318	6,853,043	10,373,772

*Not all condimental feeds come under the law.

†Not included in total.

‡Does not include feeds registered under annual registration fee.

Table 5.—Summary of the Annual Tonnage and Expenditures for Commercial Feeding Stuffs Since 1911

YEAR	1911	1912	1913	1914	1915	1916
Estimated sales, tons	179,000	196,752	217,689	271,751	270,339	317,664
Estimated retail value, dollars	5,056,906	6,371,571	6,406,645	8,461,751	8,221,684	10,316,516
YEAR	1917	1918	1919	1920	1921	1922
Estimated sales, tons	379,152	439,152	506,958	390,078	283,256	340,197
Estimated retail value, dollars	21,700,101	26,717,086	33,013,463	27,014,049	11,716,745	14,244,175
YEAR	1923	1924	1925	1926	1927	1928
Estimated sales, tons	389,971	419,441	408,713	337,298	440,534	524,476
Estimated retail value, dollars	18,026,682	19,720,313	20,945,026	16,837,512	24,173,605	29,818,566
YEAR		1929	1930	1931	1932	1933
Estimated sales, tons		498,887	512,096	322,125	244,909	322,318
Estimated retail value, dollars		26,491,777	24,293,652	11,939,153	6,853,043	10,373,772

Table 6.—Summary of Feed Inspection January 1, 1933 to December 31, 1933

NAME AND ADDRESS OF MANUFACTURER	Number of Samples Examined	Number of Samples Passed	Number of Samples Not Passed	Number of Samples Not Tagged
A & B Coal & Feed Co., Marion, Ind.	2	1	1	
Acme-Evans Co., Indianapolis, Ind.	8	7		4
Acme Milling Co., Aurora, Ind.	5	3	1	2
Akron-Urbana Mills, Inc., Urbana, Ohio	2	2		2
Allen, J. P., Farmersburg, Ind.	1	1		
Allied Mills, Inc., Chicago, Ill.	39	37	2	9
American Maize Products Co., New York, N. Y.	3	3		
American Mineral Co., New Castle, Ind.	6		6	
American National Mineral Corp., Hillsboro, Ind.	19	14	5	
American Soya Products Corp., Evansville, Ind.	1		1	
Amo Milling Co., Amo, Ind.	3	1	2	
Amos Pig Grow Tonic & Food Co., Kokomo, Ind.	1	1		
Anchor Feed Store, Kokomo, Ind.	1	1		
Anderson, C. P., Frankfort, Ind.	1	1		
Anderson Hatchery, Mable, Noblesville, Ind.	6	6		
Anderson Mercantile Exchange, Inc., Anderson, Ind.	3	3		
Angola Reduction Co., Angola, Ind.	1	1		
Anheuser-Busch, Inc., St. Louis, Mo.	1	1		
Arcady Farms Milling Co., Chicago, Ill.	6	6		
Archer-Daniels-Midland Co., Minneapolis, Minn.	4	4		1
Armour & Company, Chicago, Ill.	12	11	1	1
Armour Creameries, Chicago, Ill.	5	4	1	2
Attica Electric Hatchery, Attica, Ind.	1	1		
Aubrey & Co., Louisville, Ky.	8	7	1	1
Auburn Roller Mills, Auburn, Ind.	2	2		
Augusta Milling Co., Augusta, Mich.	1			1
Aukerman Bros. Co., Peru, Ind.	9	8	1	
Aurora Farmers Supply Co., Aurora, Ind.	1	1		
Aurora Flour & Feed Co., Aurora, Ind.	4	4		
Austin Dog Bread & Animal Food Co., Chelsea, Mass.	1	1		1
Aviston Milling Co., East St. Louis, Ill.	1			1
Badenoch Co., J. J., Chicago, Ill.	1		1	1
Bahler Feed Co., Remington, Ind.	3	3		
Baker, Jesse I., Hagerstown, Ind.	1	1		
Balanced Pet Food Co., Chicago, Ill.	1		1	1
Baldwin & Co., J. Jay, Crown Point, Ind.	2	2		
Ballard Packing Co., Marion, Ind.	3	3		
Balting & Goble, Morristown, Ind.	2	2		
Barr Grain Co., O. L., Bicknell, Ind.	3	2	1	1
Bashore Feed Store & Hatchery, Silver Lake, Ind.	3	3		
Bashore Feed Store & Hatchery, Warsaw, Ind.	5	5		
Batesville Fertilizer Co., Batesville, Ind.	1	1		
Batesville Roller Mills, Batesville, Ind.	1	1		
Battle Creek Dog Food Co., Battle Creek, Mich.	9	6		5
Bausback Fertilizer Co., Shelbyville, Ind.	2	2		
Beck Grain & Feed Co., Shelbyville, Ind.	7	6	1	1
Bee Line Feed Supply, LaPorte, Ind.	2	2		

Table 6.—Continued

NAME AND ADDRESS OF MANUFACTURER	Number of Samples Examined	Number of Samples Passed	Number of Samples Not Passed	Number of Samples Not Tagged
Bellman & Bortz, LaPorte, Ind.	6	6		
Benz Co., Inc., The, Batesville, Ind.	1	1		
Berne Equity Exchange Co., Berne, Ind.	1	1		
Bernet, Craft & Kaufman Milling Co., St. Louis, Mo.	1			1
Bickel's Feed & Supply Store, Corydon, Ind.	3	3		
Big Four Elevator Co., Mattoon, Ill.	2	1	1	2
Bisbee Linseed Co., Chicago Heights, Ill.	3	3		1
Blair Milling Co., The, Atchison, Kans.	2	2		
Blanton Feed Store, Jasonville, Ind.	3	2	1	
Blanton Mills, Clayton, Ind.	3	1	2	
Blatchford Calf Meal Co., Waukegan, Ill.	1	1		
Blish Milling Co., Seymour, Ind.	9	8	1	
Bloomingdale Milling Co., Bloomingdale, Ind.	2	2		
Bloomington Packing Co., Bloomington, Ind.	7	7		
Blue River Reduction Co., Edinburg Ind.	3	3		
Bluff City Flour & Feed Mill, Rockport, Ind.	1	1		
Bluffton Milling Co., Bluffton, Ind.	3	3		
Board of Sanitary Commissioners, Indianapolis, Ind.	2	2		
Boldt Milling Co., Waynetown, Ind.	6	6		1
Boonville Elevator Co., Boonville, Ind.	1	1		
Boonville Milling Co., Boonville, Ind.	4	4		
Bourbon Elevator & Feed Mill, Bourbon, Ind.	1	1		
Bowling Green Milling Co., Bowling Green, Ind.	6	4	2	
Bowman Dairy Co., Chicago, Ill.	1	1		1
Branch Grain & Seed Co., Martinsville, Ind.	1	1		
Brazil Flour & Feed Co., Brazil, Ind.	4	3	1	
Brazil Tankage Co., Brazil, Ind.	2	2		
Bremen Custom Grinding Co., Bremen, Ind.	1	1		
Bremen Roller Mills, Bremen, Ind.	1	1		
Brewer Milling Co., Gosport, Ind.	2	2		
Bridgeton Milling Co., Bridgeton, Ind.	1	1		
Brizius Co., The Chas. W., Evansville, Ind.	10	10		
Brode Corp., F. W., Memphis, Tenn.	1	1		1
Brook Feed Mill, Brook, Ind.	1	1		
Brown Bros., Inc., Indianapolis, Ind.	2		2	
Brown Ice & Fuel Co., W. Terre Haute, Ind.	3	3		
Browns Valley Grain Co., Browns Valley, Ind.	1	1		
Brundage, A. J., New Paris, Ind.	1	1		1
Buchsieb, Inc., E. G., Columbus, Ohio	5	3	2	
Buckeye Cereal Co., Massillon, Ohio	1		1	1
Buhner Fertilizer Co., Seymour, Ind.	9	7	2	1
Bundy Bros., Medora, Ind.	3	3		2
Bundy Bros. Mill Co., Vallonia, Ind.	4	4		
Burket Elevator Co., Burket, Ind.	2	2		
Burnettsville Elevator Co., Burnettsville, Ind.	2	2		
Busenbark Grain Co., Crawfordsville, Ind.	5	4	1	
Butler Milling Co., Butler, Ind.	3	3		
Butt & Co., L. T., Center Point, Ind.	6	4	2	
Cadick Milling Co., Grand View, Ind.	4	2	2	
Cairo Meal & Cake Co., Cairo, Ill.	20	19	1	3
Camden Elevator Co., Camden, Ind.	2	2		
Campbell & Ogles, Greencastle, Ind.	1	1		
Cannon Valley Milling Co., Minneapolis, Minn.	3	3		
Capitol Flour Mills, Inc., Minneapolis, Minn.	1	1		
Caple Co., The A. B., Toledo, Ohio	1	1		1
Carmer Co., J. M., Fort Wayne, Ind.	1	1		
Carney Hatcheries, Inc., Shelbyville, Ind.	5	5		
Cayuga Milling Co., Cayuga, Ind.	2	2		
Central Chemical Corporation, Inc., Baltimore, Md.	1	1		1
Central Elevator Co., St. Louis, Mo.	1	1		
Central States Elevator Corp., Montezuma, Ind.	1	1		
Chapman-Doake Co., The, Decatur, Ill.	19	18	1	
Chappel Bros., Inc., Rockford, Ill.	3	3		1
Charlestown Milling Co., Charlestown, Ind.	2	2		
City Feed Store, Plymouth, Ind.	1	1		
City Mills, Rising Sun, Ind.	1			1
City Roller Mill, Vevay, Ind.	1	1		1
Clawson & Sons, Independence, Ind.	1		1	
Clay County Farm Bureau Cooperative Association, Inc., Brazil, Ind.	5	3	2	
Claypool Feed Store, Claypool, Ind.	3	3		
Clayton Feed Store, Clayton, Ind.	1	1		
Clendenin & Co., Richmond, Ind.	2		2	
Clinton Corn Syrup Refining Co., Clinton, Iowa	1			1
Clover Leaf Creameries, Inc., Decatur, Ind.	1	1		1
Cloverleaf Mills, Kokomo, Ind.	2	2		
Coal City Milling Co., Coal City, Ind.	1	1		
Coble, L. R., Delphi, Ind.	1	1		1
Cohee & Clark, Kempton, Ind.	1	1		

Table 6.—Continued

Name and Address of Manufacturer	Number of Samples Examined	Number of Samples Passed	Number of Samples Not Passed	Number of Samples Not Tagged
Colby Milling Co., Dowagiac, Mich.	3			3
Collis Products Co., St. Paul, Minn.	1	1		1
Columbus Milling Co., Columbus, Ind.	12	9	3	1
Columbus Sanitary Reduction Co., Columbus, Ind.	3	3		
Combs, Gilbert, Bloomfield, Ind.	2	2		
Community Mill, Edinburg, Ind.	2	1		1
Conders Feed Store, LaPorte, Ind.	1	1		
Conkey Co., G. E., Cleveland, Ohio	1	1		1
Consolidated Products Co., Danville, Ill.	19	8	9	4
Consumers Import Co., New York, N. Y.	1		1	
Consumers Supply Co., Fulton, Ind.	1	1		
Cooper Co., O. A., Humbolt, Neb.	1		1	
Cooperative Elevator Co., Winamac, Ind.	1	1		
Corn Belt Feed Co., Boswell, Ind.	1	1		
Corn Products Refining Co., New York, N. Y.	2	2		1
Cottrell Bros., Terre Haute, Ind.	9	8	1	
Couch & Sons, Geo., New Harmony, Ind.	1		1	
Cowan Coal & Feed Co., Cowan, Ind.	1	1		1
Crabbs Reynolds Taylor Co., Lafayette, Ind.	10	10		
Culver City Grain & Coal Co., Culver, Ind.	3	3		
Cut Rate Feed Store, Sullivan, Ind.	2	1	1	
Cynthiana Reduction Plant, Cynthiana, Ind.	1		1	
Daniel Bros., Inc., Columbia City, Ind.	2	2		
Danville Electric Hatchery, Danville, Ind.	1	1		
Danville Rendering Co., Danville, Ill.	1		1	
Darling & Company, Chicago, Ill.	6	6		1
Daviess County Farm Bureau, Washington, Ind.	7	6	1	
Davis, G. G., Tipton, Ind.	1	1		
Davis Elevators, G. G., Atlanta, Ind.	3	3		
Davis Elevators, G. G., Goldsmith, Ind.	1	1		1
Davis, S. P., Little Rock, Ark.	7	6	1	1
Davis Fertilizer Co., Plainfield, Ind.	1	1		
Decatur County Cooperative Co., Greensburg, Ind.	6	6		
Decatur Milling Co., Decatur, Ill.	11	11		
Decatur Rendering Plant, Decatur, Ind.	2		2	
Deck, James H., Roann, Ind.	2	2		
Decker Packing Co., The Val, Piqua, Ohio	1	1		
Dekalb Tanking Co., Auburn, Ind.	2	2		
Delphi Hatchery, Delphi, Ind.	1	1		
Denver Alfalfa Milling & Products Co., Lamar, Colo.	4	4		4
Depoy Feed Mill, Ben, Muncie, Ind.	7	7		
Deshler Alfalfa Milling Co., Deshler, Ohio	2		2	
Dewey Bros. Co., The, Blanchester, Ohio	1			1
Diamond Feed Mill, Cedar Grove, Ind.	2	2		1
Dickey, H., Parker, Ind.	1	1		
Dickinson & Co., The Albert, Chicago, Ill.	4	4		
Donahue-Stratton Co., Milwaukee, Wis.	1			1
Dry Milk Products Co., Columbus, Ohio	1	1		
Dryfus Packing & Provision Co., Lafayette, Ind.	3	2	1	
Dubois County Farm Bureau, Inc., Huntingburg, Ind.	1		1	
Dutschke Milling Co., Cannelton, Ind.	4	3	1	1
Dwiggins & Sons, Waynetown, Ind.	4	4		
Early & Daniel Co., Cincinnati, Ohio	13	12	1	3
Eberts & Brother, North Vernon, Ind.	3	3		
Eberts Grain Co., Louisville, Ky.	9	9		
Eckhart Milling Co., B. A., Chicago, Ill.	1	1		
Economy Feed Co., Princeton, Ind.	2	2		
Economy Hog & Cattle Powder Co., Shenandoah, Iowa	1		1	
Edwards & Co., Inc., S. T., Chicago, Ill.	5	3	1	2
Eelsingh & Lugtigheid, Grand Rapids, Mich.	1	1		1
Egloff Milling Co., Vincennes, Ind.	3	3		
Elkhart County Farm Bureau Cooperative, Inc., Goshen, Ind.	2	2		
Elkhart Packing Co., Elkhart, Ind.	4	4		
Emge & Sons, Ft. Branch, Ind.	7	5	2	
Emmert, C. B., Clarksburg, Ind.	1	1		
Engler & Co., W. M., Poneto, Ind.	2	2		
English & Milltown Milling Co., Milltown, Ind.	1	1		
English Milling Co., English, Ind.	4	4		
Enos Grain Co., Morocco, Ind.	2	2		
Erwin, J. R., Daylight, Ind.	4	4		1
Evans Milling Co., Indianapolis, Ind.	11	11		
Ewing Milling Co., Brownstown, Ind.	2	2		
Excelsior Milling Co., Minneapolis, Minn.	2	1	1	1
Fairmount Creamery Co., Omaha, Neb.	3	2	1	3
Farm Bureau Elevator & Supply Co., Crawfordsville, Ind.	12	10	2	
Farm Bureau Mills, Inc., Auburn, Ind.	4	2	2	
Farm Bureau Service, Inc., Columbus, Ind.	8	8		
Farm Bureau Supply Co., Valparaiso, Ind.	2	2		2
Farmers & Merchants Exchange, New Albany, Ind.	4	3	1	

Table 6.—Continued

NAME AND ADDRESS OF MANUFACTURER	Number of Samples Examined	Number of Samples Passed	Number of Samples Not Passed	Number of Samples Not Tagged
Farmers Coal & Feed Co., Goshen, Ind.	2	2		
Farmers Cooperative Co., Cicero, Ind.	3	3		
Farmers Cooperative Co., Lucerne, Ind.	1	1		
Farmers Cooperative Co., Monterey, Ind.	1	1		
Farmers Cooperative Company of Selma, Selma, Ind.	1	1		
Farmers Cooperative Co., Sheridan, Ind.	4	4		
Farmers Cooperative Co., Shideler, Ind.	1	1		
Farmers Cooperative Co., Southport, Ind.	3	3		
Farmers Cooperative Co., Wolcott, Ind.	1	1		
Farmers Cooperative Co., Yorktown, Ind.	3	1	2	
Farmers Cooperative Elevator, Winamac, Ind.	3	3		
Farmers Cooperative Elevator Co., Seymour, Ind.	5	5		2
Farmers Cooperative Milling Co., St. Joe, Ind.	1	1		
Farmers Elevator Co., South Whitley, Ind.	4	4		
Farmers Feed & Coal Co., Bloomington, Ind.	3	3		
Farmers Feed & Grain Co., Darlington, Ind.	2	2		
Farmers Feed Store, Dunkirk, Ind.	1	1		
Farmers Feed Store, Peru, Ind.	3	3		
Farmers Grain & Lumber Co., South Wanatah, Ind.	1	1		
Farmers Grain & Supply Co., Windfall, Ind.	2	1	1	
Farmers Grain Co., Pershing, Ind.	1	1		
Farmers Mill, The, Huntingburg, Ind.	2	2		
Farmers Mill & Elevator Co., Columbia City, Ind.	4	4		
Farmers Service Station, Corydon, Ind.	1	1		
Farmers Supply Co., Boston, Ind.	2	2		1
Farm Products Association, Indianapolis, Ind.	5	5		
Feed Dealers Exchange, Argos, Ind.	7	7		4
Feed Mills, The, Cambridge City, Ind.	1	1		
Fehr Brewing Co., Frank, Louisville, Ky.	1	1		1
Fernando Milling & Supply Co., Los Angeles, Calif.	1			1
Finch, O. T., Portland, Ind.	1	1		
Finch & Co., E. P., Hillsboro, Ind.	4	4		
Finch & Weisel Elevator Co., Portland, Ind.	1	1		
Fischer Packing Company, Inc., Henry, Louisville, Ky.	4	4		1
Fisher & Son, W. F., Maplewood, Ind.	1	1		
Fishers Grain Co., Fishers, Ind.	5	4	1	
Fisher-Lambert Feed & Coal Co., Anderson, Ind.	3	3		
Fohl & Fohl, Cedar Grove, Ind.	1	1		1
Forest Park Mills, North Terre Haute, Ind.	2	2		
Fort Dodge Serum Co., Fort Dodge, Iowa	1	1		
Fortville Grain Co., Fortville, Ind.	1	1		
Foster-Kendall Co., Carmel, Ind.	12	11		4
Frankfort Electric Hatchery, Frankfort, Ind.	3	3		
Frankfort Rendering Co., Frankfort, Ind.	11	10	1	
Franklin Grain Co., Franklin, Ind.	3	2	1	
Freese's & Sons, Geo., Nappanee, Ind.	3	3		
French Lick Milling Co., French Lick, Ind.	2	2		
Fretz Feed Co., R. C., Waterloo, Ind.	5	5		
Friend, R. T., Lafayette, Ind.	1	1		
Fuhrer-Ford Milling Co., Mt. Vernon, Ind.	2	2		
Fulks & Sons, Willard, Columbus, Ind.	1	1		
Funk Brothers Seed Co., Bloomington, Ill.	1	1		
Fyke Milling Co., Kendallville, Ind.	5	5		
Gaines Food Co., Sherburne, N. Y.	1	1		1
Garland Milling Co., Greensburg, Ind.	3	3		
Garten Feed Co., Indianapolis, Ind.	6	3	3	3
Geabes Bros., Clay City, Ind.	5	5		
Geneva Milling & Grain Co., Geneva, Ind.	1		1	
Germantown Rendering Co., Germantown, Ohio	1		1	
Gibson County Shipping Association, Princeton, Ind.	2	1	1	
Goeke Sons, Edward F., Evansville, Ind.	32	31	1	2
Goldblatt Bros., Chicago, Ill.	2	1	1	2
Goldreich Fertilizer Co., Marion, Ind.	4	4		
Goodrich Bros. Co., Winchester, Ind.	23	21	2	1
Grabill Grain & Milling Co., Grabill, Ind.	2	1	1	
Graft, C. V., Winchester, Ind.	4	2	2	
Graham Farms, Washington, Ind.	16	13	3	
Granger Feed Mill, Granger, Ind.	4	4		
Grant Coal & Feed Co., Marion, Ind.	3	2	1	
Great Atlantic & Pacific Tea Co., The, New York, N. Y.	1	1		
Greene County Farm Bureau Cooperative Association, Linton, Ind.	4	3	1	
Greene Coal & Supply Co., H. O., Goshen, Ind.	1	1		
Greenfield Fertilizer Co., Greenfield, Ind.	2	2		
Grimes & Finch, Portland, Ind.	1	1		
Gust, E. G., Westville, Ind.	1	1		
Gutwein Milling Co., Francesville, Ind.	6	6		
Habig Bros., Indianapolis, Ind.	2	2		2
Hagerman & Co., H. J., South Bend, Ind.	6	5	1	
Haines-Thompson Milling Co., Crawfordsville, Ind.	2	2		

Table 6.—Continued

NAME AND ADDRESS OF MANUFACTURER	Number of Samples Examined	Number of Samples Passed	Number of Samples Not Passed	Number of Samples Not Tagged
Haldeman-Baum Co., Akron, Ind.	2	2		
Hales & Hunter Co., Chicago, Ill.	5	4		4
Hallawells Feed Store, North Vernon, Ind.	5	5		
Hamlet Grain & Feed Co., Hamlet, Ind.	1	1		
Hammel Milling Co., Freemont, Ind.	1	1		
Hammond Brooder Specialties, Inc.; Hammond, Ind.	1	1		1
Hancock County Farm Bureau Cooperative Association, Inc., Greenfield, Ind.	3	3		2
Hansel, C. D., North Terre Haute, Ind.	2	2		
Hardy & Son, M. N., Scottsburg, Ind.	1	1		
Hartford City Milling Co., Hartford City, Ind.	3	2	1	
Hartz Milling Co., Chrisney, Ind.	1	1		
Hauser, C. M., New Carlisle, Ind.	7	2	5	
Hay's Branch Mills, Dillsboro, Ind.	2	2		
Hayes, W. E., Kokomo, Ind.	3	3		
Hayes & Sons, Charles M., Oakland City, Ind.	1	1		
Haynes Milling Co., Portland, Ind.	6	6		
Haysville Milling Co., Haysville, Ind.	1	1		
Hebron Feed Co., Hebron, Ind.	3	3		
Hegers Products Co., St. Paul, Minn.	1			1
Heise Bros., Orleans, Ind.	16	13	3	
Heldt Co., The, Evansville, Ind.	3	3		
Helena Cotton Oil Mill, Helena, Ark.	5	4		1
Henline, M. S., Ossian, Ind.	2	2		
Heppe Co., The, Logansport, Ind.	6	6		
Hirst & Begley Linseed Works, Chicago, Ill.	1	1		1
Holland Mills, The, Holland, Ind.	2	1	1	
Hollingsworth, C. W., Russiaville, Ind.	1	1		
Holser & Co., B. I., Walkerton, Ind.	11	11		
Home Grain Co., LaGrange, Ind.	2	2		
Home Mill & Grain Co., Mt. Vernon, Ind.	4	3	1	
Home Packing & Ice Co., Terre Haute, Ind.	3	3		
Hoosier Abattoir Co., Indianapolis, Ind.	1	1		
Hoosier Mineral Feed Co., Greenwood, Ind.	12	7	5	
Hooton-Davis Co., Lebanon, Ind.	1		1	
Hornung's Mill, Greensburg, Ind.	2	2		
Hoyland Flour Mills Co., Kansas City, Mo.	1	1		1
Hubbard, J. W., Monrovia, Ind.	1	1		
Hughes-Curry Packing Co., Anderson, Ind.	7	6	1	
Humphreys-Godwin Co., Memphis, Tenn.	17	16	1	1
Hunter Packing Co., East St. Louis, Ill.	1	1		1
Huntington Equity Exchange, Huntington, Ind.	4	2	2	1
Huntington Mill Co., Huntington, Ind.	7	6	1	
Hurn Milling Co., W. D., Leavenworth, Ind.	2	2		
Hutchins Bros. Mineral Works, Hillsboro, Ind.	1		1	
Igleheart Bros., Inc., Evansville, Ind.	3	2	1	
Imperial Mills, Cambridge City, Ind.	3	3		
Indiana Dairy Marketing Association, Muncie, Ind.	4	4		
Indiana Farm Bureau Cooperative Association, Inc., Indianapolis, Ind.	118	109	9	6
Indiana Flour & Feed, Muncie, Ind.	6	5	1	
Indiana Hide & Tallow Co., Huntington, Ind.	3	2	1	
Indiana Hide & Tallow Co., South Bend, Ind.	13	11	2	2
Indiana State Milling Co., South Bend, Ind.	4	3	1	
Iroquois Roller Mills, Rensselaer, Ind.	8	8		
Irwin Feed Store & Hatchery, Madison, Ind.	7	7		
Jay Grain Co., Elwood, Ind.	3	3		
Jenner & Sons, W. E., Marengo, Ind.	1	1		
Jennings County Farm Bureau Cooperative Association, Inc., North Vernon, Ind.	3	3		
Jersee Co., The, Minneapolis, Minn.	4	3	1	
Johnson County Farm Bureau Cooperative Association, Inc., Franklin, Ind.	3	3		1
Johnson Feed & Supply Co., Linton, Ind.	1	1		
Johnston & Sons Milling Co., Prairieton, Ind.	2	2		
Jones, Hiram, West Lebanon, Ind.	4	3		1
Jones & Co., J. W., Heltonville, Ind.	1	1		
Jonesville Milling Co., The, Jonesville, Mich.	1	1		
Joslin-Schmidt Corporation, Cincinnati, Ohio	16	13	3	
Kahn Sons Co., The E., Cincinnati, Ohio	3	2	1	
Kaiser, W. F., Harrison, Ind.	3	3		
Kalo Co., The, Quincy, Ill.	1	1		1
Kansas Flour Mills Co., Wichita, Kans.	1	1		1
Karsell Co., Inc., The, Bloomington, Ind.	7	6	1	
Kasch, Louis, Logansport, Ind.	2	2		
Kelco Co., Chicago, Ill.	1	1		
Kell, R. C., Oakland City, Ind.	3	2	1	
Kellogg & Sons, Inc., Spencer, Buffalo, N. Y.	1	1		

Table 6.—Continued

NAME AND ADDRESS OF MANUFACTURER	Number of Samples Examined	Number of Samples Passed	Number of Samples Not Passed	Number of Samples Not Tagged
Kentucky Chemical Manufacturing Co., Covington, Ky.	2	2		
Kiefer Feed & Supply Co., Elwood, Ind.	7	7		
Kiest Milling Co., Knox, Ind.	3	3		
Kingan & Co., Indianapolis, Ind.	6	4	2	
King Elevator Co., Wabash, Ind.	1	1		
King Midas Mill Co., Minneapolis, Minn.	5	5		2
Kingsbury & Co., Indianapolis, Ind.	1	1		
Klondike Milling Co., Danville, Ind.	2	2		
Knapp, C. E., South Bend, Ind.	2	2		
Knappen Co., Augusta, Mich.	1	1		1
Knecht Milling Co., Hartford City, Ind.	1	1		
Knightstown Grain Co., Knightstown, Ind.	6	4	2	
Knox County Farm Bureau, Vincennes, Ind.	1	1		1
Kokomo Electric Hatchery, Kokomo, Ind.	1	1		
Kokomo Phosphorus Co., Kokomo, Ind.	2	2		
Kopp's Feed Store, Rockport, Ind.	1	1		
Koschnick & Co., Indianapolis, Ind.	5	4	1	
Krause Milling Co., Chas. A., Milwaukee, Wis.	8	8		2
Kuhner Packing Co., Muncie, Ind.	11	10	1	
Lafayette Cooperative Elevator Co., Lafayette, Ind.	4	4		
Lafayette Milling Co., Lafayette, Ind.	8	4	4	
Lagrange County Farm Bureau, Lagrange, Ind.	1	1		
Lake and Reagan Grain Co., Manson, Ind.	2	2		
Lake County Oil Mill, Tiptonville, Tenn.	1	1		
Lake Milling Co., Richland, Ind.	2		2	
Lanesville Milling Co., Lanesville, Ind.	1	1		
LaPorte County Hatcheries, LaPorte, Ind.	6	6		
Larrowe Milling Co., Detroit, Mich.	2	2		1
Lash Flour Mills, Fred B., Farmersburg, Ind.	1	1		
Lebanon Electric Hatchery, Lebanon, Ind.	1	1		
Lebanon Grain Co., Lebanon, Ind.	1	1		
Lemon Milling Co., Bedford, Ind.	2	2		
Levy Grain Co., Ben, New Haven, Ind.	2	2		
Liberty Mills, Liberty, Ind.	5	5		1
Liberty Rendering Co., Liberty, Ind.	1	1		
Lima Elevator Co., Howe, Ind.	3	3		
Lingeman, Adams & Co., Brownsburg, Ind.	3	2		1
Linkhart & Son, North Vernon, Ind.	3	3		
Lizton Grain & Lumber Co., Lizton, Ind.	1	1		
Logansport Elevator Co., Logansport, Ind.	2	2		
Loughry Bros. Milling & Grain Co., Monticello, Ind.	1	1		
Louisville Cereal Mill Co., Louisville, Ky.	1	1		
Louisville Feed Mills, Louisville, Ky.	1	1		
Louisville Milling Co., Louisville, Ky.	1		1	
Louisville Provision Co., Louisville, Ky.	1	1		1
Lovitt & Co., L. B., Memphis, Tenn.	8	8		1
Lower, Alton, Pierceton, Ind.	1	1		
Lyon & Greenleaf Co., Ligonier, Ind.	1	1		1
McCarty Seed Co., J. A., Evansville, Ind.	27	27		
McClaren's Feed Store & Hatchery, Corydon, Ind.	1	1		
McComas & Pritchard, Mohawk, Ind.	6	4	2	1
McKnight, J. M., Noblesville, Ind., Rte. 1	2	2		1
MacDonald, C. L., Marion, Ind., Rte. 5	4	4		
Madison Glue Corp., Madison, Ind.	5	5		1
Maegerlein, E. S., Patricksburg, Ind.	2	1	1	
Mahan, J. P., Morristown, Ind.	1	1		
Major Bros. Packing Co., Mishawaka, Ind.	8	8		
Majot Mills, E. C., Michigan City, Ind.	7	7		
Maplewood Turkey Farm, Coal City, Ind.	1	1		
Marengo Milling Co., Marengo, Ind.	2	2		
Marianna Sales Co., Memphis, Tenn.	7	7		1
Marlatt Feed Store, Attica, Ind.	1	1		
Marquart, Bert, New Haven, Ind.	1			1
Martin, John D., Lafayette, Ind.	14	14		
Martin Grain Co., A. B., LaFontaine, Ind.	1	1		
Martins Feed & Supply Store, Palmyra, Ind.	1	1		
Martinsville Milling Co., Martinsville, Ind.	4	3	1	
Mayer Grain Co., South Whitley, Ind.	6	6		
Meat Products Co., The, Cleveland, Ohio	1		1	
Medaryville Cooperative Co., Medaryville, Ind.	1	1		
Meloy, W. A., Argos, Ind.	2	1	1	
Menaugh, Will H., Osceola, Ind.	1		1	1
Merchants Creamery Co., Inc., Cincinnati, Ohio	4	1	3	
Merkert, John F., Leiters Ford, Ind.	1	1		1
Metamora Roller Mills, Metamora, Ind.	2	2		
Mexico Roller Mills, Mexico, Ind.	4	4		1

Table 6.—Continued

Name and Address of Manufacturer	Number of Samples Examined	Number of Samples Passed	Number of Samples Not Passed	Number of Samples Not Tagged
Middlebury Milling Co., Middlebury, Ind.	2	2		
Middletown Grain Co., Middletown, Ind.	1	1		
Midland Creameries, Inc., Greenville, Ohio	1	1		1
Midwest Mineral Co., Greenwood, Ind.	5		5	
Miesenhelder Bros., Palestine, Ill.	1	1		
Milford Grain & Milling Co., Milford, Ind.	2	2		
Miller, A. J., Montpelier, Ind.	2	2		
Miller, Fred, College Corner, Ind.	4	4		
Miller & Thomas, Jonesboro, Ind.	3	1	2	
Miller Cereal Mills, Omaha, Nebraska	8	8		
Miller Grain Co., Bainbridge, Ind.	10	10		
Milltown Concrete Co., Milltown, Ind.	1	1		
Mishawaka Grain & Coal Co., Mishawaka, Ind.	5	5		
Missouri Cotton Oil Co., Cairo, Ill.	8	8		1
Moellering's Flour Mill, Ft. Wayne, Ind.	5	5		
Monroeville Equity Union Exchange, Monroeville, Ind.	1	1		
Montana Horse Products Co., Butte, Mont.	1	1		
Mooresville Milling Co., Mooresville, Ind.	1	1		
Mooring, Ward, Bryan, Texas	3	3		1
Moorman Manufacturing Co., Quincy, Ill.	1	1		
Morgan, Frank, Plainville, Ind.	2	2		
Morgan, Reese J., Jonesboro, Ind.	1		1	
Morgan County Farm Bureau Cooperative Association, Inc., Martinsville, Ind.	1	1		
Morris & Co., Chicago, Ill.	12	10	2	
Morrison-Tegarden Co., Saratoga, Ind.	1	1		
Moutoux, P. E., Evansville, Ind.	1	1		
Muff Grain & Coal Co., Liberty, Ind.	1	1		1
Mulberry Grain Co., Mulberry, Ind.	2	2		
Muncie Tanking Co., Muncie, Ind.	1		1	
Murphy Products Co., Burlington, Wis.	11	10	1	
Myers & Co., J. M., Chili, Ind.	2	2		
Myers & Smith, Chili, Ind.	7	7		
Naber & Co., Charles F., Alexandria, Ind.	3	1	1	1
Naber & Co., Charles F., Fairmount, Ind.	5	4	1	
Nading Grain Co., William, Greensburg, Ind.	2	2		
Nagel Milling Co., Cincinnati, Ohio	1			1
Nappanee Milling Co., Nappanee, Ind.	4	4		
National Biscuit Co., New York, N. Y.	1	1		
National Ice & Products Co., New Albany, Ind.	2	2		
National Live Stock Remedy Co., Chicago, Ill.	3	1	2	
National Milling Co., Toledo, Ohio	1	1		
Nebraska Consolidated Mills Co., Omaha, Neb.	1	1		1
Nedderman, Roy, Sunman, Ind.	2	2		
New Albany Milling Co., New Albany, Ind.	2	2		
Newby, A. T., Fredericksburg, Ind.	1	1		
New Castle Hatchery, Inc., New Castle, Ind.	1	1		
New Century Co., Chicago, Ill.	2	2		2
New Haven-Thurman Equity Exchange, New Haven, Ind.	1	1		1
New Palestine Elevator Co., New Palestine, Ind.	1	1		
New Paris Creamery Co., New Paris, Ind.	3	3		
New Paris Elevator Co., New Paris, Ohio	1	1		
New Richmond Roller Mills Co., New Richmond, Wis.	3	2		1
New Ross Grain & Lumber Co., New Ross, Ind.	3	3		
Newsome Feed & Grain Co., Pittsburgh, Pa.	5	5		
New Ulm Roller Mill Co., New Ulm, Minn.	2	2		
Niles Creamery Co., Niles, Mich.	1	1		
Noblesville Milling Co., Noblesville, Ind.	7	6	1	
Nora Grain & Coal Co., Nora, Ind.	7	7		
Norman & Roberts, G. M., Bedford, Ind.	3	2	1	
Northern Illinois Cereal Co., Lockport, Ill.	3	3		2
Northern Indiana Cooperative Association, Mentone, Ind.	6	6		
North Madison Coal Co., North Madison, Ind.	2	2		
North Manchester Fertilizer Co., North Manchester, Ind.	3	3		
Northwestern Yeast Co., Chicago, Ill.	1	1		
Nowak Milling Corporation, Hammond, Ind.	8	7	1	1
Nunn & Sons Milling Co., Chas., Evansville, Ind.	19	16	3	
Nutrena Mills, Inc., Kansas City, Kans.	5	3	2	
Oakland City Milling Co., Oakland City, Ind.	5	2	3	
Odon Milling Co., Odon, Ind.	18	16	2	
Ohio Valley Seed Co., Evansville, Ind.	2	2		
Old Trusty Dog Food Co., Needham Heights, Mass.	1			1
Orestes Fertilizer Co., Anderson, Ind.	3	2	1	
Owen Farmers Supply Co., Inc., Spencer, Ind.	1	1		
Pala-Tono Feed & Cereal Mill, Jonesboro, Ind.	1		1	
Palestine Mills, Palestine, Ind.	5	4	1	

Table 6.—Continued

Name and Address of Manufacturer	Number of Samples Examined	Number of Samples Passed	Number of Samples Not Passed	Number of Samples Not Tagged
Paoli Milling Co., Paoli, Ind.	4	3	1	
Park, Wm. H., Bargersville, Ind.	1	1		
Parke County Farm Bureau, Inc., Rockville, Ind.	1	1		
Paxson, C. E., Elkhart, Ind.	1	1		
Pearl Packing Co., Madison, Ind.	2		2	
Pecos Valley Alfalfa Mill Co., Hagerman, N. Mex.	2	2		1
Penick & Ford Ltd., Inc., Cedar Rapids, Iowa	4	4		
Penman Bros., Brazil, Ind.	1	1		
Pennington Feed Store, Bloomington, Ind.	3	3		
Peoples Cooperative Feed Store, Wolcott, Ind.	2	2		
Perfection Foods Co., Battle Creek, Mich.	3	1	2	1
Perry County Farm Bureau, Tell City, Ind.	1		1	
Peru Grain & Coal Co., Peru, Ind.	9	9		
Petersburg Milling & Grain Co., Petersburg, Ind.	2	2		
Phillips, J. C., Star City, Ind.	1	1		
Pho-So-Ash Products Corp., Kendallville, Ind.	2	1	1	
Pickaway Dairy Co., Circleville, Ohio	1	1		
Piel Bros. Starch Co., Indianapolis, Ind.	1	1		
Pierson, Chas. K., Muncie, Ind.	1	1		
Pilsitz, John, Hobart, Ind., Rte. 2	5	1		4
Pioneer Elevator Co., Worthington, Ind.	1	1		
Plainville Mill & Elevator, Plainville, Ind.	4	4		1
Plymouth Fertilizer Co., Plymouth, Ind., Rte. 1	1	1		
Poland Roller Mills, Poland, Ind.	1		1	
Polk Miller Products Co., Richmond, Va.	1	1		
Polk Sanitary Milk Co., Indianapolis, Ind.	3	2		1
Porter County Farm Bureau Supply Department, Valparaiso, Ind.	1		1	
Portland Fertilizer Plant, Portland, Ind.	1	1		
Posey Seed & Feed Co., Mt. Vernon, Ind.	4	2	1	1
Poseyville Grain & Feed Co., Poseyville, Ind.	9	8	1	
Postum Company, Inc., Battle Creek, Mich.	4	4		2
Prairie Creek Mill, Prairie Creek, Ind.	1	1		
Pratt Food Co., Hammond, Ind.	5	4	1	1
Producers Creamery, Marion, Ind.	2	2		
Purcell Seed Co., Inc., Evansville, Ind.	6	5	1	
Quaker Oats Co., Chicago, Ill.	12	12		2
Ragsdale & Owen, Bedford, Ind.	1	1		
Ralston Purina Co., St. Louis, Mo.	19	19		1
Rankin & Co., M. G., Milwaukee, Wis.	1	1		
Rapier Sugar Feed Co., Owensboro, Ky.	1		1	1
Rauh & Sons Animal Feed Co., E., Indianapolis, Ind.	7	6	1	
Read Phosphate Co., New Albany, Ind.	6	6		1
Records, James L., Edinburg, Ind.	2	2		
Red Mills, The, Fairland, Ind.	2	2		1
Red Wing Milling Co., The, Red Wing, Minn.	2	2		2
Reed Elevator Co., Decatur, Ind.	9	9		
Reel Bros., Cedar Rapids, Iowa	1			1
Reising & Sons, N., Poseyville, Ind.	2	2		
Richmond Grain Co., Richmond, Ind.	4	4		
Rich Products Corp., Chicago, Ill.	1	1		
Riedling, R. D., Louisville, Ky.	2	2		1
Riverdale Products Co., Chicago, Ill.	21	17	4	2
Riverside Mills, Clinton, Ind.	1	1		
Roberts Cotton Oil Mill, Cairo, Ill.	3	3		
Robinson Feed Co., Perrysville, Ind.	3	3		
Rochester Fertilizer & Tankage Co., Rochester, Ind.	2	2		1
Rockledge Products Co., Portland, Ind., Rte. 5	1	1		
Rolling Prairie Grain & Lumber Co., Rolling Prairie, Ind.	1	1		
Ronek & Bevis Co., Philadelphia, Pa.	1	1		
Roper & Brown, Hobart, Ind.	1	1		
Rose & Co., G. P., Nashville, Tenn.	1		1	1
Rosedale Elevator Co., Rosedale, Ind.	5	5		
Ross, Dr. W. J., Los Angeles, Calif.	1			1
Rowe & Sons Co., A., Terre Haute, Ind.	3	3		
Rund Packing Co., Inc., Lafayette, Ind.	3	3		
Rush County Mills, Rushville, Ind.	1	6	4	
Rush Service Co., Inc., Rushville, Ind.	7	7		
Russell & Martin, Elkhart, Ind.	3	2	1	1
Russellville Flour & Feed Co., Russellville, Ind.	2	2		
Russiaville Milling Co., Russiaville, Ind.	1	1		
Ryde & Co., Chicago, Ill.	3	3	1	
St. Joe Milling Co., St. Joe, Ind.	1	1		
Salamonie Mills, Warren, Ind.	1	1		
Salem Fertilizer Co., Salem, Ind.	7	6	1	
Sample, John L., Madison, Ind.	1	1		
Santa Fe Elevator Co., Santa Fe, Ind.	3	3		

Table 6.—Continued

Name and Address of Manufacturer	Number of Samples Examined	Number of Samples Passed	Number of Samples Not Passed	Number of Samples Not Tagged
Saunders Mills, Inc., Toledo, Ohio	8	4	4	
Schaefer, John H., Columbus, Ind.	5	5		
Schlemmer, John, Harrison, Ind.	12	12		
Schlensker, C. F., Daylight, Ind.	2	2		
Schlosser Bros., Frankfort, Ind.	3	3		2
Schmadel Packing & Ice Co., Evansville, Ind.	2	1	1	
Schnaible Co., M. & J., Lafayette, Ind.	2	2		
Schulte, W. C., Freelandville, Ind.	5	5		
Schultz-Baujan & Co., Beardstown, Ill.	5	5		5
Schultz Bros., Elberfeld, Ind.	6	6		
Schwartz Feed Co., Ladoga, Ind.	1	1		
Sears, Roebuck & Co., Chicago, Ill.	2		2	
Shavers Hatchery & Feed Store, Crawfordsville, Ind.	1	1		
Sheridan Milling Co., Sheridan, Ind.	2	2		
Sherman White & Co., Goodland, Ind.	2	2		1
Shine & Co., J. H., New Albany, Ind.	6	6		
Shirley, A. D., Walton, Ind.	1	1		
Silver Lake Egg Farm & Hatchery, Silver Lake, Ind.	1	1		
Simpson Products Co., Terre Haute, Ind.	1	1		
Sims Milling Co., Frankfort, Ind.	2	2		
Skeen Hatchery, Thorntown, Ind.	2		2	1
Smith Agricultural Chemical Co., Indianapolis, Ind.	2	2		
Smith & Cascadden, Lapel, Ind.	1		1	
Smith Coal & Feed Co., Muncie, Ind.	1	1		
Sowash Grain Co., Inc., E. K., Crown Point, Ind.	2	2		
Soya Products, Inc., Chicago, Ill.	2	2		
Sparks Milling Co., Terre Haute, Ind.	5	5		
Spellman, Cecil, Newport, Ind.	1			1
Spencer County Farm Bureau Cooperative Association, Inc., Chrisney, Ind.	1	1		
Spencer Fertilizer & Tankage Co., Spencer, Ind.	4	4		
Spratts Patent, Ltd., Newark, N. J.	3			3
Springer, W. D., Indianapolis, Ind.	2	2		
Stadler Products Co., Cleveland, Ohio	3	3		
Stahl Packing Co., Evansville, Ind.	3	3		
Staley Manufacturing Co., A. E., Decatur, Ill.	1			1
Stanley Feed Co., Salem, Ind.	2	2		
Star Milling Co., Shoals, Ind.	2	2		
Starr Mills, South Bend, Ind.	7	7		
Star Roller Mills, Burlington, Ind.	6	6		
Star Roller Mills, Monrovia, Ind.	1		1	
Stauffer Grain Co., Nappanee, Ind.	1	1		
Steckleys Feed Mills, Kendallville, Ind.	6	6		4
Steeb, William, Crown Point, Ind.	1		1	
Sterling Products Co., Evansville, Ind.	1	1		
Steuben County Farm Bureau Cooperative Association, Inc., Angola, Ind.	3	3		1
Steventon Bros., Rockville, Ind.	4	3	1	
Stiefel Grain Co., Fort Wayne, Ind.	3	3		
Stock & Sons, F. W., Hillsdale, Mich.	3	3		3
Stolle & Sons, Anton, Richmond, Ind.	1	1		
Strait & Son Milling Co., Asa, Nashville, Mich.	2	2		
Strauch, Albert H., Royal Center, Ind.	1	1		
Strauss & Sons, J. W., North Manchester, Ind.	2	2		
Street Milling Co., J., LaPorte, Ind.	1	1		
Struven & Co., Chas. M., Baltimore, Md.	2	1		2
Success Mills, Inc., Chicago, Ill.	6	5		1
Suckow Milling Co., Franklin, Ind.	3	2	1	
Sugar Creek Grain Co., Thorntown, Ind.	1	1		
Sullivan County Farm Bureau Cooperative, Sullivan, Ind.	1	1		
Sullivan Fertilizer Co., Sullivan, Ind.	2	2		1
Sunman Flour Mills, Sunman, Ind.	1	1		
Sunshine Feed Store, Rushville, Ind.	1	1		1
Sunshine Stores, Inc., Greenfield, Ind.	2	2		
Sunshine Stores, Inc., Ft. Wayne, Ind.	5	4	1	
Swarthout, Jacob, Vernon, Ind.	1	1		
Swayzee Grain Co., Swayzee, Ind.	2	2		
Swift & Co., Chicago, Ill.	29	23	5	3
Syler & Syler, Nappanee, Ind.	2	2		
Tell City Flouring Mills, Tell City, Ind.	2	2		
Tennant & Hoyt Co., Lake City, Minn.	1			1
Terre Haute Abattoir & Stock Yards Co., Terre Haute, Ind.	2	2		
Terre Haute Grease & Tallow Factory, Terre Haute, Ind.	7	4	3	
Thomas & Son, A. R., Markle, Ind.	2	2		
Thomas Milling Co., Marion, Ind.	9	9		
Thornburg Milling & Elevator Co., Martinsville, Ind.	1	1		

Table 6.—Continued

Name and Address of Manufacturer	Number of Samples Examined	Number of Samples Passed	Number of Samples Not Passed	Number of Samples Not Tagged
Thoro Bread Co., The, Cincinnati, Ohio	4	2	2	3
Tipton County Farm Bureau Cooperative Association, Inc., Tipton, Ind.	2	2		
Tipton Fertilizer Co., Tipton, Ind.	1	1		1
Tipton Milling Co., Tipton, Ind.	3	3		
Topeka Flour Mills Co., Topeka, Kans.	1	1		
Topeka Roller Mill, Topeka, Ind.	3	3		
Tower & Merryman, Marengo, Ind.	2	2		
Tri County Farm Bureau Cooperative Association, Inc., Evansville, Ind.	6	6		
Tri State Cooperative Association, Montgomery, Mich.	1	1		
Tri State Fertilizer & Feed Mill, Daylight, Ind.	2	2		
Trow Co., W., Madison, Ind.	1	1		
Tuholski, Albin A., Michigan City, Ind.	2	2		
Turner Coal & Feed Co., Muncie, Ind.	4	2	2	
Ubiko Milling Co., Cincinnati, Ohio	1	1		
Uhl-Snider Milling Co., Connersville, Ind.	6	6		
Union Grain & Feed Co., Anderson, Ind.	1	1		
Union Mills, Wabash, Ind.	2	2		
Union Mineral Co., The, Liberty, Ind.	1	1		
Union Starch & Refining Co., Columbus, Ind.	1	1		
Union Township Farm Bureau, Kewanna, Ind.	1		1	
Urbana Mills, Urbana, Ohio	1		1	
Utterback & Lee Milling Co., Anderson, Ind.	1	1		
Valentine & Co., Terre Haute, Ind.	3	2	1	
Valier & Spies Milling Corp., St. Louis, Mo.	2	2		2
Valley Milling Co., Crawfordsville, Ind.	1	1		
Valparaiso Hatchery, Inc., Valparaiso, Ind.	2	2		
Vanek Bros., North Judson, Ind.	3	3		
Vaughn, O. W., Gilford, Ind.	1	1		
Vermillion County Farmers, Inc., Dana, Ind.	1	1		
Vevay Flour Mills, Vevay, Ind.	1	1		
Victoria Mill & Elevator Co., Jasper, Ind.	2	2		
Vogel Bros., Seymour, Ind.	1	1		
Wachtel Co., John, Indianapolis, Ind.	5	5		
Wadley Company, The, Indianapolis, Ind.	1	1		
Wakarusa Milling Co., Wakarusa, Ind.	1	1		
Walker & Co., Peter M., Loogootee, Ind.	2	2		
Walker & Co., Peter M., Washington, Ind.	4	4		
Ward Dry Milk Co., St. Paul, Minn.	3	3		1
Warsaw Milling & Grain Co., Warsaw, Ind.	2	1	1	1
Washington County Farm Bureau Cooperative Association, Salem, Ind.	3	3		
Waterloo Mills, Waterloo, Ind.	2	2		
Wayne Dairy Products Co., Richmond, Ind.	4	1	3	
Weber Milling Co., Brookville, Ind.	2	2		
Wedeking & Co., C. W., Dale, Ind.	1	1		
Weinkauf Grain Co., LaCrosse, Ind.	2	2		
Wellington Milling Co., Anderson, Ind.	8	8		
Western Coal & Feed Exchange, New Castle, Ind.	5	3	2	1
Westville Hammer Mill, Westville, Ind.	7	5	2	
Wheatland Grain Co., Wheatland, Ind.	2	2		
Wheatland Milling Co., Wheatland, Ind.	1	1		
Whitelock Milling Co., Petersburg, Ind.	1	1		1
Wilkinson Feed Mill, Clay City, Ind.	1			1
Williams Electric Hatchery, Elwood, Ind.	2	2		
Williamsburg Flour Mills, Williamsburg, Ind.	2	2		1
Wilson & Co., Chicago, Ill.	8	7	1	
Wilson & Co., J. C., Russellville, Ind.	1		1	
Wilson Grain Co., Sulphur Springs, Ind.	2	2		
Winders, J. G., Arcadia, Ind.	1	1		
Wise, H. C., Crete, Ind.	1	1		
Wiseman & Son, W. H. P., Corydon, Ind.	1	1		
Witte Milling Co., Dale, Ind.	2	2		
Wolf, C. G., North Liberty, Ind.	1	1		
Wolf & Son Hatchery & Feed, North Judson, Ind.	3	3		
Wolfe Grain Co., Shipshewanna, Ind.	4	3	1	
Wood, B. H., Valparaiso, Ind.	2	1	1	
Worthington Grain Co., Worthington, Ind.	6	3	2	1
Wright, John H., Clinton, Ind.	4	3	1	1
Wuichet Fertilizer Co., Dayton, Ohio	2		2	
Wyatt Grain Co., Wyatt, Ind.	2	1		1
Yeddo Farmers Grain Co., Yeddo, Ind.	1	1		
Ziliak & Schaefer Milling Co., Evansville, Ind.	28	25	3	1
Zionsville Grain Co., Zionsville, Ind.	3	2	1	

UNIVERSITY OF ARIZONA LIBRARY

Circular No. 202 May, 1934

COMMERCIAL FERTILIZERS

UNIVERSITY OF ARIZONA
LIBRARY

The effect of fertilizer versus no fertilizer application. Dark rows, fertilizer drill holes were stopped up and no fertilizer was applied. Light rows, fertilizer drill holes were clear and fertilizer was applied.

Purdue University
Agricultural Experiment Station
Lafayette, Indiana

This circular gives a summary of the inspection of commercial fertilizers for the year 1933. The inspectors visited every county in the state in both the spring and the fall season and collected 1,153 official samples.

The Indiana Fertilizer Law is essentially a correct labeling act. It protects the honest and efficient manufacturer, dealer and agent as well as the consumer. In order to obtain maximum protection the consumer must read carefully and understand thoroughly the information on the state tag.

Refunds amounting to $263.43 were paid by 17 manufacturers on 47 shipments of fertilizer deficient in analysis.

Table 1 shows the average composition of the common fertilizer materials.

Table 3 shows the tonnages of the different analyses for which there was the greatest demand. The tonnage sales of 2-12-6 amounted to over 37 per cent of all the fertilizer sold. Over 86 per cent of the total tonnage was confined to 33 analyses, while less than 14 per cent was divided among 110 different grades.

The average content of actual plant food of all the fertilizer sold in 1933 was 460 pounds per ton. The average analysis was 2.1 per cent nitrogen, 13.2 per cent available phosphoric acid and 6.6 per cent water soluble potash.

Table 6 gives the tonnage sales of low and high analysis fertilizers for the past 19 years.

Due to lack of funds, the table giving the analysis of individual samples is omitted from the report this year. It is the intention to resume publication of this table in future reports as soon as funds are available.

COMMERCIAL FERTILIZERS

H. R. Kraybill, *State Chemist*
O. W. Ford, *Assistant Chemist* O. S. Roberts, *Chief Inspector*
Assistant Chemists, L. E. Horat, M. H. Thornton
Inspectors, C. M. Cohee, J. W. Jackman

The Indiana Fertilizer Law is essentially a correct labeling act. The intent of the law is not to determine what type of fertilizer may be sold. The law is designed to furnish the purchaser with a true statement of certain information on the state tag that will enable him to decide whether or not the fertilizer is the type that will meet his needs. The state tag gives a statement of the percentages of total nitrogen, total or available phosphoric acid, and water soluble potash. With this information available the purchaser should be able to judge whether the fertilizer offered for sale meets his requirements. *In order to do this the consumer must read carefully and understand thoroughly the information on the state tag.*

The Indiana Fertilizer Law protects the honest and efficient manufacturer, dealer and agent, as well as the consumer. Full cooperation on the part of the manufacturer, dealer, agent and consumer is necessary in order to accomplish the purpose of the law.

A copy of the full text of the law will be sent to persons making requests for the same to the State Chemist, Purdue University Agricultural Experiment Station, Lafayette, Indiana.

This circular presents the results of the inspection of commercial fertilizers sold in Indiana during 1933. From the sale of tags it is estimated that 99,755 tons of fertilizer were sold, while from manufacturers' reports a tonnage of 105,289 is indicated. It is believed that the latter figure represents more nearly the actual tonnage. The difference between the two estimates is apparently due to the fact that the manufacturers reduced their stocks of tags on hand during the year. This indicates that the tonnage in 1933 was about five per cent higher than in 1932.

Inspectors from the department visited every county in the state in both the spring and fall seasons and collected 1,153 official samples of fertilizer. One sample was drawn for approximately each 90 tons of fertilizer that were sold. Of these samples, 1,064 were equal to or above the guarantee in value; 84 were within 10 per cent of the guaranteed value and 5 were 10 per cent or more below the guaranteed value. Eleven of the 790 samples which contained nitrogen showed the presence of inferior nitrogen, of which four were dried manure and four were muck. Both of these materials are inferior sources of nitrogen.

REFUNDS

Every year a few cases of deficiencies occur, due to errors in labeling the fertilizer. This results from carelessness on the part of the person responsible for attaching the tags. Manufacturers should guard against such errors.

When deficiencies in analysis amounting to $1.00 or more per ton on raw materials, as calculated from the wholesale price, are found, refunds are calculated and indicated on the report of the analysis which is sent to the manufacturer and to the consumer. Refunds on mixed fertilizers are usually calculated when one ingredient is deficient to the extent of $1.00 or more per ton, regardless of the excess in amounts of the other ingredients. Nitrogen, phosphoric acid and potash play definite roles in crop production. An excess of one ingredient will not necessarily compensate for a deficiency of another.

All refunds are required to be distributed to the consumer wherever possible, and receipts for the same must be filed with the State Chemist. In case there are no records as to the consumer, the refunds may be turned over to a local charitable organization, but receipts for the same must be filed with the State Chemist.

The payment of a refund by the manufacturer to the consumer does not remove the violation, but it does indicate good intentions on the part of the manufacturer and shows his willingness to do what he can to correct the violation. However, the payment of the refund does not nullify the right of anyone in the state to call a deficiency of analysis to the attention of the prosecuting attorney.

Refunds amounting to $263.43 were paid by 17 manufacturers on 47 shipments of deficient fertilizer in 1933.

MANUFACTURERS

The term "Commercial Fertilizer" is defined by law to include all materials used for manurial purposes except barnyard manure, marl, lime, wood ashes and plaster. Barnyard manure, sheep manure and muck when dried or processed in any way come under the provisions of the law. Before any commercial fertilizer is exposed or offered for sale or sold in the state it is necessary to register the fertilizer with the State Chemist and tag it properly with Indiana state tags or labels. Bulk shipments must be accompanied with sufficient labels to cover the total weight of the material.

Manufacturers should not ship fertilizer without having it properly tagged with Indiana state tags. Experience has shown that when this is done it is difficult to avoid the sale of untagged fertilizer. The State Chemist has no authority to grant permission to a manufacturer to ship unlabeled fertilizer.

AGENTS, DEALERS AND DISTRIBUTORS

Agents should familiarize themselves with the provisions of the Indiana Fertilizer Law. Each package of fertilizer offered or exposed for sale or sold in Indiana must have attached to it the Indiana state tag bearing the facsimile signature of the State Chemist (see reproduction, page 8). *In case you receive a car of untagged fertilizer, wire the manufacturer for tags and notify the State Chemist. Do not accept the shipment until proper tags are furnished.*

Since local agents are responsible for the fertilizer that they offer for sale they should deal only with those manufacturers who agree to assume full responsibility in cases where the fertilizer fails to meet the requirements of the law.

When inspection reports show that fertilizer in your possession is deficient enough so that a refund is calculated on it, withdraw it from sale at once and notify the State Chemist, giving the date and the amount withdrawn from sale.

CONSUMERS

The Indiana state tag is your guarantee of the fertilizer that you purchase. Read the tag. Let the analysis on the state tag be your guide rather than the brand name. Refuse to accept any fertilizer which does not have the Indiana state tag attached to each package.

When analysis of a fertilizer is desired, do not forward a sample, but notify the State Chemist, telling how much you have on hand and send in a copy of the official label which is attached to the fertilizer.

Purchase the type of fertilizer that will meet the plant food requirements of your crops. Consult Circular No. 162 of the Purdue University Agricultural Experiment Station, entitled "Fertilizers for Indiana Soils and Crops."

CAUTION

The consumer should remember that the presence of the Indiana state label with the facsimile signature of the State Chemist does not mean that the State Chemist recommends the fertilizer. Poor quality fertilizer may be sold legally, provided it is correctly labeled. The consumer should be guided by the analysis of the fertilizer.

MEANING OF ANALYSIS

Nitrogen.—In 1881 when the Indiana Fertilizer Law was passed the principal source of nitrogen was from organic materials. The nitrogen was derived largely from such products as dried blood, bone, tankage and slaughter house by-products, garbage tankage, cotton seed meal, castor pomace, tobacco stems, manure sweepings and dried peat. Although there is little water soluble nitrogen in the above products, all carry a good source of nitrogen with the exception of garbage tankage, manure sweepings, spent tobacco stems and dried peat. In more recent years most of the animal products have been diverted into the mixed feed channels, and water soluble forms of nitrogen have taken their place in fertilizer mixtures. Today we find that most of the nitrogen carrying fertilizers have more than 80 per cent of their nitrogen content in some water soluble form.

A few of the sources of water soluble forms of nitrogen are as follows: nitrate of soda (natural and synthetic), ammonium sulphate, cal-urea, cal-nitro, urea, cyanamid and calcium nitrate.

Since water soluble forms of nitrogen are considered as readily available for plant growth, we class a fertilizer as satisfactory that has 60 per cent of its guaranteed nitrogen in water soluble form.

If less than 60 per cent of its guaranteed nitrogen is water soluble, then the availability of the insoluble organic nitrogen is determined by the alkaline permanganate method. In this case, if the active water insoluble nitrogen is equal to or greater than the inactive, the nitrogen is classed as satisfactory. If less than half of the insoluble nitrogen is active, the nitrogen is classed as inferior.

Manures and garbage tankages that have not been acidulated show an inferior quality of nitrogen. This is not the fault of the manufacturer when they are sold as manure and garbage tankage.

Phosphoric Acid.—The phosphorus in the fertilizer is linked up as chemical compounds with calcium, iron and aluminum. It may be present as mono-, di- or tricalcium phosphate.

As monocalcium phosphate $CaH_4\ (PO_4)_2$ it is water soluble and readily available to plants for growth.

As dicalcium phosphate $Ca_2H_2\ (PO_4)_2$ it is soluble in the soil solution and rendered available to plants for growth.

As tricalcium phosphate $Ca_3\ (PO_4)_2$ it is somewhat less available to plants.

As a complex tricalcium phosphate combined with fluorine and lime (raw rock phosphate) it is much less available to plants and becomes available only slowly in the soil.

The bulk of the fertilizer sold today contains mixtures of large amounts of mono- and dicalcium phosphate and some tricalcium phosphate. This is in contrast to the earlier years when most of the fertilizer used was bone where the phosphorus is present as tricalcium phosphate.

In acidulated goods the phosphorus is sold only on the basis of the available phosphoric acid (P_2O_5) content. The available is the sum of the soluble and reverted phosphoric acid (P_2O_5).

In bone and rock phosphate, when sold as such, the phosphorus is sold only on the basis of the total phosphoric acid (P_2O_5) content. It is only fair to state, however, that about 60 to 75 per cent of the total phosphoric acid (P_2O_5) content of bone is available by the neutral ammonium citrate method, while only from three to six per cent of the total phosphoric acid (P_2O_5) of rock phosphate is available by the same method.

Potash.—Potash, as the official label states, must be soluble in water, in which form it is considered directly available for plant use.

No difference in crop growth has been noted in American, French or German potash. Muriate of potash (KCl) being the cheapest has largely supplanted other potash salts for general crops.

AVERAGE COMPOSITION OF FERTILIZER MATERIALS

Table 1 gives the average composition of some of the more common fertilizer materials.

TABLE 1. Average Composition and Comparative Evaluation of the Common Fertilizing Materials

Material	Nitrogen Per Cents							Phosphoric Acid Per Cents			Water Soluble Potash Per Cent	Comparative Value Per Ton
	Total	Water Soluble Organic	Water Soluble Ammonia	Water Soluble Nitrate	Water Insoluble Organic	Active Insoluble Organic	Inactive Insoluble Organic	Total	Insoluble	Available		
Sodium Nitrate	15.5			15.5								$23 25
Calcium Nitrate	14.0			14 0								21 00
Ammonium Sulphate	20.5		20.5									30 75
Cyanamid	22.0	21.6			0 .40							33.00
Garbage Tankage	3.3	0.63			2.70	0.66	**2.04**	4.47	2.49	1.98	0.75	7.85
Cattle Manure	2.50	0.52			1.98	0.72	**1.26**	1.6			1.6	6.77
Sheep Manure	2.50	0 57			1.93	0.62	**1 31**	1.8			2 2	7 51
Poultry Manure	4.3	1.90	0.60		1.80			3.1			1.7	10.32
Muck	2.0	0.13			1.90	0 34	**1.56**					3.00
Activated Sewage	6.0	0.84			5.11	3.54	1.57	2.2				10.54
Raw Bone	3.6	0.84			2.80	2.03	0.77	23.4	9.2	14.2		22.36
Steam Bone	2.2	0.42			1.79	1.41	0.38	27.5	10.4	17.1		23.52
Animal Tankage	6.0	1 50			4 50	2 98	1 52	12 0	4 0	8 0		18 20
Bone Black	1.3				1 30	0 09	**1.21**	30 3	23 4	6 9		15 87
Basic Slag								17 7	2 7	15 0		17.70
Raw Rock Phosphate								33.4	31.1	2.3		11.63
Superphosphate—												
0-40-0								41 0	1 0	40 0		40 00
0-24-0								25 0	1 0	24 0		24 00
0-20-0								21 0	1 0	20 0		20 00
0-16-0								17 0	1 0	16 0		16 00
Muriate of Potash											50 0	50 00
Sulphate of Potash											48 0	48 00
Manure Salts											20 0	20 00
Kainit											14 0	14.00
Tobacco Dust	1 50	0 31		0 39	0.80	0 17	0.63	0 50			5.4	8 00
Coal Ash								0.4			0.1	0 38
Corn Cob Ash								4 9			31 0	34 43
Hard Wood Ash								2 2			10 2	11 80
Soft Wood Ash								3 1			4 3	6.47

Values appearing in the Inactive Insoluble Organic column in heavy type indicate an inferior source of nitrogen.

CLASSIFIED FERTILIZER SALES SINCE 1883

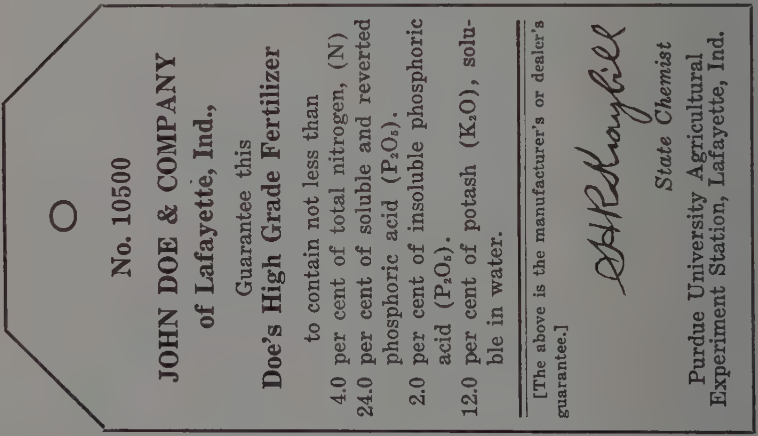
Table 2 illustrates the changes that have occurred in the types of fertilizers sold during the past fifty-one years.

TABLE 2. Classified Fertilizer Sales Since 1883

Year	Total Tons	Tons Nitrogen Salts	Tons Potash Salts	Tons Super-Phosphate	Tons Bone	Tons Raw Phosphate Rock	Tons Phosphate Potash	Tons Ammoniated Super-Phosphate	Tons Complete
1883	8,000	....	....	....	8,000	....	....	....	....
1888	10,000	....	....	‡	10,000	....	‡	‡	‡
1893	38,000	....	....	1,000	14,000	....	1,000	4,000	18,000
1895	45,000	....	....	1,000	15,000	....	2,800	3,800	20,300
1897	49,400	....	....	7,200	13,950	50	1,550	5,200	21,450
1909	134,064	268*	2,146	8,111	10,323	804	18,769	1,005	89,287
1914	219,139	123*	3,586	12,878	7,748	2,400	40,451	1,184	144,126
1918	244,446	82*	....	57,984	12,586	1,079	3,839	83,111	78,302
1923	195,702	1,550†	3,251	49,501	8,356	....	35,394	4,309	91,220
1927	240,498	3,530†	5,200	32,041	4,456	719	41,785	520	151,112
1928	221,082	1,350†	1,700	26,997	1,907	968	40,451	....	145,709
1929	291,193	3,140	1,800	21,655	2,650	844	45,000	62	214,010
1930	219,684	2,950	1,900	12,208	1,976	1,500	34,657	....	163,136
1931	170,777	4,325	2,100	12,790	3,437	1,313	25,262	....	119,841
1932	79,400	1,750	950	7,605	1,093	93	9,188	....	57,626
1933	99,755	1,550	1,100	11,314	757	63	9,750	188	73,895

*Largely Nitrate of Soda.
†Nitrate of Soda and Ammonium Sulphate.
‡Light Sales.

OFFICIAL STATE LABEL



No. 10500

JOHN DOE & COMPANY
of Lafayette, Ind.,

Guarantee this
Doe's High Grade Fertilizer

to contain not less than
4.0 per cent of total nitrogen, (N)
24.0 per cent of soluble and reverted phosphoric acid (P_2O_5).
2.0 per cent of insoluble phosphoric acid (P_2O_5).
12.0 per cent of potash (K_2O), soluble in water.

[The above is the manufacturer's or dealer's guarantee.]

H R Kraybill
State Chemist

Purdue University Agricultural
Experiment Station, Lafayette, Ind.

The only label recognized under the law is that bearing the facsimile signature of the State Chemist. (See reproduction.) The label as issued is always printed and contains all the facts required by law; any alteration thereon constitutes a violation of the law.

Label No. 10500 guarantees that each 100 pounds of fertilizer will contain at least 4.0 pounds of total nitrogen (N), 24.0 pounds of soluble and reverted phosphoric acid (P_2O_5), and 2.0 pounds of insoluble phosphoric acid (P_2O_5), and 12.0 pounds of water soluble potash (K_2O).

We hope that it will not again be necessary to file affidavits against agents for distributing unlabeled fertilizer. There can be no excuse for shipping unlabeled fertilizer. Agents receiving same should protect themselves by refusing to accept the car. Wire the manufacturer for official labels and write the State Chemist fully concerning the unlabeled shipment.

MANY GRADES UNNECESSARY

Table 3 shows the tonnage of fertilizer sold under the different grades of analyses. In 1933 over 86 per cent of the tonnage is represented by 33 grades, while less than 14 per cent were distributed over 110 analyses. Considerable saving could be made by the manufacturer if the number of grades were reduced materially.

TABLE 3. Tons Sold Under 33 Analyses for Past Eight Years

ANALYSIS	Year* 1926	Year* 1927	Year* 1928	Year* 1929	Year* 1930	Year* 1931	Year* 1932	Year* 1933	Rept. by Mfrs. Year 1933
Nitrate of Soda	350	433	500	1,740	1,150	2,200	600	350	157
Ammonium Sulphate	2,350	3,090	900	1,400	1,800	2,100	950	950	1,387
0-16-0	16,744	12,665	8,053	6,241	3,937	5,780	2,625	3,719	4,688
0-20-0	19,518	16,281	13,000	12,826	6,781	5,753	4,875	7,188	7,715
0-40-0	9,375	2,905	3,689	1,563	750	838	313	188	312
Potash Salts	5,700	4,500	1,600	1,800	1,750	2,100	1,350	1,100	816
Raw Bone	900	1,750	813	869	750	1,249	625	538	238
Steamed Bone	4,175	2,706	1,094	1,781	1,250	2,188	531	219	192
2-8-2	1,340	1,260	594	2,063	1,094	563	688	563	296
2-8-5	2,625	1,053	1,906	1,531	563	744	531	469	394
2-8-10	1,650	656	1,125	1,463	1,094	781	625	1,031	1,004
2-8-16	282	2,650	2,531	3,919	4,063	2,719	1,625	2,000	2,044
2-10-4	1,750	1,625	2,169	1,146	406	782	375	594	503
2-12-2	41,237	45,109	43,606	36,550	19,313	17,063	9,469	16,344	14,511
2-12-4	4,154	4,375	2,906	2,688	1,375	219	31	125	139
2-12-6	23,580	37,290	43,078	74,850	78,894	56,344	29,375	38,500	37,748
2-14-4	....	....	2,760	9,906	3,719	1,219	438	125	451
2-16-2	4,562	4,821	2,813	2,575	844	281	....	63	137
2-16-8	1,081	2,018	2,250	2,769	3,594	2,156	781	688	786
4-24-4	2,812	5,275	3,603	4,150	2,619	1,781	344	756	903
4-24-12	687	906	3,331	7,853	6,806	4,625	1,250	1,725	1,760
0-8-24	2,687	3,962	1,681	1,750	3,444	2,563	1,375	1,063	1,414
0-10-10	10,481	15,525	11,969	7,744	7,206	6,000	2,438	2,969	3,246
0-12-12	5,031	5,312	3,438	6,813	6,500	6,063	2,500	2,844	2,644
0-20-20	1,156	2,531	2,281	1,313	2,181	2,063	656	531	657
0-12-6	4,056	5,312	5,312	1,954	1,000	813	281	437	448
0-14-4	3,156	4,312	3,750	1,625	719	500	719	231	568
0-14-6	....	....	2,063	9,150	7,425	3,250	781	1,343	2,136
0-8-32	....	....	343	856	656	63	31	31	250
0-16-4	....	....	2,250	313	937	594	....	....	77
0-14-14	625	718	463	813	969	375	500	94	27
0-16-8	500	593	1,313	844	94	375	125	63	129
0-12-8	....	....	....	1,844	406	188	....	63	130
33 analyses	172,564	189,633	175,260	214,702	174,089	134,332	67,809	86,904	87,907
Other analyses	55,716	50,865	45,822	76,491	45,595	36,445	11,591	12,851	13,168
Total tonnage	228,280	240,498	221,082	291,193	219,684	170,777	79,400	99,755	†101,075
Total number of analyses	....	....	....	157	163	167	153	143	....

*Tonnage calculated from tag sales.

†This does not include the 4,214 tons calculated from tag sales of companies that did not report their tonnage sale for 1933.

Table 4 gives the total tonnage by grades as reported by the manufacturers for 1933.

TABLE 4. Fertilizer Tonnage Sold in Indiana in 1933 as Reported by Fertilizer Manufacturers

A. Raw Materials—

1. Nitrogen Salts	
Nitrate of Soda	157
Ammonium Sulphate	1,387
2. Potash Salts	
Muriate of Potash	
0-0-60	10
0-0-50	816
Sulphate of Potash	
0-0-48	4
3. Raw Rock Phosphate	65
4. Superphosphates	
0-40-0	312
0-32-0	3
0-24-0	50
0-20-0	7,715
0-18-0	41
0-16-0	4,688
0-14-0	294
0-13-0	18

B. Ammoniated Superphosphate—

5-10-0	1

C. Phosphate and Potash Mixtures—

0-28-12	40
0-24-24	37
0-24-12	24
0-21- 9	34
0-20-20	657
0-16- 8	129
0-16- 6	49
0-16- 4	77
0-15-15	3
0-14-14	27
0-14- 6	2,136
0-14- 4	568
0-13-13	16
0-12-20	5
0-12-12	2,644
0-12-10	2
0-12- 8	130
0-12- 6	448
0-11-15	1
0-10-10	3,246
0- 9-27	1
0- 8-32	250
0- 8-24	1,414
0- 8-16	12
0- 5-15	2

D. Complete Fertilizer Mixtures—

12-12- 6	1
12- 6- 4	9
12- 3- 3	9
10- 8- 6	3
10- 6- 4	8
9-27- 9	5
9-18-18	5
8-24- 8	1
8-16-16	5
8- 6- 5	6
7- 7- 1	5
6-15- 9	38
6- 8- 6	26
5-15- 5	3
5-10- 5	20
5-10- 4	5
5- 8- 6	10
4-24-12	1,760
4-24- 4	903
4-16-32	25
4-16-20	6
4-16- 4	192
4-14- 4	2
4-12- 8	269
4-12- 4	110
4-10- 6	282
4- 8-32	12
4- 8- 8	44
4- 8- 7	24
4- 8- 6	488
4- 8- 3	18
4- 7- 8	10
3-21- 6	48
3-18- 9	534
3-18- 3	15
3-16- 3	20
3-15-12	266
3-14-14	4
3-12-12	142
3-12- 4	84
3-11-14	10
3-10- 7	17
3-10- 6	97
3-10- 4	5
3- 9-18	322
3- 8- 6	379
3- 7- 7	137
2-20-10	62
2-16- 8	786
2-16- 6	20
2-16- 2	137
2-14- 7	24
2-14- 4	451
2-12- 8	23
2-12- 6	37,748
2-12- 4	139
2-12- 2	14,511
2-10- 8	103
2-10- 6	45
2-10- 4	503
2-10- 3	120
2-10- 2	44
2- 9- 5	60
2- 8-16	2,044
2- 8-15	17
2- 8-10	1,004
2- 8- 6	64
2- 8- 5	394
2- 8- 4	347
2- 8- 2	296
1-14- 5	93
1-14- 3	44
1-14- 2	223
1-12- 4	73
1-12- 3	498
1-12- 2	154
1-12- 1	19
1-11- 5	916
1-11- 4	727
1-11- 3	119
1-10- 5	202
1-10- 4	51
1-10- 3	482
1-10- 2	329
1-10- 1	70
1- 9- 3	60
1- 8- 8	22
1- 8- 7	1
1- 8- 5	30
1- 8- 4	702
1- 8- 3	602
1- 8- 2	75
1- 6- 8	5
3- 9A*-9I*-3	54
2-12A*-7I*-2	20
2- 8A*-8I*-6	50
2- 8A*-8I*-2	35
2- 8A*-4I*-6	910
2- 8A*-4I*-2	215
2- 6A*-6I*-3	520
1- 8A*-4I*-2	202

E. Bone Products (Steam and Raw Bone)—430.
F. Miscellaneous—303.

Summary—
1. Total tons reported—101,075.
2. Tag sales from firms not reporting—4,214.
3. Total tonnage based on reports (Items 1 and 2)—105,289.
4. Total tonnage from tag sales—99,755.

*A—Available P_2O_5; I—Insoluble P_2O_5.

Table 5 gives the total tonnage, retail price, cost per ton, pounds of actual plant food per ton and the cost per pound of plant food for the past 13 years. It will be noted that the average cost per pound of plant food is lower in 1933 than for any year since 1920.

TABLE 5. Tonnage, Retail Value and Pounds Per Ton of Plant Food

Year	Tons reported by manufacturer	Tonnage per year based on tag sales	Retail Value dollars	Cost per ton dollars	Pounds per ton actual plant food	Cost per pound plant food cents
1920...............	....	230,184	8,499,256	36.92	318	0 116
1921...............	....	186,041	5,907,990	31.76	330	0 096
1922...............	....	207,501	5,644,639	27.20	367	0 074
1923...............	....	195,702	6,126,759	31.31	402	0 078
1924...............	....	192,417	6,479,605	33.67	443	0 076
1925...............	....	226,148	8,253,670	36.50	459	0 080
1926...............	....	228,280	8,464,607	37.08	452	0 082
1927...............	....	240,498	8,998,412	37.42	444	0 084
1928...............	....	221,082	8,254,591	37.34	452	0 083
1929...............	*237,590	291,193	11,327,868	38.90	473	0 082
1930...............	*246,009	219,684	8,521,905	38.79	486	0 080
1931...............	*188,496	170,777	5,503,088	32.22	493	0 065
1932...............	*100,581	79,400	2,319,147	29.21	458	0 064
1933...............	*105,289	99,755	2,851,674	28.59	460	0 062

*Estimated from manufacturers' reports and tag sales of companies that did not report their tonnage sales.

Table 6 shows the tonnages of low and high grade fertilizers estimated from the tag sales of the past 19 years.

TABLE 6. Tonnage of Low and High Grade Fertilizers

Year	Ammoniated Superphosphate			Superphosphate and Potash			Complete			Superphosphate		
	Low Grade	High Grade		Low Grade	High Grade		Low Grade	High Grade		Low Grade	High Grade	
	Less than 14 units	14 to 19 units	20 units and above	Less than 14 units	14 to 19 units	20 units and above	Less than 14 units	14 to 19 units	20 units and above	Less than 14 units	16 to 20 units	above 20 units
1915	3,767*	......	......	13,255	1,074	....	88,946	22,589	....	8,407	6,960	....
1916	32,578*	....	......	2,034	....	....	58,698	16	....	6,369	20,157	....
1917	67,820*	....	......	3,556	....	....	67,123	....	......	7,088	35,521	....
1918	72,239	10,872	......	2,370	1,469	....	66,297	12,005	......	14,019	49,952	....
1919	44,283	11,294	......	7,613	7,697	....	68,139	24,138	....	7,003	52,010	....
1920	28,391	9,782	......	3,815	19,785	....	52,554	28,314	......	7,474	60,697	....
1921	13,080	6.041	......	2,060	20,425	....	40,747	33,338	....	951	53,167	600
1922	5,879	4,510	......	2,141	28,553	....	35,439	56,464	....	2,407	57,689	644
1923	2,082	2,227	......	656	34,738	....	22,995	68,225	....	469	45,875	3,157
1924	458	872	......	402	30,145	....	18,899	67,815	....	813	45,508	7,232
1925	494	750	......	125	32,663	....	17,370	94,515	....	1,032	44,095	12,000
1926	63	219	......	....	32,038	....	16,609	114,920	....	1,906	36,475	10,000
1927	219	301	......	94	13,750	27,941	13,409	111,395	26,308	906	29,166	1,969
1928	....	....	......	125	9,351	30,975	6,437	66,256	73,016	875	21,135	4,987
1929	62	....	......	....	3,919	41,081	10,444	70,291	133,275	750	19,067	1,838
1930	....	....	......	....	1,844	32,813	5,001	42,132	116,003	876	10,125	1,187
1931	....	....	......	....	1,556	23,706	2,956	33,535	83,350	719	11,233	838
1932	....	....	......	....	594	8,594	3,625	17,469	36,532	93	7,238	274
1933	....	188	......	....	656	9,094	3,281	23,501	47,113	219	10,907	188

*Not divided into classes.

Table 7 gives the amount of plant food in tons sold for each of the past 14 years.

TABLE 7. Plant Food in Tons

Year	Nitrogen	Available phosphoric Acid	Insoluble phosphoric Acid	Total phosphoric acid (bone)	Total phosphoric acid (rock)	Potash
1920	1,685.52	24,529.78	3,345 19	3,109.27	776.68	3,462.33
1921	1,553.82	20,160.84	2,418.63	2,615.84	289.99	3,990.03
1922	1,832.40	24,970.10	2,791.37	2,778.99	9.28	6,032.44
1923	2,178.43	24,225.45	2,795.56	2,545.94	....	8,176.80
1924	2,159.38	25,375.26	2,291.36	2,740.71	....	10,064.16
1925	3,163.28	31,207.63	2,989.05	1,565.87	....	12,927.98
1926	3,167.68	31,816.71	3,201.93	1,529.18	37.13	11,831.11
1927	3,823.60	31,210.51	2,916.94	1,141.05	208.10	14,098.24
1928	3,142.32	30,575.33	2,641.39	708.58	302.02	12,577.45
1929	5,979.58	39,852.75	3,632.04	730.12	274.30	18,359.58
1930	4,337.27	29,775.30	2,690.06	556.76	524.40	15,546.71
1931	4,077.10	22,232.81	2,138.18	1,023.85	463.08	12,201.80
1932	1,849.31	10,186.35	689.05	312.46	38.06	5,127.09
1933	2,163.77	13,211.67	765.19	229.67	20.79	6,568.22

Calculated from tag sales and inspection reports.

Table 8 gives a summary of inspection of samples for the last 32 years.

TABLE 8. Summary of Inspection for the Past Thirty-two Years

Year	Number of samples reported	Number equal to guarantee in every particular	Number equal in value of guarantee	Number within 10 per cent of value of guarantee	Number not within 10 per cent of value of guarantee
1902	679	335	564	93	22
1903	674	286	492	139	43
1904	643	248	451	148	44
1905	734	312	528	158	48
1906	879	374	642	176	61
1907	793	265	481	210	102
1908	901	391	683	171	47
1909	969	417	720	215	34
1910	1,118	441	834	242	42
1911	1,095	527	896	180	19
1912	1,220	636	1,034	175	11
1913	1,204	714	1,021	178	5
1914	1,396	727	1,152	239	5
1915	1,368	684	1,145	214	9
1916	1,367	870	1,183	168	16
1917	919	622	830	76	13
1918	1,285	888	1,142	121	22
1919	1,401	936	1,227	141	32
1920	1,491	944	1,267	188	27
1921	1,314	754	1,070	227	17
1922	1,216	812	1,071	132	13
1923	1,325	970	1,214	108	3
1924	1,439	1,072	1,340	94	5
1925	1,442	1,019	1,329	111	2
1926	1,225	798	1,033	183	9
1927	1,450	909	1,277	153	10
1928	1,437	865	1,283	144	9
1929	1,378	854	1,217	155	6
1930	1,421	1,090	1,320	89	10
1931	1,396	1,100	1,315	74	7
1932	1,138	835	1,053	80	5
1933	1,153	829	1,064	84	5

PRICES USED IN SECURING COMPARATIVE VALUE OF FERTILIZERS

These values are not for the purpose of fixing the commercial value of mixed fertilizers, but are for comparative purposes only. They are for use in comparing the value of inspection samples with manufacturers' guarantees, and can be used advantageously by fertilizer purchasers in calculating the relative values of various brands offered for sale by different manufacturers.

For use in determining the comparative values of fertilizer inspected in 1934 the following prices have been adopted:

TABLE 9. Prices Used in Determining Comparative Values of Fertilizers

	Per pound cents	Per unit or per cent dollars
All fertilizers—		
Nitrogen (N)	10.0	2.00
Potash (K_2O) soluble in water	5.0	1.00
Soluble and reverted phosphoric acid (P_2O_5)	5.0	1.00
Mixed fertilizers containing nitrogen—		
Insoluble phosphoric acid (P_2O_5)	1.5	0.30
Precipitated bone—		
Available phosphoric acid (P_2O_5)	5.0	1.00
Insoluble phosphoric acid (P_2O_5)	1.5	0.30
Animal by-products, bone, tankage, etc.—		
Total phosphoric acid (P_2O_5)	3.5	0.70
Basic Slag—		
Total phosphoric acid (P_2O_5)	4.5	0.90
Rock phosphate (floats) and low grade slag—		
Total phosphoric acid (P_2O_5)	1.5	0.30
Mixed fertilizer, acid phosphate, etc., containing no nitrogen—		
Insoluble phosphoric acid	.0	0.00

Table 10 gives the fertilizer tonnage for the spring and fall seasons as well as the total tonnage and estimated retail value for the year 1933.

TABLE 10. Fertilizer Tonnage and Estimated Retail Value, 1933

Class of Fertilizer	Spring 1933 Tons	Fall 1933 Tons	Total 1933 Tons	Estimated 1933 Retail Value
1. Acid phosphate, 14% and less		219	219	$4,677.84
2. Acid phosphate, 16%	844	2,875	3,719	74,305.62
3. Acid phosphate, 18-20%	844	6,344	7,188	168,486.72
4. Acid phosphate above 20%	94	94	188	6,236.56
7. Ammoniated superphosphate*	188		188	7,995.50
10. Acid phosphate and potash, 14-19 units	156	500	656	16,104.80
10a. Acid phosphate and potash above 20 units	6,125	2,969	9,094	270,091.80
11. Complete fertilizer (low)	125	531	656	21,405.28
12. Complete fertilizer (medium)	1,156	1,469	2,625	54,757.50
13. Complete fertilizer (high)	6,141	17,360	23,501	628,181.73
13a. Complete fertilizer above 20 units	22,225	24,888	47,113	1,427,523.90
14. Steamed bone	94	125	219	7,227.00
15. Raw bone	131	407	538	10,760.00
16. Tankage	313	125	438	6,570.00
21. Rock phosphate*		63	63	945.00
22. Nitrogen salts**	1,200	350	1,550	57,009.00
†Ammonium sulphate	900	50	950	
†Nitrate of soda	250	100	350	
†Cyanamid	50	200	250	
23. Potash salts**	1,100		1,100	50,468.00
†Muriate of potash	1,100		1,100	
†Sulphate of potash				
†Kainit				
31. Miscellaneous (peat, dried manure, dried blood, garbage tankage, etc.)	606	94	700	19,460.00
Total	41,342	58,413	99,755	$2,851,674.25

* Retail values estimated from average analyses obtained from tag sales and the comparative values of circular 196, p. 13.

** Tonnage in these classes estimated on the basis of 200-pound bags or 10 bags per ton. All other classes estimated on the basis of 125-pound bags or 16 bags per ton.

† Not included in totals.

Table 11 gives a summary of inspection on the basis of guaranteed and found composition and retail values, while Table 12 gives the standing of the manufacturers as determined by the inspection of 1933.

TABLE 11. Summary of Inspection on the Basis of Composition, Guaranteed, Found, and Retail Values

Class of Fertilizer	Number of Samples	Nitrogen (N), average per cent.		Available phosphoric acid (P_2O_5), average per cent.		Insoluble phosphoric acid (P_2O_5), average per cent.		Total phosphoric acid (P_2O_5), average per cent.		Potash (K_2O), soluble in water average per cent.		Comparative value per ton dollars		Retail price per ton, average, dollars	Comparison, retail price and found comparative value per ton, dollars	Range in retail price per ton, dollars
		Guaranteed	Found	Guaranteed	Found	Guaranteed	Found	Guaranteed	Found	Guaranteed	Found	Guaranteed	Found			
1. Acid phosphate, less than 16 per cent available phosphoric acid	1	.....	.....	14.0	15.7	.....	1.6	.....	.....	...	...	14.00	15.70	21.36	+ 5.66	21.36- *
2. Acid phosphate, 16 to 18 per cent available phosphoric acid	55	.....	.....	16.0	16.9	0.9	0.8	.....	.....	.....	.....	16.00	16.90	19.98	+ 3.08	18.00-22.00
3. Acid phosphate, 18 to 20 per cent available phosphoric acid	85	.....	.....	20.0	21.1	0.8	0.6	.....	.....	.....	.....	20.00	21.10	23.44	+ 2.34	21.00-26.50
4. Acid phosphate more than 20 per cent available phosphoric acid	10	.....	.....	42.0	42.6	1.1	0.3	.....	.....	...	...	42.00	42.60	33.12	— 9.48	26.25-40.00
10. Acid phosphate and potash (High grade), 14 or more per cent available plant food	8	.....	.....	13.0	13.5	0.5	0.7	.....	.....	5.0	5.1	18.00	18.60	24.55	+ 5.95	21.50-27.50
10a. Acid phosphate and potash (High grade), 20 or more per cent available plant food	187	.....	.....	12.4	12.9	0.8	0.6	.....	.....	12.8	13.2	25.20	26.10	29.70	+ 3.60	24.10-45.00
11. Complete fertilizer (Low grade), less than 12 per cent available plant food	12	1.9	2.0	6.3	8.0	6.7	2.6	.....	.....	2.3	2.6	13.46	14.38	31.63	+17.25	22.00-60.00
12. Complete fertilizer (Medium grade), 12 to 14 per cent available plant food	39	1.2	1.4	8.2	8.7	1.4	0.9	.....	.....	3.0	3.1	13.42	14.17	20.86	+ 6.69	19.10-22.00
13. Complete fertilizer (High grade), 14 or more per cent available plant food	270	2.1	2.2	10.8	11.5	2.3	0.9	.....	.....	3.2	3.5	17.84	18.57	26.73	+ 8.16	19.85-70.00
13a. Complete fertilizer (High grade), 20 or more per cent available plant food	433	2.6	2.6	13.6	14.1	0.9	0.8	.....	.....	8.0	8.2	25.77	26.44	30.30	+ 3.86	20.00-54.70
14. Steamed bone	6	1.8	2.3	.....	.....	.....	.....	25.8	26.1	.....	.....	20.76	21.78	33.00	+11.28	33.00- *
15. Raw bone	8	3.2	3.4	.....	.....	.....	.....	21.7	23.6	.....	.....	19.99	21.62	20.00	— 1.62	20.00- *
16. Tankage	2	5.2	6.0	.....	.....	.....	.....	8.2	8.0	.....	.....	13.54	14.60	15.00	+ 0.40	15.00- *
22. Nitrogen salts	11	17.9	18.3	.....	.....	.....	.....	.....	.....	.....	.....	26.85	27.45	36.78	+ 9.33	31.70-41.00
23. Potash salts	16	.....	.....	.....	.....	.....	.....	.....	.....	50.0	48.8	50.00	48.80	45.88	— 2.92	41.00-57.15
31. Miscellaneous (peat, peat and limestone, dried manure, dried blood, garbage tankage, etc.)	10	1.7	1.9	.....	.....	.....	.....	1.2	1.5	1.5	1.9	4.89	5.80	27.80	+22.00	12.00-40.00

*Only one retail value obtained.

TABLE 12. Standing of Manufacturers Determined by Inspection of 1933

Manufacturers	Number of samples reported	Number equal to guarantee in every particular	Number equal in value to guarantee	Number within 10 per cent of value of guarantee	Number not within 10 per cent of value of guarantee	Number with inferior nitrogen	Total number with nitroger
American Agricultural Chemical Co., The, New York, N. Y.	65	41	58	7	....	....	55
American Reduction Corp., Chicago, Ill.	1	....	1	......	....	....	1
Angola Reduction Co., Angola, Ind	1	1	1	....	....	....	1
Armour Fertilizer Works, Chicago Heights, Ill	90	66	88	1	1	....	65
Board of Sanitary Commissioners, Indianapolis, Ind	1	....	1	....	....	....	1
Buhner Fertilizer Co., The, Seymour, Ind	71	29	60	11	....	1	59
Clendenin & Co., Richmond, Ind	11	3	4	6	1	....	8
Consolidated Chemical Co., Louisville, Ky	7	5	6	....	1	....	7
Darling & Co., Chicago, Ill	38	31	38	....	....	....	29
Diamond Fertilizer Co., Sandusky, Ohio	6	1	3	3	....	....	3
Falls City Fertilizer Co., New Albany, Ind	1	1	1	....	....	....	1
Farmers Fertilizer Co., The, Seymour, Ind	1	1	1	....	....	....	1
Federal Chemical Co., Inc., Louisville, Ky	59	49	57	2	....	....	44
Ford Motor Co., Dearborn, Mich.	1	1	1	....	....	....	1
Globe Fertilizer Co., Louisville, Ky	3	3	3	....	....	....	....
Greiner Chemical Corp., The, Fort Wayne, Ind	2	....	2	....	....	....	2
Groves Chemical Co., Columbus, Ohio	5	5	5	....	....	....	3
Heil Co., The, Milwaukee, Wis	1	1	1	....	....	1*	1
Heldt Co., The, Evansville, Ind	3	1	3	....	....	....	2
Hopkins Fertilizer Co., New Albany, Ind	44	32	43	1	....	....	37
Indiana Farm Bureau Cooperative Ass'n., Inc., Indianapolis, Ind	231	166	201	30	....	....	114
International Agricultural Corp., Cincinnati, Ohio	27	23	26	1	....	....	18
Jarecki Chemical Co., Cincinnati, Ohio	1	1	1	....	....	....	....
Joslin-Schmidt Corp., Cincinnati, Ohio	13	9	10	3	....	....	11
Kingsbury & Co., Inc., Indianapolis, Ind	66	47	62	4	....	....	50
Louisville Fertilizer Co., Louisville, Ky	2	2	2	....	....	....	1
McCarty Seed Co., J. A., Evansville, Ind	17	14	17	....	....	....	11
Natural Products, Inc., Indianapolis, Ind	3	....	3	....	....	2	3
Norris Fertilizer Co., The, Rushville, Ind	11	4	9	2	....	....	8
North American Fertilizer Co., Louisville, Ky	8	5	8	....	....	....	7
Old Gardener Co., Pittsburgh, Pa.	1	1	1	....	....	....	1
Packers Fertilizer Co. (Branch of Jarecki Chemical Co.), Cincinnati, Ohio	1	1	1	....	....	....	....
Price Chemical Co., Louisville, Ky	56	48	54	1	1	....	46
Pulverized Manure Co., Chicago, Ill	3	2	3	....	....	3*	3
Rasin Monumental Co., Cincinnati, Ohio	1	1	1	....	....	....	1
Rauh & Sons Fertilizer Co., E., Indianapolis, Ind	55	41	50	5	....	....	36
Read Phosphate Co., New Albany, Ind	4	3	4	....	....	....	3
Royster Guano Co., F. S., Toledo, Ohio	15	15	15	....	....	....	8
Smith Agricultural Chemical Co., The, Indianapolis, Ind	88	78	85	3	....	....	57

TABLE 12. Continued

Manufacturers	Number of samples reported	Number equal to guarantee in every particular	Number equal in value to guarantee	Number within 10 per cent of value of guarantee	Number not within 10 per cent of value of guarantee	Number with inferior nitrogen	Total number with nitrogen
Soilmaster Co., Berrien Springs, Mich.	1	1	1	.... .	....	1	1
Standard Wholesale Phosphate & Acid Works, Baltimore, Md....	2	1	2	....	....	....	2
Steinkamp, Hugo, Holland, Ind..	11	7	10	1	....	1	10
Swift & Co., Fertilizer Works, Calumet City, Ill.	50	46	49	1	....	....	29
Sydenstricker, J. L., Indianapolis, Ind.	1	....	....	....	1	1	1
Tennessee Corp., Lockland, Ohio.	1	1	1	....	....	....	1
Terre Haute Tallow & Grease Co., Terre Haute, Ind.	1	....	1	....	....	....	1
Virginia-Carolina Chemical Corp., Cincinnati, Ohio.	70	40	68	2	....	....	44
Walker-Gordon Farms, Juliustown, N. J.	1	1	1	....	....	1*	1
Wuichet Fertilizer Co., The, Dayton, Ohio.	1	....	1	....	....	....	1
Totals.	1,153	829	1,064	84	5	11	790

*Manufacturers not responsible for the quality of the nitrogen in manure.

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REPORT OF
MOSES FELL ANNEX FARM
BEDFORD, INDIANA

JUNE, 1934

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Agricultural Experiment Station
Lafayette, Indiana

The Moses Fell Annex Farm consisting of 479 acres was received from the Honorable Moses F. Dunn and Antoinette Fell in 1914, and is used by the Purdue University Agricultural Experiment Station for the purpose of making a thorough study of the agricultural problems of southern Indiana. Mr. Dunn not only gave the farm but generously provided for its development so that it might be operated without cost to the taxpayers of the State.

The farm is being operated for the benefit of the farmers of this section. The soil type represents a very large section in the southern part of the state and the results of the experimental work may be applied throughout that section.

Purdue University wishes to acknowledge the helpful cooperation of the various Farm Bureaus, the County Agricultural Agents, the banks, the Home Economics Clubs, Kiwanis Clubs, Rotary Clubs, and other organizations and individuals of Lawrence and neighboring counties. This cooperation extends the value and usefulness of the farm.

"After we have done everything that it is possible to do toward improving agriculture as a whole it still will be true that only those who farm intelligently and carefully, who work diligently and save reasonably, can hope to prosper. Those who fall below these standards will make at best but a bare living.

"It is a mistaken notion that when prices are low because of overproduction that the remedy is to take less pains and let the yields of our acres and of our animals run down. Such practice leads to but one end —bankruptcy. Whatever the price, it is the man that makes the highest returns on his acres who is most prosperous. The truth is the lower the price of the product the greater the need for high efficiency in producing it. When prices are high even mediocre yields are profitable, but such yields are always unprofitable when the prices are low. Therefore the more discouraging the price of farm products, the greater the necessity for good farming.

"The surest way to cut production costs is by increasing the yields of our acres and our animals. The farmer who disregards this law cannot be saved by any outside help."

REPORT OF MOSES FELL ANNEX FARM

JUNE, 1934

H. J. Reed, Farm Director H. G. Hall, Local Superintendent

The work on the Moses Fell Annex farm is carried on to answer many important questions that have confronted the farmers of southern Indiana.

What are the most profitable fertilizer applications on this type of soil? Are applications of manure sufficient? What rotations will give the best results? What can be done to make our pasture-lands more productive for live stock? What varieties of the various grain crops will give the most satisfactory yields over a period of years?

Can Korean lespedeza be used in a regular crop rotation? What about sweet clover? How can alfalfa be grown on this land?

What are the principal problems of poultry production?

Can cool storage be satisfactorily used for apples in this section of the state? What is the value of ice in connection with cool storage? How much longer can fall apples be held by using ice? What is the best and most economical method of using ice in such storage? Does such storage aid marketing the crop?

How much fertilizer is necessary for best results with tobacco?

What kind of sheep will fit best into the live stock program of your farm?

Is electric brooding of chicks practical on your farm?

What results will the new spray materials give on fruit trees in this section?

Can the thin lands of this section be made to produce good crops?

What varieties of plums and peaches should be grown here? Do they have a place in the local market?

Can cows give a good milk supply and also produce calves that make good beef?

What is the best time to sow clover seed?

These and hundreds of other pertinent questions are being answered by the results of projects now underway on this farm. Years of continuous and painstaking effort are necessary to give reliable information on such problems.

Regardless of whether the farmer can control or influence the prices of his products, economical and efficient production will always effect his net income.

Marketing is an important phase of our agricultural work today but crops and live stock of high quality must be produced before any marketing plan can operate satisfactorily. It is, therefore, logical that the farmers are interested in farming systems that give the best average returns over a period of years to eliminate the variations of temperature and moisture.

The soils and crops work carried out under the direction of the Department of Agronomy has been under way since 1915, and clearly demonstrates the value of various applications of plant food and the importance of choosing the best varieties for economical crop production.

The investigations being conducted under the Horticultural Department have demonstrated orchard renovation practice, the value and effectiveness of various spray schedules, orchard fertilization, cool storage management and costs, orchard sanitation, removal of arsenical residue from fruit, adaptation of peach and plum varieties, farm garden and many other phases of horticulture that have added to the knowledge of fruit production. The Entomology Department has rendered valuable service in combating orchard insects and timing orchard sprays. The Agricultural Engineering Department has studied the use of electricity on the farm, both in the home and on the farm. The Department of Poultry Husbandry has assisted in developing an outstanding flock of Barred Plymouth Rock chickens which has not only contributed information on flock improvement but has demonstrated good housing, brooding methods, feeding and flock management.

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The Department of Animal Husbandry is cooperating in a lamb production demonstration that is of interest to sheepmen. A cooperative project is under way to study the milking and beefing qualities of an imported strain of Scotch shorthorn cattle. This work will continue for a long period of years and will yield information on breeding practices that will be of value to breeders of both beef and dairy cattle. Pasture improvement is a matter of economic importance in southern Indiana. The work on this farm is showing that it is possible to improve the carrying capacity of the pasture land and in time a more complete project will be undertaken to coordinate the live stock and pasture work.

The Moses Fell Annex farm serves the farmers of southern Indiana in a very practical way at no cost to the taxpayers of the State. The Hon. Moses F. Dunn and Antoinette Fell gave the farm for this purpose and generously provided for its development so that a long-time constructive effort could be made to develop an agriculture that would improve the land, yield a profit and enrich the state.

SOILS AND CROPS WORK

The soil fertility experiments carried on under the direction of A. T. Wiancko, Chief, and G. P. Walker, Associate, of the Agronomy Department are showing striking results that are of great value to the farmers of southern Indiana.

GENERAL SOIL FERTILITY TEST

The field was laid out and tile drained in the spring of 1917. The original rotation was corn, wheat, clover and timothy, but this was changed in 1923 to corn, soybeans, wheat and clover, which is a more suitable rotation for this kind of land. All crops are removed except on plots 6, 7, 8, 10 and 11, where only the ear corn, wheat grain, soybean grain, and clover hay are removed, leaving all the roughage, except the clover hay on the land in lieu of manure.

The treatments shown in the second column of the table are as follows: L = ground limestone; Res. = crop residue; O = no treatment; M = manure.

All limed plots received 3 tons of ground limestone per acre in the spring of 1917 and an additional 2 tons in 1931. The fertilizers indicated in the table have been applied at the rate of 200 pounds per acre in the row for corn and 400 pounds for wheat since 1929. To the end of 1928 the potash in the fertilizer was 4 per cent and the phosphorus and potash were equally divided between the corn and wheat, but the nitrogen was all applied for wheat, half in the fall and half in the spring.

The manure applications consisted of 6 tons per acre plowed under for corn in the first round of the rotation. Since then the rate of manuring has been equal to the amount of produce removed during the previous round of the rotation except the wheat grain.

Table I shows the results of different soil treatments begun in 1917.

It will be noted, in comparing with earlier reports and in examining the crops on the experiment field, that the spread between the good and poor treatments is becoming greater year by year, and that the better treatments are becoming more and more profitable. Without soil treatment, the average value of the crops per acre per rotation of corn, soybeans, wheat, and clover, is now $23.44 (plot 14). With lime manure and fertilizer, the value is $67.76 at an average cash outlay of $11.70 for lime and fertilizer (plot 19).

The most profitable returns have been secured on the limed land, which has received an average of 6.7 tons of manure for corn and 450 pounds of superphosphate per acre divided between the corn and wheat in the rotation of corn, soybeans, wheat, and clover (plot 18). The crop increases from this treatment have averaged 30.4 bushels of corn; 9.4 bushels of soybeans; 11.6 bushels of wheat; and 1,088 pounds of hay per acre, valued at $43.80 per rotation at a cost of $11.33 for lime and fertilizer.

TABLE I.—RESULTS OF GENERAL FERTILITY TEST

Plot No.	Treatment	Average Yields Per Acre				Financial Statement Per Rotation			
		Corn bushels 1917-1933	Soybeans bushels 1923-1933	Wheat bushels 1918-1933	Hay pounds 1917-1933	Total value of grain and hay	Value of increase due to soil treatment	Cost of treatment	Gain over cost of treatment
1	L	24.4	8.8	4.7	1366	$31.59	....	....	....
2	L 0-12-0	40.9	14.4	13.3	2545	58.21	$33.93	$7.98	$25.95
3	L 0-12-6	45.5	13.9	13.7	2595	60.58	35.70	10.50	25.20
4	L 2-12-6	44.3	14.2	15.6	2552	61.59	36.11	11.70	24.41
5	L	26.3	9.3	5.5	1429	33.99	....	....	....
6	L 2-12-6 Res.	47.0	16.0	16.4	2736	66.30	40.18	12.95	27.23
7	L 0-12-6 Res.	47.8	16.2	15.5	2839	66.69	40.53	11.00	29.53
8	L 0-12-0 Res.	47.2	16.5	14.2	2684	64.88	38.68	9.38	29.30
9	L	27.2	9.2	5.6	1372	34.14	....	....	....
10	L Res.	29.0	9.9	5.7	1440	36.16	10.69	3.78	6.91
11	—Res.	24.5	9.2	4.6	1220	31.23	6.51	.68	5.83
12	—2-12-6	40.3	11.4	13.7	2111	53.06	29.10	8.76	20.34
13	L	24.7	8.3	4.9	1309	31.11	7.91	2.94	4.97
14	O	20.2	6.9	3.2	777	23.44	....	....	....
15	—M	36.6	9.0	5.4	1194	37.59	13.91	2.40	11.51
16	LM	41.6	10.7	7.6	1550	45.33	21.40	5.54	15.86
17	L	25.8	8.4	5.5	1276	32.08	....	....	....
18	LM 0-12-0	50.8	16.2	15.2	2701	67.26	43.80	11.33	32.47
19	LM 0-12-6	51.8	15.8	15.8	2685	67.76	45.01	13.87	31.14
20	LM 2-12-6	49.6	15.2	16.5	2670	66.55	44.51	15.05	29.46
21	L	24.1	7.6	4.8	1151	29.24	....	....	....
	Av. L checks	25.4	8.6	5.2	1316	32.04	....	....	....

NOTE.—In computing the financial results, corn has been valued at 50c, wheat at 80c and soybeans at $1.00 per bushel; and hay at $10.00 per ton. Straw and stover have not been counted. Nitrogen has been charged at 10c, phosphoric acid at 7c and potash at 7c per pound. Ground limestone has been charged at $2.50 per ton. Manure has been charged at 50c and residues at $1.00 per ton for spreading on the land.

Phosphorus is by far the most important plant food need of this soil. Applications of superphosphate have been highly profitable, either alone or in addition to manure. Without manure (plot 2) 225 pounds of 16 per cent superphosphate for corn and wheat in the four-year rotation has produced average crop increases of 16.0 bushels of corn, 5.5 bushels of soybeans, 8.4 bushels of wheat and 1,164 pounds of hay per acre, valued at $33.93 at a cost of $5.04 for the fertilizer. On land receiving an average of 6.7 tons of manure for corn, a similar use of superphosphate has further increased the crop yields by 14.1 bushels of corn, 5.7 bushels of soybeans, 7.4 bushels of wheat and 1,191 pounds of hay, valued at $22.40 at a cost of $5.04 for the phosphate, showing that manure is not sufficient on this land. (Compare plots 16 and 18).

In recent years, however, potash has become increasingly important on the land which has been receiving only phosphate, showing that the available supply of potash has been so reduced that it has become a limiting factor. It is showing up particularly on the corn and hay. During the last round of the rotation corn has averaged 6.4 bushels more and hay 326 pounds more on plot 3 than on plot 2.

Manure applied at an average rate of 4.8 tons per acre for the corn has produced average crop increases of 16.3 bushels of corn, 2.1 bushels of soybeans, 2.1 bushels of wheat and 425 pounds of mixed hay per acre, valued at $13.91, which amounts to an average return of $2.90 per ton of manure applied. (Compare plots 14 and 15).

Ground limestone applied at the rate of three tons per acre in 1917 and 2 tons in 1931 has so far produced average crop increases of 5.0 bushels of corn, 1.4 bushels of soybeans, 1.8 bushels of wheat, and 523 pounds of mixed hay per acre, valued at $33.62, up to the present time. (Compare plots 13 and 14.)

Lime and manure together have produced average increases of 21.1 bushels of corn, 3.7 bushels of soybeans, 4.2 bushels of wheat, and 789 pounds of mixed hay per acre, amounting to $21.40 for the rotation. (Compare plots 14 and 16.)

Phosphate and potash on the corn and complete fertilizer on the wheat have produced average increases of 20.0 bushels of corn, 4.3 bushels of soybeans, 10.4 bushels of wheat, and 1,309 pounds of mixed hay per acre, amounting to $29.10 at a total cost of $8.76 for the fertilizer. (Compare plots 12 and 14.)

TOP-DRESSING WHEAT WITH NITROGEN

Beginning with 1928, the wheat on the west ends of plots 4, 6, 12 and 20 of the General Fertility Test has been given a spring top-dressing of 15 pounds of nitrogen per acre. The average results for the five years are shown in the following table:

TABLE II.—RESULTS OF TOP-DRESSING WHEAT WITH NITROGEN IN SPRING

Plot No.	Treatment	Bushels wheat per acre 1928-1933	Bushels increase due to spring top-dressing
4 east end	2-12-6 in fall	15.3	....
4 west end	2-12-6 in fall + 15 lb. N in April	21.6	+6.3
6 east end	2 12-6 in fall	16.9	....
6 west end	2-12-6 in fall + 15 lb. N in April	23.2	6.3
12 east end	2-12-6 in fall	13.0	....
12 west end	2-12-6 in fall + 15 lb. N in April	19.3	6.3
20 east end	2-12-6 in fall	18.6	....
20 west end	2-12-6 in fall + 15 lb. N in April	24.3	5.7

Top-dressing the wheat with 15 pounds of nitrogen per acre in April has increased the yields by 5.7 to 6.3 bushels per acre. This increase has averaged one bushel of wheat for each 2.5 pounds of nitrogen applied. With nitrogen at 10 cents per pound, the increase in yield has been secured at a cost of 25 cents per bushel.

COMPARISON OF DIFFERENT PHOSPHATES

The object of this experiment is to determine the relative values of superphosphate, rock phosphate, bone meal, and basic slag as phosphatic fertilizers. Superphosphate and rock phosphate are also compared in several different proportions with and without lime, manure, nitrogen and potash fertilizers.

This field was laid out and tile drained in the summer of 1915. The crop rotation is corn, wheat and clover with all produce removed, except second growth clover.

The treatments shown in the second column of the table are as follows: L = ground limestone; M = manure; St.B. = steamed bone meal; BS = basic slag; SP = superphosphate; RP = rock phosphate; N = 12 pounds nitrogen; K = 50 pounds potash.

Ground limestone was applied at the rate of 4 tons per acre in 1915 and an additional 2 tons in 1931.

Manure was applied at the rate of 6 tons per acre for corn in the first round of the rotation and since then in amounts equal to the produce removed except wheat grain. The phosphates are applied at the rate shown in the third column in Table III. The rock phosphate is plowed under for corn and the other phosphates, and the nitrogen and potash are broadcast and harrowed in before planting. The following table shows the results to date of treatments begun in 1916.

TABLE III.—RESULTS OF PHOSPHATE EXPERIMENT

Plot No.	Treatment	Pounds phos. acid per acre	Average Yields Per Acre			Financial Statement Per Rotation			
			Corn bushels 1916-1933	Wheat bushels 1917-1933	Hay pounds 1918-1933	Total value of grain and hay	Value of increase due to soil treatment	Cost of treatment	Gain over cost of treatment
0	O	....	22.5	4.4	1204	$20.79	......	......	......
1	LM	......	36.5	8.9	1698	33.86	......	......	......
2	LM St. B.	48	43.4	13.2	2564	45.08	$25.51	$5.86	$19.65
3	LM BS	48	46.4	14.5	2500	47.30	27.08	5.86	21.22
4	LM	....	38.9	9.3	1788	35.83	....	....	......
5	LM SP	48	47.7	14.9	2723	49.38	27.77	5.86	21.91
6	LM RP	192	47.0	13.6	2595	47.35	25.00	7.30	17.70
7	LM	......	40.5	9.9	1972	38.03	......	......	......
8	—M SP	48	45.9	13.5	2559	46.54	23.61	5.76	17.85
9	—M RP	192	46.3	13.8	2903	48.70	25.91	7.30	18.61
10	LM	......	39.7	9.8	1982	37.60	......	......	......
11	L— SP	48	31.2	10.5	2206	35.03	12.64	5.86	6.78
12	L— RP	192	28.9	8.6	2062	31.64	9.51	7.30	2.21
13	L[1]	......	23.8	5.5	1420	23.40	1.53	2.50	—0.97
14	—SP	48	31.7	8.4	1752	31.33	9.73	3.36	6.37
15	—RP	192	35.6	10.4	2292	37.58	16.25	4.80	11.45
16	LM	......	37.8	9.6	1887	36.01	......	......	......
17	L—NK SP[2]	48	41.0	12.3	2360	42.14	20.54	10.56	9.98
18	L—NK RP[2]	192	35.2	10.3	2300	37.34	15.21	12.00	3.21
19	LM	......	39.2	10.3	1957	37.62	......	......	......
20	—NK SP[2]	48	40.5	11.3	2060	39.59	17.51	8.06	9.45
21	—NK RP[2]	192	40.2	11.9	2604	42.64	21.14	9.50	11.64
22	LM	......	37.8	9.1	1936	35.86	......	......	......
23	LM SP	24	46.7	13.8	2555	47.16	24.33	6.68	17.65
24	LM RP	96	45.9	12.9	2505	45.79	21.03	7.30	13.73
25	LM	......	41.8	12.3	2176	41.62	......	......	......
26	LM SP	72	49.7	17.3	3151	54.44	28.53	10.34	18.19
27	LM RP	288	47.4	15.0	2945	50.42	25.27	12.38	11.89
28	LM	......	40.6	10.5	2129	39.34	......	......	......
29	LM SP	160[3]	47.7	15.7	2918	51.00	27.65	8.93	18.72
30	LM RP	600[3]	46.3	13.7	2761	47.91	25.61	10.04	15.57
31	LM	......	39.4	8.9	1876	36.20	......	......	......
32	—M	......	34.0	7.1	1194	28.65	8.04	1.50	6.54
33	—	......	19.6	4.3	967	18.07	......	......	......
34	LM	......	36.6	9.8	1626	34.27	16.84	4.48	12.36
	Av. LM check	......	39.0	9.9	1911	36.97	......	......	......

1. Plot 13 was manured on Series B in 1916 and Series C in 1917.
2. Plots 17, 18, 20, and 21 receive 12 pounds of nitrogen and 50 pounds of potash per acre per rotation, all on the corn.
3. Applied in 1916 and again in 1925.

NOTE.—In computing the financial results, corn has been valued at 50c, and wheat at 80c per bushel and hay at $10.00 per ton. Straw and stover have not been counted. Nitrogen has been charged at 10c, phosphoric acid at 7c and potash at 7c per pound. Rock phosphate (30%) has been charged at $15.00, and ground limestone at $2.50 per ton. Manure has been charged at 50c per ton for spreading on the land.

The largest returns have been secured from the combination of ground limestone, manure and medium to heavy applications of superphosphate (plots 5 and 26). The heavy treatment (plot 26) has produced average increases of 26.2 bushels of corn, 10.8 bushels of wheat, and 1,733 pounds of mixed hay per acre over the average of the untreated land. (Compare plot 26 with 33.)

In combination with lime and manure, superphosphate has been the most profitable source of phosphorus. (Compare plots 5, 3, 2 and 6.) In this comparison, superphosphate, basic slag and steamed bone meal have been applied at the rate of 48 pounds and rock phosphate at 192 pounds of phosphoric acid per acre with manure for each corn crop.

On limed land, superphosphate has been more efficient than rock phosphate in all cases, whether used in large or small amounts, and with or without manure or nitrogen and potash (compare plots 5, 11, 17, 23, 26 and 29 with plots 6, 12, 18, 24, 27 and 30).

On manured land without lime, rock phosphate has been slightly more profitable than superphosphate (compare plots 8 and 9).

VARIETY TESTS OF FARM CROPS

The selection of hardy, high-yielding varieties of the crops grown in any section is very important. To determine those best adapted for this part of the state, the most promising varieties of several crops have been compared each year for a number of years. Each variety has been harvested separately and the yields determined by weight. The land on which the variety tests are carried has been kept in a good state of fertility by uniform applications of fertilizer on wheat, and manure on each corn crop.

TABLE IV.—RESULTS OF CROP VARIETY TESTS, 1922-1933

Varieties	Average yields bushels per acre	
	1930-1933	1922-1925
Winter Wheat		
Purkof	25.6	21.9
Selection 21-2-11	25.1	......
Michigan Amber	25.3	19.5
Fulhio	25.0	......
Fultz	25.7	19.1
Poole	......	17.5
Rudy	......	17.4
Red Rock	24.8	17.2
Red Chaff	......	18.2
Red Cross	23.3	......
Trumbull	25.6	......
Gladden	26.1	......
Nabob	26.4	......
Berkeley Rock	25.0	......
Kharkov	23.0	......
American Banner	20.1	......
Winter Rye		
Mammoth Winter	25.6	21.2
Wisconsin Pedigree	......	18.9
Rosen	......	19.0
Winter Barley		
Purdue 21	35.3	20.7
Tennessee Winter	......	19.0

Varieties	Average yields bushels per acre		
	1926-1930	1922-1925	1930-1933
Oats			
Gopher	......	......	26.0
Iogren	......	......	18.7
Minota	35.2	37.2	24.2
Swedish Select	30.4	33.9	......
Iowa 103	33.7	33.4	27.3
Fairfield	......	32.7	......
Big Four	......	29.2	......
Burt	......	29.0	......
Victory	......	27.8	......
Iowar	36.3	......	......
Fulghum	33.0	......	27.3
Cornellian	31.5	......	......
Cartier	......	......	31.8
Hulless	......	......	18.4
Spring Barley	11.2	10.4	10.5
Spring Wheat	5.8	8.3	3.7
Spring Rye	9.9	13.7	7.8
Soybeans	Hay pounds per acre		Seed bus. per acre average
	1927-1931	1930-1932	1930-1932
Kingwa	......	3972	17.7
Dunfield	4683	3741	14.1
Manchu	4527	......	......
Midwest	5206	3042	16.9
Wilson	4774	3414	14.6
Virginia	4565	......	......
Mansoy	3510	......	......
Illini	......	3509	14.1
Harbinsoy	......	3556	13.1

PASTURE EXPERIMENTS

The improvement of pasture land has a very definite place in the agricultural program for southern Indiana. Large areas of this section are better adapted to pasture purposes than to its present use. There is a considerable area of pasture land that is not producing in a satisfactory way. The development of better pastures will make possible the expansion of the livestock industry from both the beef cattle and the dairy cattle point of view.

Several years ago a series of pasture plots was laid out in one section of the old pasture, and the results of soil treatment are given in the following table.

Grass mixtures including timothy, red top, Kentucky blue grass, orchard grass, alsike clover, sweet clover, alfalfa and lespedeza were seeded on the plots in April, 1924. The first 2 years' growth was largely alsike clover, timothy and red top with scattered clumps of orchard grass, sweet clover and alfalfa.

A plot in the clover seed strain test which was practically killed out by the winter weather. Notice the excellent growth of surrounding clover. This emphasizes the importance of using hardy strains of red clover.

BETTER PASTURES

After 10 years blue grass and red top persist along with some timothy on the fertilized plots. Blue grass is much better on the limed and phosphated areas than on the unlimed. Most of the lespedeza, both Korean and common, seemed to have disappeared in the extreme drouth of 1930 but is slowly coming back. Hop clover, a member of the clover family, gradually came into the mixtures. This early growing legume seems to have some real worth for rolling pasture land of this type.

For new pasture seedings a mixture of timothy, red top, blue grass, alsike clover and lespedeza is recommended for rolling limestone land. On sour thin land, a mixture of lespedeza and red top seems best.

TABLE V.—RESULTS OF PASTURE EXPERIMENT, 1924-1933

Plot No.	Treatment Per Acre*	Green forage pounds per acre 1924	Green forage increase over untreated	1925	Cured forage, pounds per acre average 1926-33	Cured forage, increase over untreated
1	Manure	5445	1512	Due to dry weather growth was small in 1925 and nothing was harvested	1443	473
2	500 lb. 2-12-6	16940	13007		2262	1292
3	500 lb. 0-12-6	13613	9680		1716	746
4	500 lb. 0-12-0	13310	9377		1609	639
5	Untreated	3933	....		970	....
6	Limestone, 2 tons	6363	2430		1421	451
7	Lime, 500 lb. 0-12-0	13613	9680		1665	695
8	Lime, 500 lb. 0-12-6	18150	14217		1786	816
9	Lime, 500 lb. 2-12-6	16940	13007		2437	1467
10	Lime, manure	13613	9860		1715	745

* Treatments applied at seeding time in April, 1923, and fertilizer repeated in fall of 1929. Plots 2 and 9 receive top-dressings of 100 pounds of nitrate of soda per acre each spring. Manure is applied each five years.

ROTATION EXPERIMENT

A comparison of clover, alfalfa, sweet clover, Korean lespedeza and timothy in rotation with corn and wheat is being made on 17 quarter acre plots.

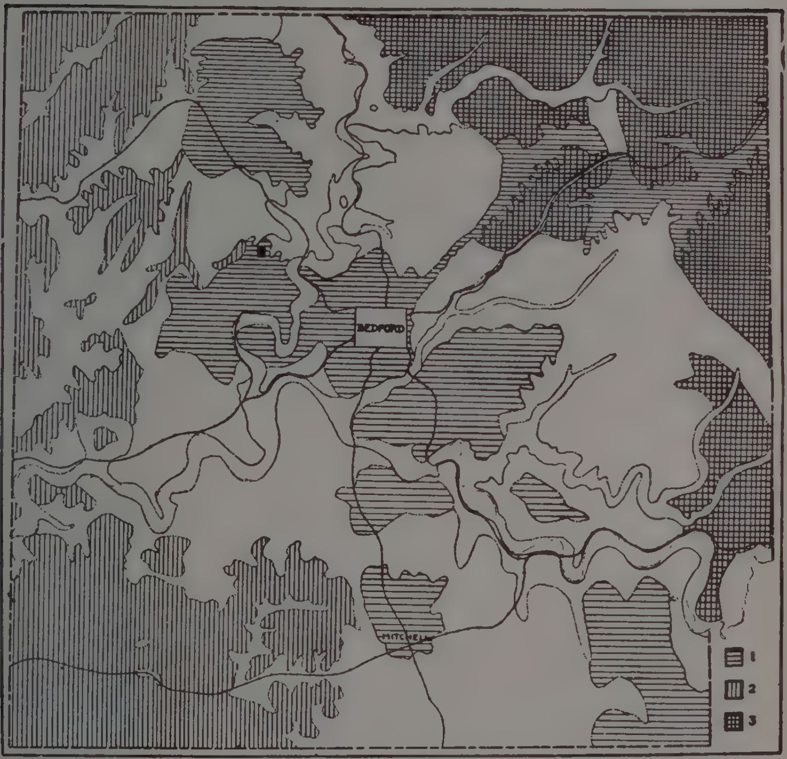
The effect of these crops on succeeding grain crops, their adaptation and dependability as one year rotation crops and their productive capacity are being studied.

All wheat receives 300 pounds per acre of 2-12-6 fertilizer and corn 100 pounds of 0-12-6 in the row. Manure equal to the total weight of produce (except wheat grain) in the previous round of the rotation is divided between corn and wheat.

The rotations under comparison are:

1. Corn, wheat, timothy (hay)
2. Corn, wheat, clover (hay)
3. Corn, wheat, alfalfa (hay)
4. Corn, wheat, sweet clover (seed)
5. Corn, wheat, (sweet clover intercrop)
6. Corn, wheat, Korean lespedeza (hay and seed).

Map Showing Soil Types Similar to Experiment Field



Region	**Principal Soil Characteristics**
No. 1.	**Yellowish limestone land like Bedford experimental field.**
No. 2.	**Yellowish "freestone" land.**
No. 3.	**Like No. 1 on ridge tops and like No. 2 on lower slopes.**

The results of the Moses Fell Annex Farm can be applied to the greater part of Lawrence County and surrounding territory.

The soil survey made in this county in 1922 enabled the Department of Agronomy to classify the soils of this section and to indicate the types which can benefit most from the experimental work on this farm.

The results will apply to all similar land in the county, which is indicated by shading No. 1 on the map. They will also apply fully as well to the areas indicated by shading No. 2, and more or less fully to the areas indicated by shading No. 3 where the hilltops are like No. 1 and the lower slopes like No. 2.

Portions of the unshaded area would doubtless respond to similar treatments, but most of it does not need either lime or fertilizer to the same extent as the shaded areas.

HORTICULTURAL WORK

The results of Horticultural investigational work at Lafayette are often not applicable to southern Indiana conditions. Consequently, numerous projects of interest to fruit growers and home gardeners are being conducted at Moses Fell Annex with a portion of the farm funds. This work is being carried on by members of the Horticultural staff under the direction of Professor Laurenz Greene, assisted by Professor C. L. Burkholder and Professor F. C. Gaylord.

Plum and Prune Variety Tests

This block of approximately 30 varieties has been selected out, so that those varieties now remaining have come through the 1931, 1932, and 1933-34 low winter temperatures without fruit bud injury. During this three year period the variety block of peaches has been almost a total failure. The late spring freeze of 26 degrees on the night of April 27, 1934, destroyed a part of the plum bloom, but enough are still left on some varieties for more than a half crop. The variety susceptibility to low temperatures in bloom will be of special interest in 1934.

Stationary vs. Portable Spraying

This work was started in 1931 with a new portable sprayer being used on one half of the orchard and a new stationary sprayer on the other half. It has been found that, regardless of the year or number of gallons of material applied in each area, labor and power costs alone are twice as high for portable spraying, averaging one-fourth cent per gallon for stationary spraying and a little over one-half cent per gallon for portable spraying. When labor, power, depreciation, and interest on investment charges are all included, there was a saving for the stationary method of $0.002 cent per gallon or $224.00 per year, based on 112,000 gallons of spray. The present stationary pump tank and power unit is large enough to handle the entire orchard, and the cost per gallon would be reduced if the equipment was used to full capacity.

Apple Washer and Apple Sizer Costs

Records of the entire cost of washing apples in a Bean Brush type washer have been kept for three years. A summary of results follows:

Year	*No. of orchard crates*	*Dep. & int. on investment*	*Repairs and replacements*	*Cost of acid, labor, and electric power*	*Cost per bushel*
1931	15,948	$126.00	$14.00	$34.65	$0.0109
1932	7,600	126.00	14.00	16.24	0.0210
1933	14,105	126.00	14.00	27.42	0.0118

Records have been kept on the electric power costs of operating the apple sizing machine. The average cost per 100 crates of fruit has been $0.027, and electric power costs for the apple washer $0.047 per 100 crates.

Codling Moth Control

Each year a different program of sprays is applied over the entire apple orchard in an effort to test out recent developments along insecticide and fungicide lines. In 1934, from one-fourth per cent to three-fourths per cent of oil, plus arsenate of lead, is being used in three first and two second brood covers. The north half of the orchard will receive home made oil emulsion, while a commercial summer oil will be used on the south half.

All trees have been scraped and will be banded with hot dipped beta-naphthol bands to catch the larva of summer broods of codling moth. The

Heavy applications of mulch were placed under many of the trees last summer.

packing shed and loft have been made moth tight, and are kept closed until the day of the June picnic each year. The experimental spray program followed in 1933 did not give satisfactory codling moth control and resulted in a heavy increase in codling moth population.

Apple Washing

The 1933 spray schedule in which two first brood sprays of arsenate of lead and linseed oil was followed by one second brood spray of calcium arsenate

The Elberta peach orchard after pruning. The severe winter killed the fruit buds and the orchard was given a severe pruning to prepare it for next year.

and one-fourth per cent oil resulted in a heavy entrance of worms. Arsenate of lead and one per cent oil was used in the next cover followed by arsenate of lead and lime on July 25. This schedule gave an average lead load at harvest of nearly .08 grain per pound of fruit and nearly .035 grain of arsenic.

This arsenic load was reduced to well below the tolerance with three per cent by volume cold hydrochloric acid, but nearly three times the tolerance remained when fruit was put through a brush dry cleaner. The lead load was reduced to the tolerance on all but Grimes with the same treatment. A large number of washing materials, heated solutions, and wetting agents have been tried since 1929.

Removing rough bark on apple trees as an aid in codling moth control.

Orchard Soil Management

The south half of the orchard was seeded down in 1928. Serious results of continual cultivation followed by erosion are still evident in this area. The small block of Winesap in the southeast corner of the orchard has never been cultivated, but has received light annual applications of straw and manure around the trees. All trees have received an annual application of sulphate of ammonia. About one-third of the orchard has been given a light straw mulch each year. The satisfactory size of the fruit in the fall of 1933, following a very dry summer, can be at least partly attributed to this straw mulch practice.

Peach Variety Plots

Winter temperatures have been sufficiently low for the past three winters that no fruit buds survived, even on varieties supposedly hardy to low winter temperatures. Trees have been headed back heavily and are in productive vigor, considering the age of the trees.

Use of Ice in Insulated Cool Air Apple Storage

This project has been completed, and a discussion of results will be found in Purdue Experiment Station Bulletin 379, which is free on request.

Pear Blight and Variety Test Plot

The production of pears has ceased to be profitable in Indiana, because of the high death rate of the trees due to pear blight. About one acre of pear trees has been planted along the west side of the apple orchard. These trees are on blight resistant roots and bodies. At present, the scaffold branches are being budded over to a number of the best varieties of pears.

The Farm Garden

The farm garden as laid out on the Moses-Fell Farm is suggestive of one of the most valuable enterprises on the average Indiana farm. It provides an abundance of high quality vegetables so essential to health and happiness of the whole family throughout the year.

The farm garden laid out on the Moses-Fell Farm is representative of a typical garden. It consists of an acre of ground, half in garden each year, the other half planted to soybeans in preparation for the garden operations the following year. Sufficient plantings of small fruits are included along with the vegetables to meet the family needs.

The farm garden at the Moses-Fell Farm has provided more than a hundred dollars worth of vegetables and strawberries each year for the past three years. Copies of plans and suggested lay-outs for the farm garden may be secured free by writing the Purdue Agricultural Experiment Station, Lafayette, Indiana.

A view of one of the tobacco plots which has produced 1,800 pounds of cured leaf per acre. The continued and increasing interest in this crop makes these experiments of interest to a large group of southern Indiana farmers. Applications of 500 lbs. to 1,000 lbs. per acre of a 3-16-9 fertilizer have proved efficient.

POULTRY

So that it might serve as a demonstration of practices suited to southern Indiana conditions, the flock of 800 Barred Plymouth Rocks is handled (apart from the breeding work) with a view to simplicity and economy.

During the record year ending September 30, 1933, the feed cost of the laying flock (using home mixed feed) was 74 cents per bird, or seven cents per dozen eggs produced. The average investment in laying houses and equipment per bird was $1.34, the depreciation and interest charges on which amounted to nine and one-half cents per bird, or one cent per dozen eggs produced during the year. Despite a low average egg price, the laying flock earned 55 cents per bird, exclusive of labor.

Individual records are kept on each bird by means of trap nests. All of the chickens have leg bands and individual numbers.

The growing flock is also simply housed and cared for. In the fall of 1933, 683 pullets were housed at an average cost of 26 cents apiece exclusive of labor.

To further develop the flock as a source of good breeding stock, 500 pullets are trapnested the year around, and special breeding pens are made up of the best females, as judged by production, egg size and past performance (if any) as breeders.

Of the 2022 chicks hatched during the 1934 season, 399 were pedigreed and wingbanded from the three special breeding pens.

From time to time, in the form of hatching eggs, new blood is introduced from outstanding breeding farms of the country. During the 1934 season 130 such eggs gave 104 chicks (an 80 per cent hatch) to be used in further developing the flock.

The most noticeable improvement in the 1933-34 season over previous years has been the increase in average egg weight. This detail is of growing importance as more and more markets are operating on a "quality" basis in which egg size plays a large part.

The Poultry Department, through Stephen M. Walford, Extension specialist, has supervised the management and breeding work of the flock.

RURAL ELECTRIFICATION STUDIES

The Agricultural Engineering Department, through T. E. Hienton, has cooperated during the year in studying the application of electrical energy to many farms. Chick brooders are operated by electricity as well as spray machinery, grinders, graders, pumps, codling moth traps and household equipment. Data are collected on the comparative costs of these operations.

LIVESTOCK

The livestock work on the farm is carried on to study certain problems that have a bearing on the future development of this industry in southern Indiana. The Department of Animal Husbandry of the Agricultural Experiment Station—Professor F. G. King, Chief, and the Bureau of Animal Industry, U. S. Department of Agriculture cooperate on the sheep and cattle projects. Professor Claude Harper, Asst. Chief of the Department of Animal Husbandry, acts as adviser and supervises the experimental phases of the work.

A group of Delaine Merino ewes and lambs. These sheep are included in the lamb production tests conducted on the farm. The growing interest in sheep production makes this work of particular interest to live stock farmers.

A COMPARISON OF TYPES OF EWES

Three-Year Average 1930-1933

During the past three years, three types of ewes have been used in the sheep production project at the Moses Fell Annex Farm. They would be classed as Merino ewes, Western ewes, and native Lawrence County ewes.

During the three-year period, an average of 19 native Lawrence County ewes, 22 Western ewes and 27 Merino ewes were used. They have been compared with reference to feed costs and lamb and wool production. In the fall of 1929, 25 Western ewes and 25 native Lawrence County ewes were purchased for this project and the Merino ewes that were already on the Moses Fell

Annex Farm were included in the sheep production project. That fall the native Lawrence County ewes cost eight dollars per head and included ewes from two to four years old. The Western ewes cost six dollars per head and were five year old ewes.

All of these different types of ewes were bred to Southdown rams. The same rams and the same ewes were used for a three-year period, Merinos excepted. The same Merino ewes were not used each year but they were all of the same type and breeding and hence, would have little effect upon the results.

Three Southdown rams were used in this project. They were of medium size, of good type and quality. The native Lawrence County ewes that were purchased for this project were considered by a number of people who saw them as representative of the average of Lawrence County ewes with reference to type, quality, and conformation. The Western ewes were of the white-faced type and their breeding was approximately one-half Rambouillet and one-half Lincoln. These ewes were bred in Idaho and were used at the Animal Husbandry Experimental Farm at Lafayette before they were taken to Bedford. The Merino ewes were developed on the Moses Fell Annex Farm and built up from a flock that had been started about 1920.

These ewes were all given the same feeds. However, each group received different amounts of harvested feed according to their thrift and condition. During the grazing season, all ewes and their lambs were together in the same pastures. They were also together in the same pastures during the breeding season. The following table shows the three-year records of harvested feeds used for the various types of ewes.

THREE-YEAR AVERAGE 1929-1933

	Native	Western	Merino
Ration	Oats Shelled corn Corn silage Legume hay	Oats Shelled corn Corn silage Legume hay	Oats Shelled corn Corn silage Legume hay
Number ewes per lot	19	22	57
Total feed consumed:			
whole oats	4,183.3 lbs.	4,813.0 lbs.	9,983.3 lbs.
shelled corn	154.0 lbs.	265.3 lbs.	168.3 lbs.
corn silage	9,375.7 lbs.	10,758.3 lbs.	20,180.0 lbs.
legume hay	4,827.0 lbs.	5,969.3 lbs.	10,184.7 lbs.
Number of days on feed	163	163	161
Average daily feed:			
whole oats	1.353 lbs.	1.345 lbs.	1.086 lbs.
shelled corn	.0498 lbs.	.0741 lbs.	.0183 lbs.
corn silage	3.033 lbs.	3.005 lbs.	2,195 lbs.
legume hay	1.561 lbs.	1.668 lbs.	1.108 lbs.
Cost of feed:			
whole oats	$39.30	$43.08	$91.49
shelled corn	1.25	2.23	1.18
corn silage	20.40	23.17	42.69
legume hay	33.81	39.39	66.47
Total	94.76	107.87	201.83
Average cost per sheep	4.99	4.90	3.54
Average cost per sheep per day	.0307	.0301	.0219

There was a great deal of difference in the pounds of wool sheared by the various groups. The native ewes sheared only 6.3 pounds of wool average per year while the Merino ewes sheared 10.9 pounds per ewe per year and the Western ewes averaged 9.3 pounds of wool.

The percentage of lambs raised to a marketable age from the various types of ewes were as follows: 92 per cent from the native Lawrence County ewes, 130 per cent from the Western ewes and 94 per cent from the Merino

FLEECE WEIGHT OF VARIOUS TYPES OF EWES

	1931			1932			1933			Average		
	Native	Western	Merino	Native	Western	Merino	Native	Western	Merino	Native	Western	Merino
Number ewes sheared	24	24	53	20	23	60	11	20	57	55	67	170
Total pounds wool	160	270	605	117	187	673	70	167	570	347	624	1848
Av. wt. per fleece	6.6	11.2	11.4	5.9	8.1	11.2	6.4	8.3	10.0	6.3	9.3	10.9
Av. price per lb. c	.17	.16	.20	.12	.12	.12	.31	.28	.26	....	....	....
Gross returns per ewe per year for wool	....	....	....	....	....	....	....	....	....	$ 1.27	$ 1.83	$ 2.07

ewes. These percentages are based on the number of lambs marketed in comparison with the number of ewes on hand when the lambing season began.

The average age of the various types of lambs when sold showed the natives to be 7.7 months of age, Westerns 7.7 months of age, and the lambs from the Merino ewes to be 8.4 months of age. It was possible to sell 36 per cent of the lambs from the native ewes at weaning time, 29 per cent of the lambs from the Western ewes and 25 per cent of the lambs from the Merino ewes.

GROSS RETURNS PER EWE PER YEAR

	Native Ewes	Western Ewes	Merino Ewes
Lambs	$3.49	$4.51	$3.40
Wool	1.27	1.83	2.07
Total	4.67	6.34	5.47
Harvested feed costs	4.99	4.90	3.54
Profit or loss	—$0.32	+$1.44	+$1.93

The table presented showing the gross returns per ewe per year is based on the number of ewes on hand at the beginning of the lambing season. This table does not include the cost of fattening lambs after weaning. The low cost of feed for the Merino ewes makes them show advantageously with reference to the profit or loss. On the other hand, the crossbred Merino lambs were marketed at an older age and less of them went to market at weaning time than from the Western ewes. Both the Merino ewes and the Western ewes have made a creditable showing in comparison with the native Lawrence County ewes. The native Lawrence County ewes sheared less wool and returned less income from wool than the other two types. At the same time, the native Lawrence County ewes did not produce any greater returns from lambs than the Merino ewes. It appears that there is an opportunity for improvement in both lamb and wool production in the native Lawrence County ewes.

A COMPARISON OF MERINO LAMBS AND SOUTHDOWN-MERINO CROSSBRED LAMBS

A Three-Year Average 1930-1933

In the fall of 1929, a project was developed at the Moses Fell Annex to secure information relative to comparative gains, market finish and cost of Merino lambs and Southdown-Merino crossbred lambs.

The Merino ewes used in this project were all high grade and from external appearances of conformation and fleece were essentially purebred. Approximately 75 per cent of the wool sheared from these ewes from year to year graded Delaine and about 25 per cent graded half-blood.

The Merino lambs were sired by a purebred Merino ram of smooth type and conformation with an excellent fleece. The get of this ram had produced fleeces that were twice champion Delaine fleeces at the Indiana State Fair. The Southdown rams were purebred, medium-size, of good type and quality.

During the three-year period this project was in progress at the Moses Fell Annex Farm, 81 ewes were bred to a Southdown ram and 96 ewes were bred to a Merino ram. These ewes were fed together throughout the entire year except during the breeding season. The rams were turned with the ewes each year shortly after the middle of September and kept with them until after the middle of November—a period of slightly more than two months.

Five of the Merino ewes in the group bred to a Southdown ram, failed to produce lambs, and ten of the 96 ewes bred to the Merino ram failed to drop lambs. Seventy-seven crossbred Merino lambs were marketed from 81 ewes that were offered for service during this three-year period. Seventy-three Merino lambs were raised to a marketable age. Thus, a 95 per cent crossbred lamb crop was marketed and a 76 per cent Merino lamb crop was produced.

The crossbred lambs were sold at an approximate age of 8.4 months and the Merino lambs went to market when they averaged 9.7 months of age. Twenty-five per cent of the crossbred lambs were sold at weaning time and two per cent of the Merino lambs were sold at weaning time. The crossbred lambs sold for an average of $5.57 per hundred and the Merino lambs brought $5.35 per hundred—a difference of 22 cents per hundred in favor of the crossbred lambs.

It cost $3.54 per year for harvested feed for these Merino ewes. This includes both groups, the ones that produced the crossbred lambs and those that produced the Merino lambs. We do not have the exact cost of fattening the lambs after weaning, but owing to the fact that it was necessary to feed the Merino lambs approximately 40 days longer than the crossbred lambs, in order to get them to a fairly satisfactory market weight and finish, it is obvious that the difference in lower feed cost would be in favor of the crossbred lambs.

These Merino ewes, including both groups, sheared an average of 10.9 pounds of wool per ewe per year which brought an average return of $2.08 per ewe, per year.

All crossbred lambs were marketed at an average weight of 64.4 pounds per lamb at the market. All the Merino lambs were marketed at an average weight of 62.3 pounds per lamb.

The returns per ewe from lambs is secured on the basis of ewes bred for lamb production and includes all ewes that failed to produce lambs.

The returns from wool were the same from each group of ewes. The ewes that produced the crossbred lambs returned $3.41 per ewe from lamb production and $5.49 per ewe, including both lambs and wool. The ewes that produced the Merino lambs returned $2.54 per ewe from lamb production or $4.62 per ewe including both wool and lambs. Thus, the ewes bred to the Southdown rams returned 87 cents more per ewe than those bred to the Merino rams.

The crossbred lambs were more profitable, matured more quickly, and were of more desirable market quality. The crossbred lambs were stronger at birth and started to nurse their mothers more easily than the Merino lambs. It is also interesting to note that the Southdown rams settled more ewes in lamb than the Merino ram and a larger per cent of crossbred lambs were raised to a marketable age.

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Circular No. 204 June, 1934

THE USE OF RAPID CHEMICAL TESTS ON SOILS AND PLANTS AS AIDS IN DETERMINING FERTILIZER NEEDS

A convenient portable kit containing equipment for rapid soil and plant tests.

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Purdue University
Agricultural Experiment Station
Lafayette, Indiana

Rapid chemical tests on soils and plants offer a practical and inexpensive method for determining soil reaction (acidity) and available plant food supply.

The system of testing described in this circular makes use of practically identical reagents, equipment and technique for both soil and plant tests.

The tests on soils indicate the reaction (acidity), the dilute acid soluble phosphorus and the water soluble and replaceable potassium.

The tests used on plant tissues indicates the relative importance of nitrate, phosphate and potassium in relation to other possible limiting factors.

Such tests supply valuable information regarding plant food supplies from which it is possible to make recommendations for the proper use of fertilizers.

As a basis for a definite fertilizer recommendation, the test results should be coupled with the general experience as to amount of fertilizer and time and method of application which has been found profitable.

Since the productiveness of a soil is not solely a matter of a certain number of pounds of plant food per acre, full consideration should be given to other possible limiting factors.

THE USE OF RAPID CHEMICAL TESTS ON SOILS AND PLANTS AS AIDS IN DETERMINING FERTILIZER NEEDS

by

S. F. Thornton, S. D. Conner and R. R. Fraser

For determining soil reaction and supply of available plant nutrients, rapid chemical soil and plant tests have come into extensive use during the past few years. In the hands of competent workers such tests are proving valuable supplements to field plot, greenhouse and laboratory methods already in use. They afford a means of rapid diagnosis, are simple and inexpensive to use and are an aid in determining fertilizer needs for local fields or areas. The proper use of the tests described in this circular make it possible to more accurately determine the fertilizer needs of the various crops on individual farms. The tests can be made by anyone who can distinguish color and who has had proper instruction in their use. While no special scientific training is necessary for making the tests, considerable experience is necessary for their proper interpretation. Continued use of the tests and correlation of test results with crop responses to fertilizer applications under different soil conditions will greatly increase the reliability of interpretations by individual operators.

The potential productiveness of a soil is dependent upon many factors. Among the more important of these are physical condition, water supply, temperature, length of growing season, reaction and supply of available plant food. While soils containing an abundant supply of nitrogen, phosphorus and potassium are not always highly productive, experience has shown that highly productive soils always contain an abundance of these essential plant nutrients. For this reason a knowledge of the nutrient supply of the soil is of great practical importance.

Because the productiveness of a soil is not solely a question of a certain number of pounds of plant food per acre, in the interpretation of results of the tests, full consideration should be given to all other known characteristics of the soil in question. If any one of the physical factors governing plant growth is unfavorable, a close correlation between chemical tests and plant growth is not to be expected. Also it should not be expected that such tests definitely will answer the questions as to exactly how much or precisely what kind of fertilizer will prove most profitable or what will be the yield. The tests do, however, give valuable indications as to plant food supply from which better fertilizer recommendations can be made.

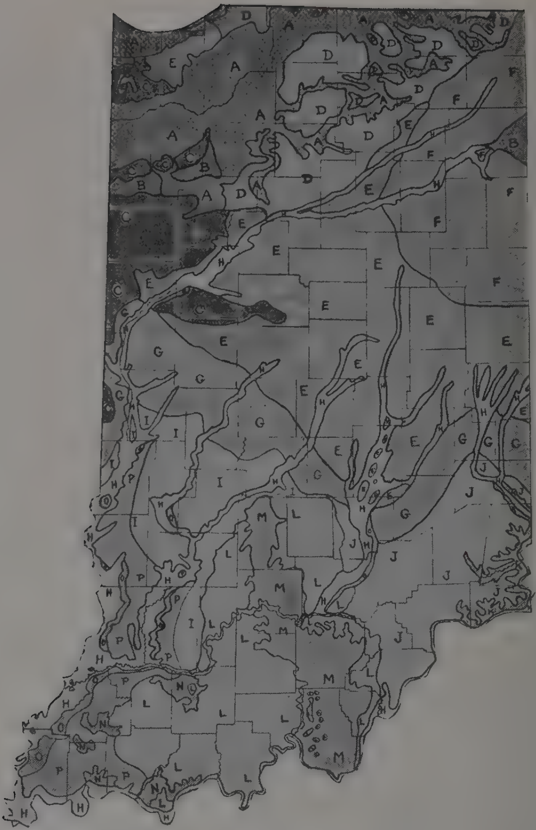


Fig. 2. Soil Regional map of Indiana, showing grouping of predominant soils.

A—Maumee, Plainfield and Newton fine sandy loams; muck.
B—Maumee clay, Rensselaer loam.
C—Carrington and Parr silt loams, Webster and Clyde silty clay loams.
D—Miami, Brookston, Crosby and Bellefontaine loams.
E—Crosby and Miami silt loams; Brookston silty clay loam.
F—Crosby and Miami silty clay loams; Brookston clay.
G—Fincastle, Russell and Brookston silt loams.
H—Genesee, Huntington and Fox loams.
I—Vigo, Gibson, Cincinnati and Holly silt loams.
J—Clermont, Avonburg, Cincinnati and Holly silt loams.
K—Fairmont and Switzerland silty clay loams.
L—Lickdale, Johnsburg, Tilsit, Zanesville and Holly silt loams; Muskingum stony loam.
M—Frederick, Bedford, Hagerstown, Guthrie, Lawrence and Huntington silt loams.
N—Bainbridge, Dubois, Haubstadt and Robinson silt loams.
O—Princeton fine sand and fine sandy loam; Logan and Owensville silt loams.
P—Iva, Muren, Pike and Alford silt loams.

The tests described in this circular are, in part, adaptations from the numerous rapid soil tests developed and used during the past few years. They make up a system in which an attempt has been made to bring together good features of the many such tests now in use. Especially desirable is the plan whereby practically identical reagents, equipment and technique are used with both soils and plants. The tests on soils indicate the dilute acid soluble phosphorus and the water soluble and replaceable potassium supply. The tests on plants indicate the nitrate nitrogen, phosphate phosphorus and total potassium content. With soils they indicate the ability of the soil to supply nutrients to the plant and with plants, the relative nutrient level in relation to other possible limiting factors.

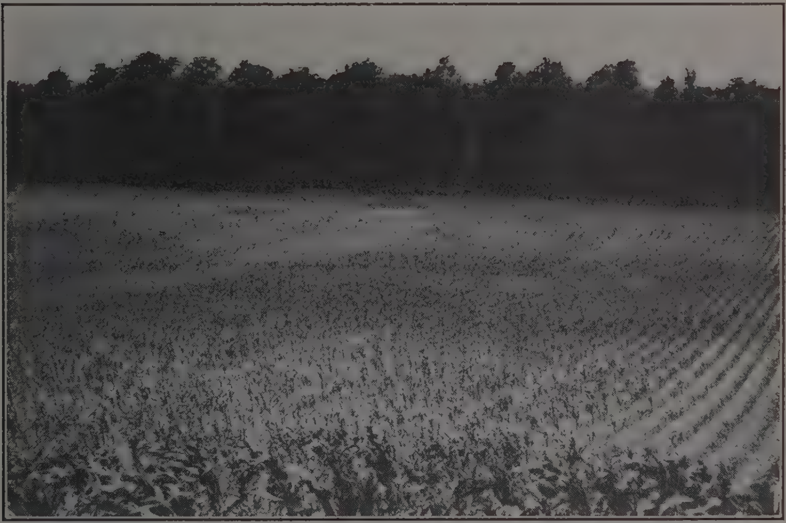


Fig. 3. Often samples from knolls, slopes and low portions of fields and from distinctly different soil types will give entirely different test results.

HOW TO COLLECT REPRESENTATIVE SOIL AND PLANT TISSUE SAMPLES FOR TESTING

Soil Sampling.—Samples may be taken at any time of the year. If a single composite sample is to represent an entire field of an acre or more it should be taken from about 10 places well distributed over the area. Composite samples may be used except that soils from widely different soil classes or types should not be mixed for testing. Often samples from knolls, slopes and low portions of fields and from distinctly different soil types will give entirely different test results. Testing such samples separately may furnish information of much practical value, especially in regard to lime requirements.

Soil augers are suitable for securing soil samples but a spade or trowel is more often used. With a spade or trowel a vertical cut is made to a depth of 6 to 8 inches and a thin slice down the face of this cut taken for the sample.

Any grass or rubbish on the surface should be removed before the sample is taken. The individual samples to be composited should be mixed, all soft clods and lumps broken up, and stones, hard clods and rubbish removed. A half-pint of soil is sufficient to keep for testing. Samples for phosphorus and potassium tests should be air-dried but not dried by means of artificial heat. Moist soils may be used for acidity determinations.

Dust from gravel and limestone roads is known to affect materially the adjacent soil, especially as to reaction and available phosphorus content. This effect often extends 400 feet or more away from the road and should be taken into consideration in sampling. Areas adjacent to such roads should be sampled separately and not composited with other portions of the field. In sampling pasture land and fields where stock have been kept, locations near the entrance where the stock are likely to congregate should be avoided.

Often the testing of subsoil as well as surface soil may be desirable, especially for acidity. In general subsoils in Indiana, as shown by plant growth, tend to be much more deficient in available phosphorus than surface soils. On the average there is no tendency for available potash supply in subsoils to be either higher or lower than that in surface soils. Chemical tests on subsoils tend to show a relatively higher available phosphorus supply than is indicated by plant growth and response. For potassium, plant growth and chemical tests correlate as closely with subsoils as with surface soils.

For each test described in this circular a teaspoonful or less of soil is used. From this sample interpretations are made covering areas containing millions of pounds of soil. This emphasizes the absolute necessity for careful selection of the sample to be used.

Selection of Material for Plant Tissue Test.—The care in sampling already emphasized for soils applies to plants. It is obvious that a single plant may fail to give a true picture of an entire field. A careful survey of the field will show that a majority of the plants are represented by certain types. Plants for testing should be selected from these representative types. The number of plants necessary to secure a representative test will vary with the uniformity and size of the field. Often six or eight plants will suffice but a larger number should be taken whenever this seems desirable. Samples from these several plants may be composited and a single test made.

Different parts of plants give different results and certain parts have been found to give more reliable indications of fertilizer needs than others. For nitrogen, main stems and leaf petioles have been found satisfactory. In general, tests for phosphorus should be made on main stems or leaf petioles from actively growing portions of the plant. For potassium, with grasses and cereals, tests should be made on the base of the leaf near the middle of the stem and for other plants the main stems or leaf petioles. The following list of some of the more common farm crops shows the parts of the plants upon which the tests should be made:

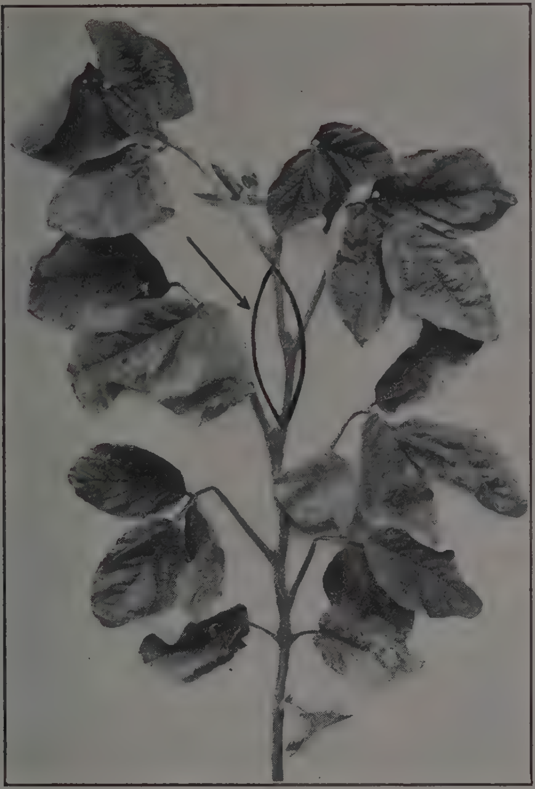


Fig. 4. With the soybean plant, the upper part of the main stem is used for both phosphorus and potassium tests.

Corn—

Nitrogen—Base of main stalk.

Phosphorus—Growing tip of main stalk or main stalk just below tassel.

Potassium—Base of leaf at ear node.

Wheat, oats, barley, rye—

Nitrogen—Main stem.

Phosphorus—Growing tip of main stem.

Potassium—Base of leaf near middle main stem.

Potatoes—

Nitrogen—Main stem near ground.

Phosphorus—Main stem near ground.

Potassium—Main stem near ground.

Alfalfa, clover, soybeans—

Nitrogen—Normally no nitrate nitrogen is present.

Phosphorus—Growing tip of main stem.

Potassium—Main stem.

Tobacco—

Nitrogen—Base of midrib of leaf from upper main stem.
Phosphorus—Base of midrib of leaf from upper main stem.
Potassium—Base of midrib of leaf from upper main stem.

Sugar beet, spinach, turnips—

Nitrogen—Leaf petiole.
Phosphorus—Leaf petiole.
Potassium—Leaf petiole.

Tomato—

Nitrogen—Leaf petiole from middle of main stem.
Phosphorus—Leaf petiole from middle of main stem.
Potassium—Leaf petiole from middle of main stem.

PREPARING TEST REAGENTS

Reaction (Soil Acidity)

Indicator No. 1. Dissolve 0.04 grams of brom-thymol blue powder in 5 cc of 95% ethyl alcohol, add 95 cc of distilled water and make to pH 6.6 (yellowish-green color) by adding, drop by drop, a 0.2 normal solution of sodium hydroxide. The pH range is 5.8 to 7.5.

Indicator No. 2. Prepare a solution of brom-creosol green as for Indicator No. 1 and adjust to pH 4.6 (yellowish-green color). The pH range is 3.8 to 5.5.

Nitrate (Plants)

Reagent No. 1. Dissolve 1 gram of diphenylamine in 100 cc of concentrated sulphuric acid. This solution is very corrosive.

Phosphate (Soils and Plants)

Reagent No. 1. Dissolve 4 grams of ammonium molybdate in 500 cc of distilled water and add, slowly and with constant stirring, a mixture of 63 cc of concentrated hydrochloric acid and 437 cc of distilled water. As this solution may become unsuited for use after standing for a few months, it is desirable to prepare a solution of five times this concentration and to dilute as needed.

Reagent No. 2. Dry powdered stannous chloride or stannous oxalate.

Potassium (Soils and Plants)

Reagent No. 1. Dissolve 5 grams of sodium cobaltinitrite and 30 grams of sodium nitrite in distilled water, add 5 cc of glacial acetic acid, make to 100 cc volume and allow to stand for several days. Add 5 cc of this solution to a solution of 15 grams of sodium nitrite in 100 cc of distilled water and adjust to pH 5.0 with acetic acid.

Reagent No. 2. Isopropyl alcohol (anhydrous).

Reagent No. 3. Ethyl alcohol (95%). When ethyl alcohol for use as a reagent is difficult to obtain, a mixture of 60 parts anhydrous methyl alcohol, 40 parts anhydrous isopropyl alcohol and 5 parts of distilled water may be substituted. Completely denatured alcohol is not satisfactory.

Soil Reaction (Acidity)

Soils, according to reaction, may be classified as acid (sour), neutral and alkaline (sweet). Not only do most cultivated plants have a definite soil reaction preference but soil reaction may exert a very powerful influence upon plant nutrient availability and upon fertilizer efficiency. Strongly acid or strongly alkaline soils may contain substances toxic to plants, resulting in poor plant growth regardless of other conditions. While some plants prefer an acid soil, some a neutral soil and some an alkaline soil, the majority of crop plants do best under neutral or slightly acid conditions. This also appears to be the condition favorable to the maximum availability of plant nutrients and the maximum efficiency of fertilizers.

The reaction of a soil may be expressed conveniently in terms of pH, this being merely a numerical expression of the hydrogen ion concentration. The neutral point is pH 7, with higher values indicating increasing alkalinity and lower values increasing acidity. Thus pH 7 indicates a neutral soil; pH 7 to 8 a slightly alkaline soil; pH 8 to 9 a very alkaline soil; pH 6 to 7 a slightly acid soil; pH 5 to 6 a medium acid soil and pH 4 to 5 a very acid soil. Soils more acid than pH 4 or more alkaline than pH 9 are usually not suitable for crop production.

In humid regions, such as Indiana, soils are often acid in reaction, due to the fact that soluble calcium, magnesium and other bases of the original soil material have been leached out of the upper layer of the soil by rain water. In semi-arid and arid regions, on the other hand, leaching is reduced to a minimum and soils are usually neutral or alkaline. In southern Indiana, where the older soils are found, the leached or acid layer of soil varies in depth from 8 to 12 feet; in central Indiana it is approximately 5 feet in depth; and in northern Indiana, 2 to 3 feet.

The majority of Indiana soils are in the range comprising slight to medium acidity, pH 5 to 7. Light colored upland soils tend to be more acid in the immediate subsoil than in the surface soil. It is estimated that three-fourths of Indiana soils are more or less in need of liming, hence a test for soil reaction is very important. Even on slightly acid soil, liming may be profitable for such crops as alfalfa and sweet clover. On moderately acid soils all clovers need lime and on very acid soils even grain crops and grasses require an application of lime for good growth.

Soils of different types respond differently to applications of lime. Soils high in organic matter need lime less than do clay soils of the same pH and clay soils, less than light sandy soils. However, when soils high in organic matter are so acid that they do need liming, a relatively large application is required to correct the acidity. Lime and fertilizer or manure play distinctly different roles and it should be remembered that while either one alone may be of some value, neither can be substituted for the other. If a soil is too acid it should be limed, if it is deficient in available nitrogen, phosphorus or potash, fertilizer or manure should be used to correct such deficiencies.

Test for Reaction of Soils.—Crease lengthwise a strip of waxed paper, add an amount of soil about equal in volume to a grain of corn and add Indicator No. 1 sufficient to slightly more than saturate the soil. Work the indicator back and forth through the soil, making sure of thorough contact. When the reaction is complete drain the excess liquid toward one end by tilting the paper and note the color. If the liquid is colorless or so cloudy that the color is obscured, add a few more drops of indicator and rework through the soil. A distinct blue color indicates a pH of 7.4 or above; a bluish-green, 7.0; a yellowish-green, 6.6; a greenish-yellow, 6.2; and a bright yellow, 5.8 or below.

If a bright yellow color is obtained with Indicator No. 1, repeat the procedure on a second portion of soil using Indicator No. 2. With Indicator No. 2 a distinct blue color indicates a pH of 5.4 or above; a bluish-green, 5.0; a yellowish-green, 4.6; a greenish-yellow, 4.2; and a bright yellow, 3.8 or less.

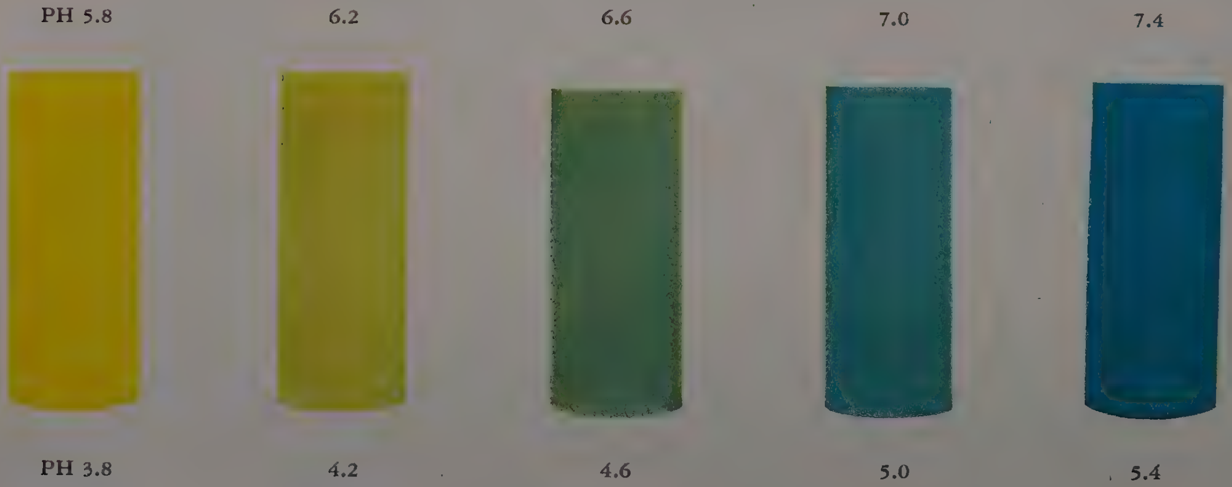
For special purposes other indicator solutions may be desirable. For example, the pH range between 5.0 and 6.0 may be more accurately covered with a chlorphenol red solution prepared as for the above indicators or a double indicator solution may be prepared to cover, roughly, the entire range between pH 4.0 and 8.0.

Nitrogen

Nitrogen in the soil is found chiefly in the organic matter. By the action of soil microorganisms such organic nitrogen is changed into inorganic nitrates, in which form it is readily taken up by plants. A test for nitrate nitrogen often is used as an indication of the available nitrogen supply in the soil. However, the production of nitrates in the soil is so greatly dependent upon physical factors such as temperature, moisture supply and kind of crop that it fluctuates to such an extent during the growing season that such a test is of little value as an indicator of nitrogen needs. Knowledge of the total nitrogen supply probably is of greater value. Color of the soil may be used as a fairly reliable indicator of total nitrogen supply, dark colored soils usually having a relatively high total nitrogen content and light colored soils, a relatively low content. Strongly acid soils tend to be deficient in available nitrogen supply even though the total nitrogen content may be relatively high.

ACIDITY TEST CHART

INDICATOR No. 1 BROM THYMOL BLUE



INDICATOR No. 2 BROM CRESOL GREEN

Nitrogen, which is required by all plants in relatively large amounts, is taken up from the soil principally in the form of nitrates. When the available nitrogen supply is abundant, nitrates accumulate in the conducting tissues of most plants. When the available nitrogen supply is inadequate, or just adequate, nitrates do not accumulate but are utilized immediately in the formation of organic plant substances, especially proteins. Even with soils usually well supplied with nitrogen, there may be periods during the growing season when conditions are unfavorable for nitrification and the nitrate supply becomes inadequate. Leaf color is usually a good index of the adequacy of the available nitrogen supply. With an adequate supply the leaves remain a normal dark green. When the supply becomes deficient, the leaf color changes to a pale yellowish green and there is often a marked tendency toward a reddish purple tinge of stems and branches. The test for nitrates may be used to confirm these external indications of nitrogen supply. Legumes and woody plants, however, do not normally accumulate nitrates in the above ground portions. With such plants the nitrate test cannot be used.

Test for Nitrates in Plants.—With large stemmed plants, split open several stalks or leaf petioles and with smaller plants cut thin discs from stems or petioles and place on a strip of waxed paper or in a glass vial. Add a few drops of the nitrate reagent and note the color produced.

A dark blue color indicates an abundant or excessive nitrogen supply; a pale blue or green color, an adequate supply; and no color accompanied by a pale green color of foliage, a deficient supply.

Phosphorus

Phosphorus has long been recognized as one of the outstanding plant food needs in practically all types of crop production. In Indiana soils, phosphorus deficiency is especially common and responses to phosphate applications are correspondingly large. However, there are Indiana soils which show no profitable responses to applications of phosphate fertilizers.

Phosphorus exists in the soil in many different forms, varying widely in their solubilities. While it is probably true that no one form is utilized by plants to the exclusion of all others, it is generally agreed that extraction with a dilute acid solvent gives a good measure of the phosphorus readily available to plants.

Phosphorus is absorbed from the soil by plants chiefly in the inorganic or phosphate form. Within the plant much of that taken up is changed rapidly into the organic form and is utilized to build up plant tissues. Plants well supplied with available phosphorus do not utilize this element as rapidly as it is taken up but tend to accumulate inorganic phosphates in the conducting tissues. However, plants growing under conditions of a deficient supply of available phosphorus show no such accumulation but convert the phosphorus into organic forms as rapidly as it is taken up.

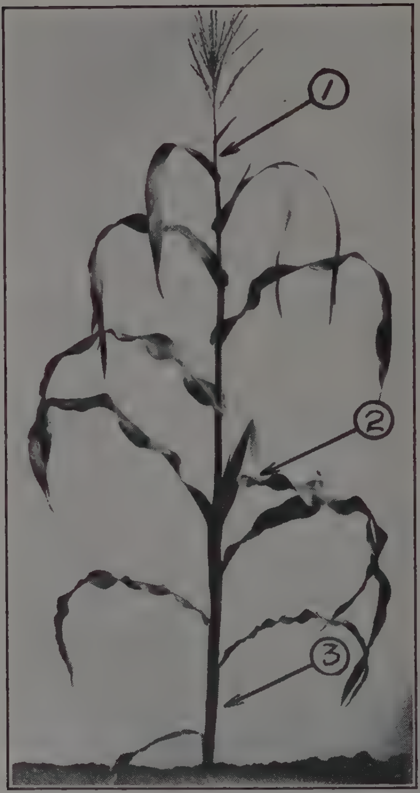


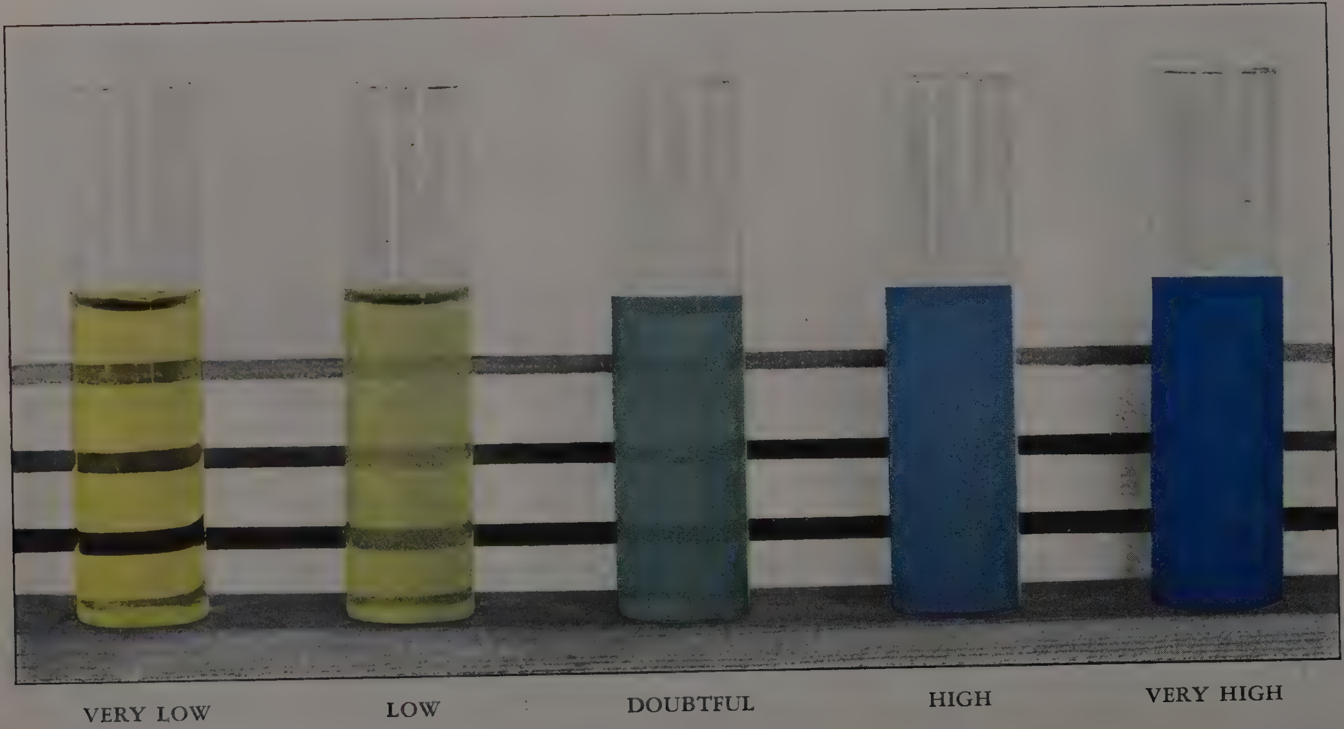
Fig. 5. With the corn plant use

1. For phosphate test—main stalk just below tassel.
2. For potassium test—base of leaf at ear node.
3. For nitrate test—base of main stalk.

As judged by external appearance of the plant, phosphorus deficiency is more difficult to recognize than are other nutrient deficiencies. In external appearance, internal structure and composition phosphorus and nitrogen deficient plants have many characteristics in common. However, while both show a similar restriction in growth, nitrogen deficient plants often develop reddish-purple stems and pale yellowish-green foliage while phosphorus deficient plants often have bluish-purple stems and darker green foliage. Low nitrogen plants contain no nitrate nitrogen but often considerable phosphate phosphorus while low phosphorus plants may contain an abundance of nitrate nitrogen but only a trace of phosphate phosphorus. Thus a test for phosphate in the conducting tissues of the plant gives a dependable diagnosis of phosphorus needs.

Since arsenic gives the same color reaction as phosphorus, the test cannot be used with either soils or plants where spray materials containing arsenic have been applied.

PHOSPHATE TEST CHART


VERY LOW
LOW
DOUBTFUL
HIGH
VERY HIGH

Test for Phosphorus in Soils.—Place 10 cc of Phosphate Reagent No. 1 in a glass vial, add ½ teaspoon level full of soil, shake vigorously for one minute, filter into another vial, add an amount of Phosphate Reagent No. 2 approximately equal in size to a mustard seed and mix. At once observe the color produced, holding the vial between the operator and a source of light. Again add Phosphate Reagent No. 2 to make certain that sufficient has been used. With mucks, greenhouse soils and other soils high in organic matter, add 2 or 3 cc of Phosphate Reagent No. 1 to the filtrate before adding Phosphate Reagent No. 2.

A dark blue color indicates an abundant phosphorus supply; a medium blue an adequate supply; a light blue, a doubtful supply; a green or bluish-green color, a moderately deficient supply; and no color or a yellow color, a very deficient supply.

On alkaline soils the test appears to give less reliable indications of phosphorus needs. Such soils usually give high tests.

Test for Phosphorus in Plants.—Place 1 teaspoon level full of finely cut stems or leaf petioles in a glass vial, add 10 cc of Phosphate Reagent No. 1, shake vigorously for 1 minute, add an amount of Phosphate Reagent No. 2 approximately equal in size to a mustard seed and mix. At once observe the color produced, holding the vial between the operator and the source of light. Add another portion of Phosphate Reagent No. 2 to make certain that sufficient has been used.

A dark blue color indicates an abundant phosphorus supply; a medium blue, an adequate supply; a light blue, a doubtful supply; a green or bluish-green, a moderately deficient supply; and a colorless or yellow, a very deficient supply.

For grain crops, plants upon which seed are fully developed are not suitable for testing. Such plants mature with seed formation and give low tests except under conditions of very high phosphorus supply. Plants, such as the tomato, which fruit more or less continuously, may be tested at any time during active growth.

Temporary standards corresponding to the above interpretations for either soils or plants may be prepared by using varying amounts of di-calcium phosphate and making the test as described for plants, with the phosphate solution replacing the plant material. Tests corresponding to very deficient, moderately deficient, doubtful and adequate are obtained with the use of 0.1 cc, 0.2 cc, 0.6 cc, and 1.5 cc, respectively, of a solution of 0.02 grams of di-calcium phosphate dissolved in 100 cc of approximately 0.75 normal hydrochloric acid.

Potassium

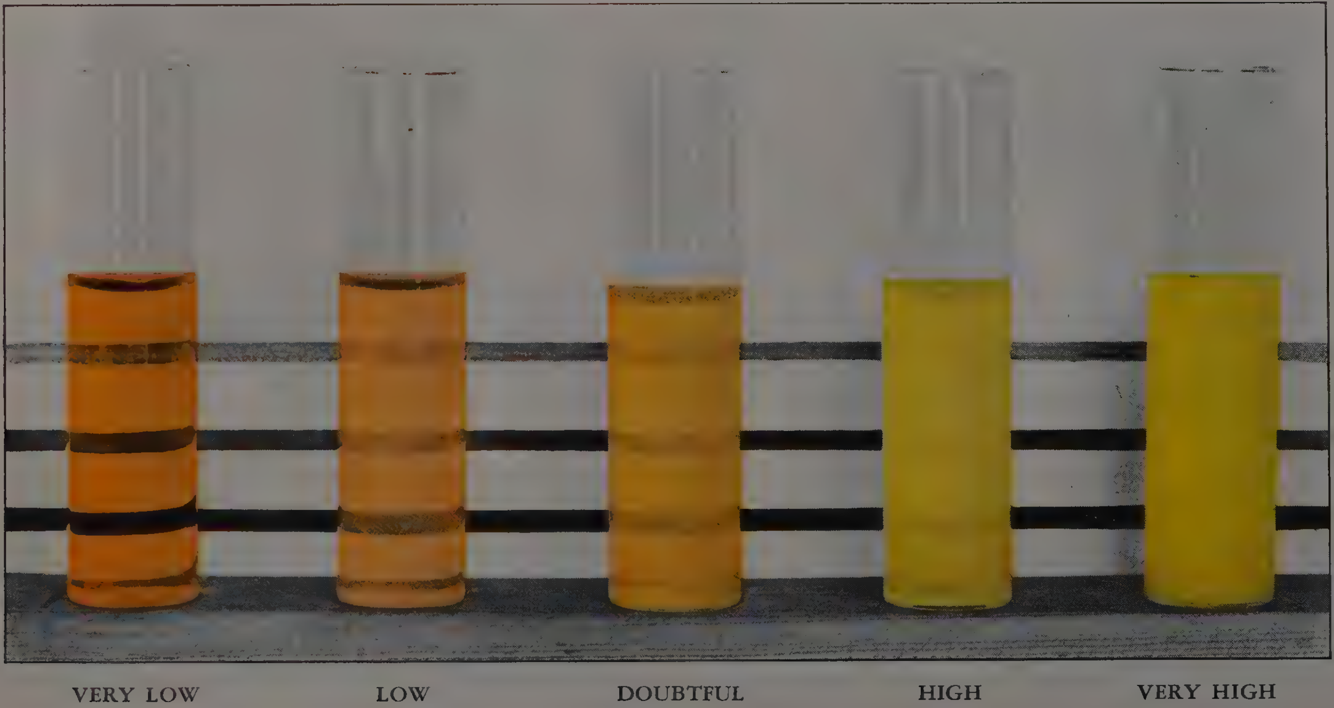
Almost all soils, with the exception of sands, mucks and peats, contain large amounts of total potassium. However, experience has shown that only a very small part of the total potassium in soils is available to plants. Long continued cropping almost always has reduced the available supply to the point where it is no longer sufficient for the needs of crops. Recent developments indicate that even with the soils of the middle western states we are approaching a soil condition where potassium deficiency is the common rule. Many of our soils, which only a few years ago were thought to be abundantly supplied with available potassium, are now showing marked responses to additions of this plant food.

It is quite generally agreed that the readily available potassium in soils exists largely in the replaceable form. Only a small part of the total potassium is found in the replaceable state at any one time. As the replaceable potassium is removed by cropping or by leaching it must be continually resupplied either from the potash containing minerals of the soil or as added fertilizers or manures. Both the amount of replaceable potassium in the soil and the rate at which it can be supplied from the less soluble compounds of the soil are important factors in determining potassium needs. Since subsoils may be well supplied with available potassium, factors which influence root development and extension are often of much importance in determining the ability of plants to secure a supply of potassium sufficient for their needs. If a subsoil is so tight, so poorly drained, or so acid that plant roots do not penetrate into it, the entire potassium supply must be obtained from the surface soil. Under such conditions the surface soil is rapidly exhausted of its supply of available potassium and symptoms of potassium deficiency appear. On soils of the same available potassium content, plants with shallow and restricted root systems may suffer from potassium deficiency much more than do plants with deep and extensive root systems.

Potassium is required by all plants in relatively large amounts throughout the entire growing period. That taken up by young plants may be translocated and utilized by newly developing tissue. Nearly all of the potassium in plant tissue remains in the readily soluble state and is believed to exist in the plant cell almost entirely in the inorganic form. Because of the relatively large amount of potassium necessary for plant growth, depletion of the available supply in the soil by cropping may be rapid. This is especially true if leaves and stems as well as grain and fruit are removed from the land.

As contrasted with the undersized but completely developed plants associated with nitrogen and phosphorus deficiencies, potassium deficient plants often develop normally at first but fail prematurely without normal seed formation. The effect of potassium deficiency upon external appearance varies greatly with different plants but is nearly always associated with mottling, spotting, streaking or curling of the leaves, especially between the veins and along the margins.

POTASH TEST CHART


VERY LOW
LOW
DOUBTFUL
HIGH
VERY HIGH

The potassium concentration in plant sap varies greatly and may be used as a reliable indicator of the available supply to which the plant has access.

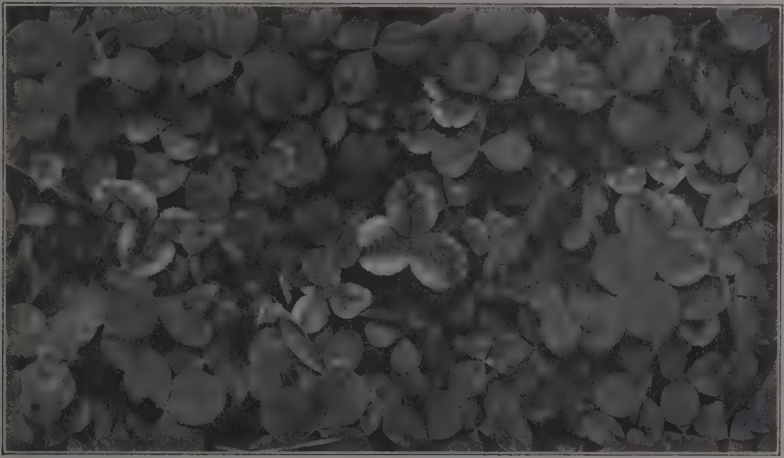


Fig. 6. Potash starved clover plants showing pattern-like spotting of the leaves.

Test for Potassium in Soils.—Place 10 cc of Potash Reagent No. 1 in a glass vial, add 1 teaspoon level full of air dried soil (½ teaspoonful for mucks and greenhouse soils), shake vigorously for 1 minute, filter into another vial until the filtrate amounts to 5 cc, carefully add 2½ cc of Potash Reagent No. 2 and mix. After standing 3 minutes note the amount of precipitate formed, placing the vial against a non-transparent background.

No precipitate or only a trace indicates a very deficient potassium supply; a light precipitate, a moderately deficient supply; a medium precipitate, a doubtful supply; and a dense precipitate, an adequate or abundant supply.

Test for Potassium in Plants.—Place ½ teaspoon level full of finely cut plant material in a glass vial, add 10 cc of Potash Reagent No. 1, shake vigorously for 1 minute, carefully add 5 cc of Potash Reagent No. 3 and mix. After 3 minutes note the amount of precipitate formed, placing the vial against a non-transparent background.

No precipitate or only a trace indicates a very deficient potassium supply; a light precipitate, a moderately deficient supply; a medium precipitate, a doubtful supply; and a dense precipitate, an adequate or abundant supply.

Temporary standards corresponding to the above interpretations for either soils or plants may be made by using varying amounts of potassium chloride and making the test as described for plants with the potassium chloride replacing the plant material. Tests corresponding to very deficient, moderately deficient, doubtful, and adequate or abundant are obtained with the use of

0.2 cc, 0.4 cc, 0.6 cc and 1.0 cc, respectively, of a solution of 1.0 gram of potassium chloride dissolved in 100 cc of a 15% sodium nitrite solution.

Limitations and Interpretations

Some limitations in the application of the tests have already been indicated. The following points are deserving of especial emphasis:

1. Results are only semiquantitative.
2. The soil tests give no information regarding the effect of important physical factors such as water supply, drainage, system of cultivation, temperature and seasonal variations.
3. Soil tests are designed to indicate the capacity of a soil to supply available phosphorus and potassium.
4. Plant tests show the relative nutrient supply as compared to other possible limiting factors. The results apply only to the conditions under which the plants have grown. Thus a nutrient supply which is shown as adequate under conditions where some other factor is limiting may become inadequate upon removal of this other limiting factor.
5. A coordinated system of testing that gives a rather complete picture of the nutrient status of both soil and plant is much more valuable than a single test for any one nutrient.

It should be evident that no general interpretation of test results, applicable to all crops, at all yield levels and for all soil and climatic conditions is possible. In practical interpretations, full consideration should be given to other plant growth factors. The appearance of the plant is often of much assistance. Certainly soil type, water supply and other physical factors which influence fertilizer efficiency and potential productivity must be considered.

The tests serve as good indicators of the type of fertilizer that can be profitably used, that is, whether it should be high in nitrogen, phosphorus or potassium or in some combination of these nutrients. For a definite recommendation these findings should be coupled with the general knowledge as to amount of fertilizer and time and method of application which has been found profitable for different crops and soils. For this reason it is desirable to make use of field plot and greenhouse tests wherever possible. Long continued field plot tests are especially valuable in showing the cumulative effects of fertilizer and other treatments under the various natural conditions that influence the yields of crops.

In general, with the soil and plant tests described in this circular, very low results for any nutrient indicate a definite need for all crops under practically all conditions and very high tests, an adequate supply. Intermediate tests may not be so easily and so definitely interpreted. Except in extreme cases, no crop production factor should be considered alone but only in its relation to other factors.

UNIVERSITY OF ARIZONA

Circular No. 205 October, 1934

INSPECTION OF AGRICULTURAL SEEDS

It pays to sow clean red clover seed of good quality.

OF ARIZONA
LIBRARY

Agricultural Experiment Station
Purdue University
Lafayette, Indiana

This circular contains a report of the agricultural seed inspection for the year ending June 30, 1934. The complete analyses of 1,139 official seed samples are given with full particulars. In addition 344 official samples drawn for test at the request of dealers and 2,447 free test samples of seed were tested during the year.

In accordance with the ruling of the State Seed Commissioner, wholesale seedsmen are required to attach at least one state label to each package of seed delivered to the retail seedsmen, who are then required to attach sufficient additional labels to cover the net weight of the package.

Since it is impossible to test all seed promptly during the rush season, directions are given for making germination tests at home.

Shipments or lots of seed not tagged or seriously misbranded were withdrawn from sale until dealers labeled such seed correctly.

Proper use of this publication will enable purchasers to discriminate between seedsmen who handle good seed and those who handle poor seed. Before buying seed farmers are urged to examine Table 7, the standing of seed distributors, and Table 8, the results of tests on 1,139 official samples.

INSPECTION OF AGRICULTURAL SEEDS

H. R. KRAYBILL, *State Seed Commissioner*
P. B. CURTIS, *Associate Chemist*

O. S. ROBERTS, Chief Inspector. REGINA B. SCHULTE,* Seed Analyst.
Assistant Seed Analysts: PAULINE BALBACH, MARY E. GREY.
Inspectors: C. M. COHEE, J. W. JACKMAN.

The Indiana Seed Law passed in 1921 is essentially a correct labeling law. Poor seed as well as good seed may be sold under the law provided it is correctly labeled. In order that the necessary information may be available the law requires that the seed be labeled with official Indiana State Labels showing minimum percentages of purity and germination and the maximum number of each of the noxious weed seeds per pound. The date of germination test and state or foreign country where the seed was grown must also be stated. This seed law offers an inducement to farmers to grow better seed and also encourages the seedsmen to sell the better grades of seed. Copies of the Indiana Seed Law may be secured by making application to the State Seed Commissioner.

This circular contains detailed results of the inspection of agricultural seeds for the period from July 1, 1933, to June 30, 1934. The inspectors secured from the seed dealers and consumers in all sections of the state 1,483 official samples of seed. Complete analyses of these samples were made and reports were sent to the distributors, dealers and consumers. In addition 2,447 free test samples and 28 Custom House samples were analyzed. The testing of these samples entailed the making of 2,891 purity tests, 14,200 germination tests, 54 examinations and 72 identifications.

Responsibilities of the Wholesale Seedsman

The wholesale seedsman is required to attach at least one Indiana State Label to each package of seed delivered to the retail seedsman. However, if the seed is shipped directly to the consumer it must be tagged to full weight with Indiana State labels.

Responsibilities of the Retail Seedsman

The retail seedsman is required to attach sufficient state labels properly filled out to each package of seed to cover the total weight of the seed before the seed is offered or exposed for sale. These labels can be chosen of such denominations of weight so that they may be removed and attached to a portion of the seed which may be sold from the original package. It should be remembered that every package of seed of one pound or more when sold for seeding purposes must have attached to it sufficient state labels properly filled out to cover the total weight of the package. It should also be remembered that it is just as much a violation of the state law to offer or expose seed for sale for seeding purposes without tagging to full weight as it is to sell the same without tagging.

Responsibilities of the Purchaser

The purchaser should examine the official label carefully before purchasing seed and ascertain whether the seed is of the quality desired. He should insist that all seed which he purchases be tagged properly with official state labels. Attention should be paid to the date of germination on the seed tag. If the germination test was made more than six months before, in many cases it will be well to insist upon a more recent germination test. Table 7 gives the standing of the distributors as determined by the 1934 inspection while

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* Assistant Botanist, in cooperation with the Division of Seed Investigations, Bureau of Plant Industry, U. S. D. A.

Table 8 shows the results of the analyses of 1,139 official samples. A study of these tables will be helpful to those who purchase agricultural seeds. The farmer should make it a rule to buy his seeds from a reliable dealer, remembering that poor seeds are dear at any price and that quality and not price should be the chief consideration.

Farmers' Exemption

A farmer is exempt from the provisions of the seed law when the seed is grown, sold and delivered by that farmer on his own premises to the purchaser himself. If, however, the seed is advertised for sale by the public press, circular or catalogue, or if the seed is delivered by a common carrier, the farmer is considered as a vendor and must comply with the provisions of the act. Seed taken to community sales for sale must be labeled in accordance with the law.

Free Testing of Seeds

During the past year 2,447 samples of seed were tested free of charge for farmers and seedsmen. The privilege of having these tests made is one of much value to the farmer and the smaller seed dealers who do not have facilities for testing seeds. Not all of the tests requested can be made promptly during the busy season from January to March. For that reason it is important that all samples be sent in as early as possible, preferably from September to December.

Satisfactory tests may be made of the larger field seeds at home, leaving the laboratory facilities of the Agricultural Experiment Station available for the grasses and clovers which are more difficult to analyze.

Directions for Making Germination Tests at Home

The seed to be germinated should be mixed thoroughly and the required number of seeds (100 seeds of grains and 200 of clovers and other small seeds) counted out just as they come.

The plate germinator is satisfactory and very simple to operate. The seeds to be germinated are placed between two thicknesses of folded blotting paper or cloth (heavy grade of muslin or canton flannel). This should be moistened and placed between ordinary tin or porcelain plates and kept in a warm room where the range in temperature is from approximately 85 degrees during the day to 65 degrees at night. The place selected for the test should not be too near a window, stove or register.

The time required for germination tests varies with different kinds of seed. Under favorable conditions grass and clover seeds begin to sprout in three or four days. The tests should be continued for ten days or two weeks. Every two days the tests should be examined and a record made of the number of seeds that have sprouted. Also the blotting paper or cloth must be kept sufficiently moist. The number of seeds which germinate out of the 100 seeds will give the percentage of germination.

If a sample of seed for test is to be sent to the seed laboratory the following directions for securing the sample should be observed.

Directions for Taking of Samples

1. The minimum weight of seed forwarded for test should be approximately:
    - (a) Two ounces (cupful) of grass seed of any kind or of white and alsike clover;
    - (b) Five ounces (cupful) of red and crimson clover, alfalfa, millet, flax or seed of like size;
    - (c) One pound (pint) of cereals or seed of like size.
2. Samples may be drawn:
    - (a) With seed triers;
    - (b) With long stickers;
    - (c) By hand, taking approximately equal parts of the sample from at least three different places in the sack, including the top and opposite sides as near the bottom as practicable.

3. Samples should be drawn from each bag when there are not more than five bags in the lot, from every fifth bag when there are more than five bags, but never from less than five bags. All samples so drawn are combined into one composite sample.

Tolerance

Under the most perfect and approved conditions of testing seeds, variations will occur in purity and germination tests. For this reason the Association of Official Seed Analysts has adopted tolerances or allowances for purity and germination tests. Samples of seed with a guarantee within the tolerances are not considered to be seriously misbranded under the provisions of the Indiana Seed Law, but seed dealers will be expected to change the guarantee on the unsold portion to correspond to the analysis found by the Seed Commissioner.

Table of Tolerances for Germination Tests

Percentage of Germination	Percentage of Allowable Variation
90 or over	6
80 or over and less than 90	7
70 or over and less than 80	8
60 or over and less than 70	9
50 or over and less than 60	10
40 or over and less than 50	10
30 or over and less than 40	9
20 or over and less than 30	8
10 or over and less than 20	7
0 or over and less than 10	6

Tolerance for Purity Test

In determining the tolerance for purity the sample shall be considered as being made up of two parts: (1) pure seed and (2) everything not pure seed. The tolerance allowed shall be two-tenths of 1 per cent plus 20 per cent of the lesser part. Example: Seed marked 98 per cent pure, the lesser part is 100 minus 98, or 2. Twenty per cent of 2 equals 0.4. Therefore, the tolerance allowed would be 0.2 plus 0.4, or 0.6.

Violations of the Law

It is a violation of the State Seed Law to offer, expose for sale or sell misbranded seed or seed not tagged to full weight with official labels. During the past year nine cases of misbranding and five cases of non-tagging were called to the attention of prosecuting attorneys. Of the fourteen cases ten resulted in convictions while four of them have not been reported by the prosecuting attorneys to date.

Filling Out Official Label

Purity

The minimum purity means the percentage of pure seed of the kind and variety given on the official label. Statements of purity, as 97 per cent including 2 per cent crop seeds, or 95 per cent and 2 per cent crop seeds, will not be permitted. In cases where the seed contains two or more kinds of agricultural seed, each present in excess of 5 per cent, the seed mixture should be labeled with the official green colored mixture labels, Style C.

The filling out of the column "per cent of seed" on the mixture labels can be explained best by an example. For instance if a mixture is composed of 60 per cent Kentucky Blue Grass with a purity of 80 per cent and 40 per cent of

Red Top with a purity of 90 per cent, the per cent of Blue Grass should be given as 48 per cent, obtained by taking 80 per cent of 60. The Red Top should be given as 36 per cent, obtained by taking 90 per cent of 40.

The percentage of purity on the large seeds such as soy beans, corn, wheat, vegetable seeds, etc., must be given on the official label the same as on any other seed.

Germination

The term minimum germination means the percentage of sprouts obtained in the prescribed time for the test. If the seed contains hard seeds this percentage should be stated after the term "hard seed" on the official label. In no case should the sum of the percentages of sprouts and hard seeds be given as the percentage of minimum germination.

Distributors should not ship seed until the germination test is completed. The statement "In Test" on the official label does not meet the provisions of the seed law. If there is a demand for the seed the dealer may be tempted to sell the seed before he receives a report on the germination, thus placing himself liable to prosecution.

Noxious Weed Seeds

The number per pound of each of the noxious weed seeds present must be listed on the reverse side of the tag irrespective of the number present. The term "trace" is not permissible. The statement of the noxious weed seeds in terms of per cent or in terms of proportion will not be permitted.

Place Where Grown

The official tag must give the name of the state, territory or foreign country where the seed was grown. Terms such as Domestic, U. S. A., Northwestern, and Central States do not meet the requirements of the law, and seed found so labeled will be immediately removed from sale until the tags have been corrected.

Certified, Verified and Affidavit Seed

Certified seed is seed whose purity, germination, and variety is certified to by some state certifying agency or an agency closely associated with some state office or department. The seed is shipped in sealed sacks with a certified seed tag attached. During the growing season the fields are inspected to ascertain trueness to variety of crop, and after the harvest the seed is tested to determine whether it meets the prescribed standards of the certifying agency. In Indiana the Indiana Corn Growers' Association certifies corn, wheat, oats, lespedeza, and soy beans. The other most commonly certified seed found in the state is Grimm alfalfa.

Verified-Origin seed is seed whose origin is attested to by certain government approved seed dealers. Seed verification service deals with origin only, meaning Place Where Grown, and gives no guarantee as to the variety, purity or viability of the seed. At the present time red clover and alfalfa are the only seeds verified as to origin. Verified seed is tagged with tags bearing the official verification emblem.

Affidavit Grimm is alfalfa seed for which the grower has made affidavit as to its being Grimm alfalfa. This affadivit seed is not regulated by either State or Federal Government.

Attention Distributors and Dealers

If seeds such as oats and soy beans are sold for seeding purposes they come under the provisions of the law and must be tagged with Indiana seed tags. It is not proper for the dealer to say that he is selling his oats or soy beans as feed oats or feed soy beans and thereby attempt to evade the seed law when these seeds are actually being sold for seeding purposes. The mere fact that the dealer says that he is selling his oats and soy beans as feed when it is generally known and he himself as well knows that they are going to be used for seed does not in any way relieve him from the responsibility of complying with the seed law by properly tagging the oats and soy beans with Official Indiana seed tags.

Summary of 1934 Inspection

A majority of the samples examined during 1934 met their guarantee very closely. Table 1 shows that there has been a continued marked improvement in the correct labeling of seeds in the last few years. In fact the per cent of samples seriously misbranded in 1934, namely 14.0, was the lowest since the seed law was enacted in 1921.

Tables 2 and 3 give the average analysis of samples in the 1922 and 1933 seed inspections. Examination of Table 4 shows clearly that the quality of much of the seed could be improved by more thorough cleaning. Tables 5 and 6 show the percentages of official samples of red clover, alfalfa, sweet clover, alsike clover and timothy which contained some of the various noxious weed seeds.

Table 1—Progress in Seed Inspection

Year	Number of Samples Examined	Number Seriously Misbranded	Per Cent Seriously Misbranded
1925	745	271	36.4
1928	969	289	29.6
1929	1,230	403	32.7
1930	1,044	184	17.6
1931	1,122	201	17.9
1932	926	157	17.0
1933	698	139	19.9
1934	1,139	160	14.0

Table 2—Average Analysis of Samples in 1922 Seed Inspection

	Number of Samples	Purity per cent	Inert Matter per cent	Germ. per cent	Hard Seeds per cent	Number Weed Seeds per Pound	Number Noxious Weed Seeds per Pound
Alfalfa	33	99.19	0.33	81.42	10.44	1,228	128
Blue Grass	20	66.35	28.51	58.50	....	33,001	2,566
Alsike Clover	70	94.27	1.05	78.97	12.94	4,757	2,214
Red Clover	195	98.05	0.54	88.00	6.72	7,358	1,722
Sweet Clover	27	96.40	2.63	66.91	11.87	2,370	387
White Clover	7	95.28	0.62	79.30	14.68	15,650	10,843
Cowpeas	17	97.86	1.88	70.94	....	38	3
Millet	12	98.03	1.55	75.54	....	2,211	15
Oats	47	97.62	1.52	85.97	....	213	51
Orchard Grass	13	82.36	15.83	74.33	....	32,308	28,847
Rape	11	99.59	0.31	83.23	....	263	16
Red Top	19	83.69	12.56	81.37	....	75,163	3,810
Soy Beans	12	97.55	2.24	84.04	2.20	37	1
Sudan Grass	8	95.21	2.38	72.50	....	974	....
Timothy	85	98.90	0.55	86.72	....	2,792	1,278
Mixtures	11	76.79	11.97	57.55	11.19	81,833	26,825
Garden Seed	35	98.08	....	71.65	....	....	....
Miscellaneous	13	96.08	2.46	65.15	3.20	3,368	845

Table 3—Average Analysis of Samples in 1933 Seed Inspection

	Number of Samples	Purity per cent	Inert Matter per cent	Germ. per cent	Hard Seeds per cent	Number Weed Seeds per Pound	Number Noxious Weed Seeds per Pound	Range in Number Noxious Weed Seeds per Pound
Alfalfa	71	98.90	0.24	78.58	12.09	897	19	0- 198
Blue Grass	34	81.89	17.62	77.31	....	6,263	588	0- 2,340
Alsike Clover	64	98.38	0.50	81.89	13.27	1,742	575	0- 8,325
*Korean Clover	67	98.03	1.22	79.27	13.13	2,260	452	0- 7,470
Red Clover	130	99.13	0.24	89.03	6.53	1,543	1,069	0-27,270
Sweet Clover	121	99.53	0.25	78.99	6.03	491	21	0- 198
White Clover	5	98.68	0.42	75.55	17.95	3,343	1,318	0- 2,700
Corn	5	99.96	0.04	97.40	....	....	....	....
Millet	4	98.96	0.65	90.13	....	1,881	14	0- 36
Orchard Grass	2	78.93	20.19	81.25	....	3,600	3,263	2,925-3,600
Red Top	39	90.59	6.20	88.64	....	51,677	1,014	0-17,100
Soybeans	29	98.59	1.12	90.59	0.28	35	1	0- 8
Sudan Grass	5	97.93	1.79	79.20	....	47	....	....
Timothy	69	99.42	0.32	91.03	....	1,622	732	0-27,225
Mixtures	19	84.23	11.70	80.43	15.35	28,559	2,303	0-15,300
Garden Seed	21	99.92	0.07	91.33	....	9	....	....
Miscellaneous	13	96.40	2.89	64.92	....	6,510	1,902	0-18,450

*Listed previously as Japan Clover.

Table 4—Average Analysis of Samples in 1934 Seed Inspection

	Number of Samples	Purity per cent	Inert Matter per cent	Germ. per cent	Hard Seeds per cent	Number Weed Seeds per Pound	Number Noxious Weed Seeds per Pound	Range in Number Noxious Weed Seeds per Pound
Alfalfa	164	99.32	0.29	76.09	15.16	667	54	0- 4,410
Blue Grass	55	81.66	17.84	77.32	....	4,291	1,271	0-45,000
Alsike Clover	71	98.04	0.56	80.20	13.31	4,517	145	0-46,575
Korean Clover	118	98.13	0.72	84.46	9.25	2,965	494	0- 7,380
Red Clover	212	99.03	0.28	90.21	5.39	1,610	735	0-10,260
Sweet Clover	159	99.39	0.36	76.62	7.61	509	38	0- 441
White Clover	9	97.77	0.46	85.08	6.92	8,455	1,855	0- 7,875
Corn	8	99.83	0.17	95.25	....	....	....	....
Millet	5	99.05	0.37	87.00	....	2,394	....	....
Oats	15	97.36	1.47	95.17	....	46	13	0- 99
Orchard Grass	10	84.61	13.87	83.70	....	8,073	5,981	0-11,925
Red Top	61	93.41	5.52	88.68	....	48,472	448	0- 8,550
Soybeans	50	98.00	1.67	91.98	0.16	47	....	0- 4
Sudan Grass	5	97.46	2.24	80.70	....	151	....	....
Timothy	156	99.53	0.28	90.46	....	934	255	0- 6,525
Mixtures	25	82.56	12.70	71.97	10.40	25,419	1,518	0- 8,100
Garden Seed	10	99.87	0.13	90.70	....	9	....	....
Miscellaneous	6	96.70	3.05	86.33	0.17	503	5	0- 27

Table 5—Percentage of Samples Showing the Presence of Each of the Noxious Weed Seeds

Noxious Weed Seeds	Red Clover			Alfalfa			Sweet Clover		
	1923 per cent	1933 per cent	1934 per cent	1923 per cent	1933 per cent	1934 per cent	1923 per cent	1933 per cent	1934 per cent
Bracted plantain	17.98	13.08	11.32	1.58	0.00	1.83	0.00	0.82	3.14
Buckhorn	68.70	83.08	74.06	11.11	4.23	6.71	15.78	4.91	6.29
Canada thistle	2.51	0.00	0.94	0.00	1.41	0.00	13.15	4.10	6.29
Chicory	1.79	0.00	0.94	1.58	0.00	0.61	0.00	0.00	0.00
Common plantain	71.22	53.85	44.81	0.00	9.86	3.66	2.63	0.82	1.26
Corn cockle	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Curled dock	49.28	44.62	50.47	30.15	7.04	10.98	13.15	18.03	20.75
Dodder	18.70	20.77	17.45	47.61	21.13	14.63	0.00	1.64	0.63
Horse nettle	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mustard	3.23	1.54	3.30	0.00	2.81	2.44	18.40	38.52	49.06
Oxeye daisy	0.00	0.00	0.47	0.00	0.00	0.00	0.00	0.00	0.00
Prickly lettuce	5.75	3.08	1.89	1.58	0.00	0.61	0.00	0.82	0.00
Quack grass	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.64	2.52
Red sorrel	15.82	19.23	23.59	7.93	2.81	2.44	0.00	0.82	2.52
White top	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Wild carrot	18.34	20.77	17.45	0.00	7.04	4.88	2.63	2.46	0.63
Wild garlic or onion	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Yellow trefoil	5.75	4.62	8.02	4.76	5.63	3.66	7.89	1.64	1.26

Table 6—Percentage of Samples Showing the Presence of Each of the Noxious Weed Seeds

Noxious Weed Seeds	Alsike Clover			Timothy		
	1923 per cent	1933 per cent	1934 per cent	1923 per cent	1933 per cent	1934 per cent
Bracted plantain	2.46	3.13	8.45	1.29	10.14	8.97
Buckhorn	13.58	34.38	40.85	11.03	36.23	32.05
Canada thistle	3.70	6.25	1.41	0.64	0.00	0.64
Chicory	0.00	0.00	0.00	0.00	0.00	0.00
Common plantain	22.22	26.56	26.76	43.50	65.22	64.10
Corn cockle	0.00	0.00	0.00	0.00	0.00	0.00
Curled dock	59.25	57.81	63.38	22.00	10.14	21.15
Dodder	0.00	1.56	0.00	0.00	0.00	0.00
Horse nettle	0.00	0.00	0.00	0.00	0.00	0.00
Mustard	0.00	6.25	0.00	0.00	0.00	0.00
Oxeye daisy	1.23	0.00	0.00	1.94	15.94	3.20
Prickly lettuce	0.00	0.00	0.00	0.00	2.99	1.92
Quack grass	0.00	0.00	0.00	0.00	1.45	0.00
Red sorrel	34.56	39.06	38.03	28.57	39.13	51.92
White top	0.00	0.00	0.00	0.00	0.00	0.00
Wild carrot	0.00	0.00	4.23	0.64	1.45	2.56
Wild garlic or onion	0.00	0.00	0.00	0.00	0.00	0.00
Yellow trefoil	19.75	62.50	35.21	0.00	0.00	0.64

Table 7—Summary of Seed Inspection, July 1, 1933, to June 30, 1934

Name and Address of Certifier	Number of Samples Examined	Number of Samples Passed	Number Technically Misbranded	Per Cent* Technically Misbranded	Number Seriously Misbranded	Per Cent* Seriously Misbranded	Number Unlabeled
Allied Seed Co., East St. Louis, Ill.	1	1					
Allied Seed Co., Inc., Fort Wayne, Ind.	31	26	5	16%			
Allied Seed Co., Peoria, Ill.	1	1					
American Field Seed Co., Chicago, Ill.	9	1	1	11%	5	55%	7
Armstrong-Landon Co., Kokomo, Ind.	4	4					
Atlanta Grain Co., Atlanta, Ind.	3	1			2		
Barnard Co., W. W., Chicago, Ill.	1	1					
Baumgart & Son, Mount Carmel, Ill.	1	1					
Bean, E. W., Elnora, Ind.	1				1		
Berry Seed Co., Clarinda, Ia.	16	1	7	44%	4	25%	14
Bloomfield Mill & Elevator, Bloomfield, Ind.	1	1					
Bohnert & Son, A. M., Jasper, Ind.	1	1					
Boonville Implement Co., Boonville, Ind.	1	1					
Bottorff, D. M., Columbus, Ind.	1	1					
Bowers, L. G., Selma, Ind.	1						1
Bowman Seed Co., Concordia, Kan.	2	1					2
Bremen Elevator, Bremen, Ind.	1	1					
Buescher, Fred., Edwardsport, Ind.	1						1
Busenbark Grain Co., Crawfordsville, Ind.	3	3					
Byers Seed Co., Franklin, Ind.	5		2	40%	3	60%	1
Calhoun, Claude, Muncie, Ind.	1						1
Campbell & Co., Kendallville, Ind.	3	3					
Carman Supply Co., Lynn, Ind.	12	1	7	58%	4	33%	8
Chambers Seed Co., Louisville, Ky.	26	13	7	27%	6	23%	
Chapman-Doake Co., Decatur, Ill.	1						1
Clark, Walter, Greensburg, Ind.	1	1					
Condon Bros., Seedsmen, Rockford, Ill.	1		1				
Consolidated Seed Co., Chicago, Ill.	1				1		
Cooperative Elevator Co., Francesville, Ind.	1	1					
Cooperative Elevator Co., Winamac, Ind.	2	1	1				
Cordes Hardware Co., Seymour, Ind.	1				1		
Corneli Seed Co., St. Louis, Mo.	8	3	3	37%	2	25%	2
Crabbs Reynolds Taylor Co., Crawfordsville, Ind.	63	48	12	19%	3	5%	3
Crabbs Reynolds Taylor Co., Lafayette, Ind.	3	2	1				
Crawfordsville Seed Co., Crawfordsville, Ind.	32	25	6	19%	1	3%	
Daviess Co. Farm Bureau Coop. Ass'n, Inc., Washington, Ind.	1		1				
Davis, C. O., Cambridge City, Ind.	1	1					
Davis, Inc., Geo. A., Chicago, Ill.	1		1				
Decatur Co. Coop. Co., Greensburg, Ind.	5	5					
Demoret Grain Co., Bath, Ind.	1	1					
Dickinson Co., The Albert, Chicago, Ill.	52	37	13	25%	1	2%	5
Dill, Frank, Eskredge, Kan.	2						2
Dotterer & Son, H. G., Bluffton, Ind.	1				1		
Durckman, Henry, Batesville, Ind.	1	1					
Edgar Co. Seed Co., Paris, Ill.	2	2					1
Elliott, Clyde, Burney, Ind.	1	1					
Elliott, Perry, Burney, Ind.	1		1				
Elnora Elevator Co., Elnora, Ind.	1						1
Evans & Hedworth, Remington, Ind.	1	1					
Fargo Seed House, Fargo, North Dakota	1	1					
Farmers Coop. Elevator Co., Matthews, Ind.	1						1
Farmers Coop. Elevator Co., Selma, Ind.	1						1
Farmers Equity Exchange, Van Buren, Ind.	1				1		
Farmers Feed & Coal Co., Bloomington, Ind.	2						2

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*Percentages calculated only on five samples or more examined.

Table 7—Summary of Seed Inspection, July 1, 1933, to June 30, 1934—Continued

Name and Address of Certifier	Number of Samples Examined	Number o Samples Passed	Number Technically Misbranded	Per Cent* Technically Misbranded	Number Seriously Misbranded	Per Cent* Seriously Misbranded	Number Unlabeled
Farmers Grain & Supply Co., Modoc, Ind.	1		1				
Farmers National Grain Corp., Chicago, Ill.	3		3				
Ferry-Morse Seed Co., Detroit, Mich.	1	1					
Finch & Weisel Elevator Co., Inc., Portland, Ind.	1				1		
Foster-Kendall Co., Carmel, Ind.	72	52	18	25%	2	3%	3
Fribley Onion Seed Co., Bourbon, Ind.	2	2					
Garten Feed Co., The, Indianapolis, Ind.	4	4					
Gelzleichter & Son, J., Huntington, Ind.	1	1					
Giltner Seed Co., Eminence, Ky.	2				2		
Goldblatt Bros., Inc., Hammond, Ind.	1						1
Golden, Harry, R. R. 9, Lafayette, Ind.	1	1					
Goodrich Bros. Co., Durbin, Ind.	1		1				
Goodrich Bros. Co., Eaton, Ind.	2		1		1		
Goodrich Bros. Co., Winchester, Ind.	33	25	6	18%	2	6%	
Graft, C. V., Winchester, Ind.	5	4	1	20%			1
Haile & Sons, J. C., Cincinnati, Ohio	1		1				1
Hancock Co. Farm Bureau Coop. Ass'n, Inc., Greenfield, Ind.	2	2					
Hardin & Lewman, Louisville, Ky.	1	1					
Hart, Oscar, Jasonville, Ind.	1						1
Haynes Milling Co., The, Portland, Ind.	7	3	2	29%	2	29%	
Heldt & Voelker Co., The, Evansville, Ind.	3	1	1		1		
Heldt Co., The, Evansville, Ind.	16	7	7	44%	2	12%	1
Hirsch & Sons, Henry, Toledo, Ohio	4	1	3				
Hobbs Grain Co., Hobbs, Ind.	1				1		1
Holmes Supply Co., Kingsbury, Ind.	1				1		
Hoosier Grain & Supply Co., Bluffton, Ind.	1	1					
Hoosier Grain & Supply Co., Inc., Montpelier, Ind.	4	2	1		1		
Hooton-Davis Seed Co., Lebanon, Ind.	29	21	6	21%	2	7%	3
Hottle, Dean, Bruceville, Ind.	1						1
Huntertown Grain & Lumber Co., Huntertown, Ind.	1				1		
Indiana Farm Bureau Coop. Ass'n, Inc., Indianapolis, Ind.	42	27	6	14%	9	21%	1
Indiana Farm Bureau Coop. Ass'n, Inc., Indianapolis, Ind., agent of Farmers National Grain Corp., Chicago, Ill.	39	24	10	26%	5	13%	
Indiana Seed Co., Indianapolis, Ind.	78	59	15	19%	4	5%	1
Isay Seed Co., Churubusco, Ind.	2						2
Johnson Co. Farm Bureau Coop. Ass'n, Inc., Franklin, Ind.	1	1					
Johnson, Inc., J. Oliver, Chicago, Ill.	1	1					1
K. & A. Seed Co., Fort Wayne, Ind.	5	4			1	20%	
Kellogg-Kelly Seed Co., St. Joseph, Mo.	5	2	3	60%			
Kentucky Lespedeza Growers Ass'n, Eminence, Ky.	1				1		
Kindermann & Sons, Wm., Boonville, Ind.	1				1		
King & Sons, Inc., H. C., Battle Creek, Mich.	1	1					
Kraus, Sam, Fort Wayne, Ind.	7	3	2	29%	2	29%	
Lafayette Coop. Elevator Co., Lafayette, Ind.	1	1					
Lagomarsino & Sons, F., Sacramento, Calif.	1						1
Larrowe Buckwheat Flour Corp., Cohocton, N. Y.	1	1					
Lewis Implement & Seed Co., Louisville, Ky.	31	8	14	45%	9	29%	
Linkhart & Son, North Vernon, Ind.	1		1				

* Percentages calculated only on five samples or more examined.

Table 7—Summary of Seed Inspection, July 1, 1933, to June 30, 1934—Continued

Name and Address of Certifier	Number of Samples Examined	Number of Samples Passed	Number Technically Misbranded	Per Cent* Technically Misbranded	Number Seriously Misbranded	Per Cent* Seriously Misbranded	Number Unlabeled
Linwood Grain Co., Linwood, P. O., Alexandria, Ind.	2	1	1	.....	.....	.....	.....
Logansport Elevator, Logansport, Ind.	1	.....	.....	.....	1	.....	.....
Louisville Seed Co., Louisville, Ky.	2	1	.....	.....	1	.....	.....
Lowell Grain & Hay Co., Lowell, Ind.	2	.....	2	.....	.....	.....	.....
Lucas, Henry, Brownstown, Ind.	1	.....	1	.....	.....	.....	.....
Lyons & Hershman, Brook, Ind.	2	1	.....	.....	1	.....	.....
McCarty, Chas., Fort Branch, Ind.	1	.....	.....	.....	.....	.....	1
McCarty Seed Co., Inc., Terre Haute, Ind.	1	.....	.....	.....	1	.....	.....
McCarty Seed Co., J. A., Evansville, Ind.	6	6	.....	.....	.....	.....	.....
McCordsville Grain Co., McCordsville, Ind.	1	1	.....	.....	.....	.....	.....
McCullough Seed Co., The J. Chas., Cincinnati, O.	15	10	2	13%	3	20%	.....
McCullough & Sons Co., J. M., Cincinnati, O.	4	.....	1	.....	3	.....	2
McMahan Seed Co., Valparaiso, Ind.	15	6	4	27%	3	20%	2
Mangelsdorf & Bro., Ed. F., St. Louis, Mo.	9	3	4	44%	2	22%	.....
Market Gardeners' Seed Co., The, Cincinnati, O.	8	3	2	25%	3	37%	.....
Maxwell Grain Co., Maxwell, Ind.	1	.....	.....	.....	1	.....	1
Mayer Grain Co., Fulton, Ind.	3	3	.....	.....	.....	.....	.....
Mayer Grain Co., South Whitley, Ind.	5	5	.....	.....	.....	.....	.....
Menaugh, Will H., Osceola, Ind.	1	1	.....	.....	.....	.....	.....
Meyers, Fred, Selma, Ind.	1	.....	.....	.....	.....	.....	1
Milford Grain & Milling Co., Milford, Ind.	1	1	.....	.....	.....	.....	1
Miller, Jonas, Wakarusa, Ind.	5	.....	.....	.....	.....	.....	5
Miller Grain Co., Inc., Bainbridge, Ind.	1	.....	1	.....	.....	.....	.....
Miller Grain Co., Greencastle, Ind.	1	.....	.....	.....	1	.....	.....
Mishawaka Grain & Coal Co., Mishawaka, Ind.	1	.....	.....	.....	1	.....	.....
Monticello Feed & Seed Store, Monticello, Ind.	1	1	.....	.....	.....	.....	1
Morgan, S. J., Alger, O.	1	.....	.....	.....	1	.....	.....
Neal, Chas., Jasonville, Ind.	1	.....	.....	.....	1	.....	1
New Paris Elevator Co., The, New Paris, O.	6	4	1	17%	1	17%	.....
New Ross Lumber & Grain Co., New Ross, Ind.	1	.....	.....	.....	.....	.....	1
Noragon & Son, Butler, Ind.	1	1	.....	.....	.....	.....	.....
Ohio Valley Seed Co., Evansville, Ind.	4	2	2	.....	.....	.....	.....
Osburn, A. R., Bloomfield, Ind.	2	1	1	.....	.....	.....	.....
Ostberg Seed Co., Chicago, Ill.	6	3	3	50%	.....	.....	.....
Owen Coal & Feed Co., Bloomington, Ind.	1	.....	.....	.....	.....	.....	1
Owen Co. Farm Bureau Coop. Ass'n, Inc., Spencer, Ind.	2	2	.....	.....	.....	.....	.....
Paxson, C. E., Elkhart, Ind.	2	.....	.....	.....	2	.....	.....
Pennville Milling Co., Pennville, Ind.	1	1	.....	.....	.....	.....	.....
Phillips, J. C., Star City, Ind.	1	1	.....	.....	.....	.....	.....
Pletch, Guy, Frankfort, Ind.	1	1	.....	.....	.....	.....	.....
Porter Co. Farm Bureau Coop. Ass'n, Inc., Valparaiso, Ind.	1	.....	.....	.....	1	.....	.....
Preble Equity Exchange, Preble, Ind.	1	1	.....	.....	.....	.....	1
Probst, Art, Indianapolis, Ind.	2	.....	.....	.....	.....	.....	2
Purcell Seed Co., Evansville, Ind.	14	8	3	21%	3	21%	.....
Quinlan Seed Store, Terre Haute, Ind.	7	4	.....	.....	1	14%	3
Raridan, Lex, Bedford, Ind.	1	.....	.....	.....	.....	.....	1
Reid, V. T., Salem, Ind.	1	.....	.....	.....	1	.....	.....
Rochester Coop. Elevator Co., Rochester, Ind.	1	1	.....	.....	.....	.....	.....

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* Percentages calculated only on five samples or more examined.

Table 7—Summary of Seed Inspection, July 1, 1933, to June 30, 1934—Continued

Name and Address of Certifier	Number of Samples Examined	Number of Samples Passed	Number Technically Misbranded	Per Cent Technically Misbranded	Number Seriously Misbranded	Per Cent* Seriously Misbranded	Number Unlabeled
Rogers, Reed V., Zionsville, Ind.	1	.....	.....	.....	.....	.....	1
Rogers & Link, Westville, Ind.	1	1	.....	.....	.....	.....	1
Ross Seed Co., Louisville, Ky.	30	26	4	13%	.....	.....	.....
Rosston Grain & Lumber Co., Rosston, Ind.	1	.....	.....	.....	1	.....	1
Rothenberger, Geo., Frankfort, Ind.	1	1	.....	.....	.....	.....	.....
Rushville Farmers Grain & Live Stock Co., Rushville, Ind.	1	1	.....	.....	.....	.....	.....
Sager, Alf., Edwardsport, Ind.	1	.....	.....	.....	.....	.....	1
Salina Seed Co., Salina, Kan.	1	1	.....	.....	.....	.....	1
Sample, John L., Madison, Ind.	2	2	.....	.....	.....	.....	.....
Schmocker, John, Batesville, Ind.	1	1	.....	.....	.....	.....	.....
Schultheis, A. M., Haubstadt, Ind.	1	1	.....	.....	.....	.....	.....
Schultz Seed Co., J. M., Dieterich, Ill.	14	7	1	7%	6	43%	.....
Scott Seed Co., New Albany, Ind.	56	31	15	27%	10	18%	.....
Sellars Grain Co., Forest, Ind.	2	1	1	.....	.....	.....	.....
Shanklin Hardware Co., Frankfort, Ind.	4	3	.....	.....	1	.....	.....
Shelby Co. Farm Bureau Coop. Ass'n, Inc., Shelbyville, Ind.	2	1	.....	.....	1	.....	.....
Sherer, Carl, Mount Vernon, Ind.	2	1	1	.....	.....	.....	.....
Sholes & Co., H. A., Chicago, Ill.	1	.....	1	.....	.....	.....	.....
Spears & Son, Woodford, Paris, Ky.	1	.....	1	.....	.....	.....	.....
Standard Hatcheries, Terre Haute, Ind.	3	1	2	.....	.....	.....	1
Standard Seed Co., Chicago, Ill.	18	10	4	22%	4	22%	.....
Steckel, M. S., Mulberry, Ind	1	.....	1	.....	.....	.....	.....
Stout, Harry T., R. R. 5, Crawfordsville, Ind.	1	1	.....	.....	.....	.....	.....
Strain Estate, A. F., Princeton, Ind.	1	.....	.....	.....	1	.....	.....
Straughn Grain, Inc., Straughn, Ind.	1	1	.....	.....	.....	.....	1
Sunderman, Herman, R. R. 1, Huntingburg, Ind.	1	.....	.....	.....	.....	.....	1
Sun-Field Seed Service, Chicago, Ill.	17	3	13	76%	1	6%	4
Sunshine Feed Store, Greenfield, Ind.	1	.....	.....	.....	1	.....	.....
Sunshine Feed Store, Terre Haute, Ind.	2	1	.....	.....	.....	.....	2
Syler, Clay, North Manchester, Ind.	3	2	.....	.....	1	.....	.....
Syler & Syler, Nappanee, Ind.	2	1	.....	.....	1	.....	.....
Syler & Syler, Plymouth, Ind.	9	1	2	22%	6	67%	.....
Teweles Seed Co., L., Milwaukee, Wisc.	24	13	9	37%	2	8%	.....
Trembley Co., The S. F., Columbia City, Ind.	1	1	.....	.....	.....	.....	.....
Tri Co. Farm Bureau Coop. Ass'n, Inc., Evansville, Ind.	3	2	.....	.....	1	.....	.....
Tripp Hardware Co., North Vernon, Ind.	1	.....	.....	.....	.....	.....	1
Uhl-Snider Milling Co., Connersville, Ind.	1	1	.....	.....	.....	.....	.....
Vonnegut Hardware Co., Indianapolis, Ind.	1	1	.....	.....	.....	.....	.....
Walker, W. Y., Lucerne, Ind.	3	.....	.....	.....	.....	.....	3
Wedeking & Co., C. W., Dale, Ind.	1	1	.....	.....	.....	.....	.....
Werst & Co., Peter, Brookville, Ind.	2	2	.....	.....	.....	.....	.....
Wertheimer & Sons, N., Ligonier, Ind.	1	.....	1	.....	.....	.....	.....
Wesnidge, Dennis, Jasonville, Ind.	1	.....	.....	.....	.....	.....	1
Whitley Co. Farm Bureau Coop. Ass'n, Inc., Columbia City, Ind.	1	1	.....	.....	.....	.....	.....
Whitney-Eckstein Seed Co., Buffalo, N. Y.	4	1	2	.....	1	.....	.....
Wilson, John, Roachdale, Ind.	1	1	.....	.....	.....	.....	.....
Wilson, John, Sullivan, Ind.	1	.....	.....	.....	1	.....	.....
Wilson Grain Co., Rochester, Ind.	1	1	.....	.....	.....	.....	.....
Winchester, Clyde M., Greenwood, Ind.	1	.....	1	.....	.....	.....	.....
Wolf Seed Co., Fort Wayne, Ind.	8	4	3	37%	1	12%	.....
Wyatt Feed & Seed Store, Petersburg, Ind.	12	9	2	16%	1	8%	.....

* Percentages calculated only on five samples or more examined.

TABLE 8

ALFALFA

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, per cent	Inert Matter, per cent	Germination, per cent	Hard Seeds, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds	Number per Pound of each of the Noxious Weed Seeds Specified in the Law
5053	Cripe, C. F., New Waverly	Allied Seed Co., Inc.,	C	99.25	......	80.0	10.0	1-34	....	C None
	Grimm Alfalfa, Lot B145	Ft. Wayne, Ind	F	99.08	0.02	89.5	3.0	5-34	144	F Buckhorn 145; wild carrot 9
4848	Farmers Grain and Supply Co., Thornhope, P. O. Oak	Allied Seed Co., Inc.,	C	99.5	......	80.0	10.0	2-34	....	C None
	Grimm Alfalfa, Lot B157	Ft. Wayne, Ind	F	99.2	0.08	93.0	3.5	5-34	1,350	F None
4666	Gelzleichter & Son, J., Huntington	Allied Seed Co., Inc.,	C	99.5	......	85.0	2.0	5-33	....	C None
	Common Alfalfa, Lot B59	Ft. Wayne, Ind	F	99.54	0.12	89.0	2.0	4-34	279	F Dodder 9
5131	Graft, C. V., Winchester	Allied Seed Co., Inc.,	C	99.6	......	84.0	6.0	12-33	....	C None
	Grimm Alfalfa, Lot B113	Ft. Wayne, Ind	F	99.66	0.10	92.5	3.0	5-34	270	F None
5011	Rochester Coop. Elevator Co., Rochester	Allied Seed Co., Inc.,	C	99.5	......	80.0	10.0	2-34	....	C None
	Grimm Alfalfa, Lot B157	Ft. Wayne, Ind	F	99.7	0.00	89.0	4.5	5-34	450	F None
4897	Hillis Feed Co., Greencastle[1]	American Field Seed Co.,	C	98.0	......	88.0	......	2-34	....	C None
	Grimm Alfalfa, Lot 10139	Chicago, Ill	F	97.36	0.90	63.5	26.5	3-34	5,607	F Dodder 108; Yellow trefoil 9
4352	†Demoret Grain Co., Bath	Ayres Seed Co.,	C	99.5	......	80.0	12.0	12-33	....	C None
	Alfalfa, Lot 368	Cambridge City, Ind	F	99.2	0.72	79.0	15.5	4-34	360	F None
5123	*Berry Seed Co., Clarinda, Iowa[2]	Berry Seed Co.,	C	99.89	......	94.0	......	2-34	....	C None
	Kansas Alfalfa, Lot 21368	Clarinda, Iowa	F	99.16	0.62	69.0	20.5	4-34	170	F None
5127	*Berry Seed Co., Clarinda, Iowa[3]	Berry Seed Co.,	C	99.6	......	92.0	......	2-34	....	C None
	Grimm Alfalfa, Lot 21411	Clarinda, Iowa	F	99.48	0.20	76.0	18.0	4-34	1,170	F None
5187	*Berry Seed Co., Clarinda, Iowa[4]	Berry Seed Co.,	C	95.64	......	68.0	......	1-34	....	C None
	Honest John Alfalfa, Lot 21361	Clarinda, Iowa	F	95.04	2.87	51.0	7.5	4-34	9,864	F Bracted plantain 45; yellow trefoil (9
5189	*Berry Seed Co., Clarinda, Iowa[5]	Berry Seed Co.,	C	99.6	......	90.0	......	2-34	....	C None
	Grimm Alfalfa, Lot 10053	Clarinda, Iowa	F	99.68	0.16	64.5	31.0	4-34	369	F Mustard 9
5235	*Berry Seed Co., Clarinda, Iowa[6]	Berry Seed Co.,	C	99.5	......	92.0	......	3-34	....	C None
	Montana Common Alfalfa, Lot 10095	Clarinda, Iowa	F	99.84	0.08	77.5	15.0	4-34	270	F None
5236	*Berry Seed Co., Clarinda, Iowa[6]	Berry Seed Co.,	C	99.5	......	92.0	......	3-34	....	C None
	Grimm Alfalfa, Lot 10166	Clarinda, Iowa	F	99.19	0.24	72.5	14.5	4-34	450	F None
5125	*Jennings, H. E., Newcastle[7]	Berry Seed Co.,	C	97.95	......	76.0	......	1-34	....	C None
	Alfalfa, Lot 21357	Clarinda, Iowa	F	98.52	0.82	60.0	12.0	3-34	1,818	F Bracted plantain 9; curled dock 9
5186	*Bowman Seed Co., Concordia, Kan[8]	Bowman Seed Co.,	C	......	......	......	......	......	....	C
	Common Alfalfa	Concordia, Kan	F	94.93	4.18	50.5	7.5	4-34	5,076	F Buckhorn 18; curled dock 18
4119	Cloverdale Hdwe. & Lumber Co., Cloverdale[9]	Bowman Seed Co.,	C	99.5	......	88.0	3.0	8-33	....	C None
	Alfalfa, Lot D64 Bow	Concordia, Kan	F	99.36	0.12	87.5	8.5	1-34	....	F None
4981	Eberts Grain Co., Deputy	Chambers Seed Co.,	C	95.5	......	90.0	......	1-34	....	C Buckhorn 90
	Grimm Alfalfa, Lot 82	Louisville, Ky	F	95.44	0.04	85.5	7.0	5-34	293	F Buckhorn 54; chicory 9; dodder 5; wild carrot 45
4599	Emison Hdwe. Store, Vincennes	Corneli Seed Co.,	C	99.59	......	81.0	14.0	1-34	....	C None
	Common Alfalfa, Lot Ace	St. Louis, Mo	F	99.72	0.20	85.0	9.0	4-34	270	F None

4789	Heise Bros. & Co., Mitchell	Crabbs Reynolds Taylor Co.,	C	99.6	......	84.0	9.0	1-34	....	C	None
	Kansas Alfalfa, Lot 6-FI	Crawfordsville, Ind	F	99.56	0.34	79.0	12.0	5-34	540	F	None
4252	Marshall Feed and Grain Co., Marshall[10]	Crabbs Reynolds Taylor Co.,	C	99.58	......	87.0	4.0	1-34	....	C	None
	Alfalfa, Lot 1-S1	Crawfordsville, Ind	F	98.75	0.26	88.0	2.5	2-34	995	F	Dodder 5
4253	Marshall Feed and Grain Co., Marshall	Crabbs Reynolds Taylor Co.,	C	99.5	......	83.0	6.0	7-33	....	C	None
	Idaho Alfalfa, Lot 2-FI	Crawfordsville, Ind	F	99.3	0.54	89.0	2.5	2-34	666	F	Field dodder 36
4736	Newcastle Elevator Co., Newcastle	Crabbs Reynolds Taylor Co.,	C	99.64	......	80.0	10.0	8-33	....	C	None
	Kansas Alfalfa, Lot 3-FI	Crawfordsville, Ind	F	99.9	0.10	79.5	10.0	4-34	....	F	None
4512	Pennington Feed Store, Bloomington	Crabbs Reynolds Taylor Co.,	C	99.64	......	80.0	10.0	8-33	....	C	None
	Kansas Alfalfa, Lot 3-FI	Crawfordsville, Ind	F	99.82	0.16	79.5	12.5	4-34	....	F	None
4582	Crawfordsville Seed Co., Crawfordsville[11]	Crawfordsville Seed Co.,	C	99.5	......	85.0	8.0	1-34	....	C	None
	Grimm Alfalfa, Lot AG599	Crawfordsville, Ind	F	99.54	0.24	92.5	1.5	3-34	720	F	None
4584	Crawfordsville Seed Co., Crawfordsville[11]	Crawfordsville Seed Co.,	C	99.9	......	85.0	10.0	2-34	....	C	None
	Alfalfa, Lot 612	Crawfordsville, Ind	F	99.82	0.08	90.0	7.5	3-34	180	F	None
4545	Shelby Co. Farm Bureau Coop. Assn. Inc., Shelbyville	Crawfordsville Seed Co.,	C	99.75	......	85.0	10.0	1-34	....	C	None
	Alfalfa, Lot 612	Crawfordsville, Ind	F	99.76	0.16	86.5	10.5	4-34	90	F	None
4918	Brown Supply Co., Valparaiso[12]	Dickinson Co., The Albert,	C	99.4	......	70.0	23.0	11-33	....	C	None
	Alfalfa, Lot 28226	Chicago, Ill	F	99.6	0.30	73.5	13.5	3-34	9	F	Curled dock 9
4941	Brown Supply Co., Valparaiso[13]	Dickinson Co., The Albert,	C	99.48	......	87.0	8.0	11-33	....	C	None
	Grimm Alfalfa, Lot 27613	Chicago, Ill	F	99.9	0.10	66.0	27.0	4-34	5	F	Large seeded alfalfa dodder 5
5323	Brown Supply Co., Valparaiso	Dickinson Co., The Albert,	C	99.3	......	68.0	28.0	6-34	....	C	None
	Alfalfa, Lot B62	Chicago, Ill	F	99.42	0.02	69.0	26.5	7-34	752	F	Dodder 5; yellow trefoil 27
5324	Brown Supply Co., Valparaiso	Dickinson Co., The Albert,	C	99.46	......	82.0	10.0	6-34	....	C	None
	Grimm Alfalfa, Lot O27223	Chicago, Ill	F	99.6	0.12	74.0	19.0	7-34	279	F	Buckhorn 9
4850	Farmers Coop. Elevator, Royal Center	Dickinson Co., The Albert,	C	99.84	....	62.0	32.0	2-34	....	C	None
	Grimm Alfalfa, Lot O27587-B3	Chicago, Ill	F	99.74	0.13	69.5	28.0	5-34	180	F	None
4173	Knapp C. E., South Bend	Dickinson Co., The Albert	C	99.2	.....	82.0	11.0	5-33	....	C	None
	Alfalfa, Lot 28192	Chicago, Ill	F	99.68	0.10	84.0	1.0	2-34	180	F	None
3990	North Side Feed Store, Mishawaka	Dickinson Co., The Albert	C	99.4	......	70.0	23.0	11-33	....	C	None
	Alfalfa, Lot 28226	Chicago, Ill	F	99.74	0.22	74.0	14.5	12-33	9	F	Curled dock 9
4012	Stiefel Grain Co., Syracuse	Dickinson Co., The Albert	C	99.46	......	77.0	18.0	10-33	....	C	None
	Alfalfa, Lot 28223	Chicago, Ill	F	99.76	0.20	77.0	12.5	12-33	90	F	None
4164	Troyer Seed Co., Goshen	Dickinson Co., The Albert	C	99.5	......	70.0	23.0	11-33	....	C	None
	Alfalfa, Lot 28229	Chicago, Ill	F	99.88	0.06	69.5	17.0	2-34	189	F	Curled dock 9
4011	Warsaw Feed Store, Warsaw	Dickinson Co., The Albert	C	99.46	..	80.0	12.0	11-33	....	C	None
	Alfalfa, Lot 28224	Chicago, Ill	F	99.44	0.30	80.0	6.0	12-33	90	F	None
4117	Curry, Zwingle, Bloomington[14]	Dill, Frank,	C	....	.....	.....	......	......	....	C	
	Alfalfa	Eskridge, Kan	F	98.48	1.04	75.0	15.0	1-34	3,510	F	None
4121	*Curry, Zwingle, Bloomington[15]	Dill, Frank,	C	....	.....	.....	......	......	....	C	
	Kansas Alfalfa	Eskridge, Kan.	F	97.04	2.92	64.0	12.0	1-34	153	F	Field dodder 63

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*Not labeled.

†Certified by Retailer.

C and F stands, respectively, for Claimed and Found.

[1] Not tagged. Labels furnished. Removed from sale. Misbranded. All sold.

[2] Sample secured from Richard D. Decker, R. 6, Marion, Ind.

[3] Sample secured from Noah J. Edwards, R. 2, Fairmount, Ind.

[4] Sample secured from Chas. G. Colglazier, R. 1, Bedford, Ind.

[5] Sample secured from Robert Elston, R. 3, Bedford, Ind.

[6] Sample secured from Chas. Sparks, Fortville, Ind.

[7] Sample secured from Lewis Batt, R. 6, Newcastle, Ind.

[8] Sample secured from Chas G. Colglazier, R. 1, Bedford, Ind.

[9] Not tagged. Labels furnished.

[10] Labeled as White Blossom Sweet Clover. Found to be Alfalfa. Relabeled.

[11] Sample secured from Purdue Soils and Crops Department, Lafayette, Ind.

[12] Not tagged. Labels furnished.

[13] Not tagged. Labels furnished. Removed from sale. Misbranded. Retagged.

[14] Not tagged. Labels furnished. Sample secured from R. S. McElhinney, Bloomington, Ind.

[15] Sample secured from Winfort Moffatt, Bloomington, Ind.

ALFALFA—Continued

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor	Purity, per cent	Inert Matter, per cent	Germination, per cent	Hard Seeds, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds	Number per Pound of each of the Noxious Weed Seeds Specified in the Law
4501	Indiana Farm Bureau Co-operative Ass'n Inc., Indianapolis[16]	Farmers National Grain Corporation, C	99.65	......	78.0	15.0	2-34	....	C None
	Grimm Alfalfa, Lot 2160	Chicago, Ill. F	99.88	......	58.5	35.5	3-34	450	F None
5171	Steuben County Farm Bureau Co-operative Ass'n, Angola[16]	Farmers National Grain Corporation C	99.82	......	87.0	7.0	2-34	....	C None
	Grimm Alfalfa, Lot 837	Chicago, Ill. F	99.54	0.30	70.0	20.5	4-34	90	F None
4561	Central States Grain Ass'n, Shelbyville	Foster-Kendall Co., C	99.25	......	70.0	25.0	12-33	....	C None
	Grimm Alfalfa	Carmel, Ind. F	99.51	0.22	66.5	27.5	4-34	725	F Dodder 5
4803	Dayton Elevator Co., Dayton[17]	Foster-Kendall Co., C	99.35	......	75.0	20.0	12-33	....	C None
	Common Alfalfa	Carmel, Ind. F	99.74	0.18	82.0	6.5	5-34	360	F None
4490	Decatur County Co-operative Co., Greensburg	Foster-Kendall Co., C	99.25	......	70.0	25.0	12-33	....	C None
	Grimm Alfalfa, Lot 2631	Carmel, Ind. F	99.62	0.19	62.5	28.5	4-34	270	F None
4265	Farm Bureau Service, Columbus	Foster-Kendall Co., C	99.25	......	70.0	25.0	12-33	....	C None
	Grimm Alfalfa	Carmel, Ind. F	99.38	0.26	59.5	30.0	3-34	990	F None
4269	Farm Bureau Service, Columbus	Foster-Kendall Co., C	99.75	......	81.0	4.0	1-34	....	C None
	Common Alfalfa, Lot K-20	Carmel, Ind. F	99.72	0.24	75.0	17.5	2-34	90	F None
4820	Farmers Co-operative Co., Shideler	Foster-Kendall Co., C	99.25	......	70.0	25.0	12-33	....	C None
	Grimm Alfalfa	Carmel, Ind. F	99.06	0.32	73.5	19.5	5-34	810	F None
4822	Farmers Co-operative Co., Shideler	Foster-Kendall Co., C	99.25	......	81.0	14.0	12-33	....	C None
	Grimm Alfalfa	Carmel, Ind. F	99.14	0.04	72.5	22.5	5-34	36	F Curled dock 36
4560	Farmers Grain & Supply Co., Windfall	Foster-Kendall Co., C	99.25	......	70.0	25.0	12-33	....	C None
	Grimm Alfalfa	Carmel, Ind. F	99.38	0.06	65.0	24.0	4-34	1,175	F Dodder 5
5088	Maxwell Grain Co., Maxwell	Foster-Kendall Co., C	99.25	......	70.0	25.0	12-33	....	C None
	Grimm Alfalfa	Carmel, Ind. F	99.12	0.14	62.5	30.5	5-34	1,080	F None
4189	Rush County Hatchery, Rushville	Foster-Kendall Co., C	99.25	......	70.0	25.0	12-33	....	C None
	Grimm Alfalfa	Carmel, Ind. F	99.14	0.20	57.0	36.0	2-34	1,800	F None
5058	Shirley, O. C., Knightstown	Foster-Kendall Co., C	99.75	......	81.0	14.0	1-34	....	C None
	Common Alfalfa	Carmel, Ind. F	99.68	0.32	82.5	8.5	5-34	....	F None
4141	Smock & Co., W. C., Burrows	Foster-Kendall Co., C	99.25	......	70.0	25.0	12-33	....	C None
	Grimm Alfalfa, Lot 2631	Carmel, Ind. F	99.28	0.24	58.0	32.0	2-34	810	F None
4468	Trow Co., W., Madison	Foster-Kendall Co., C	99.25	......	70.0	25.0	12-33	....	C None
	Grimm Alfalfa	Carmel, Ind. F	99.5	0.16	60.5	33.0	4-34	720	F None
4959	Boone Grove Grain Co., Boone Grove	Goodrich Gros. Co., C	99.0	......	85.0	10.0	12-33	....	C None
	Grimm Alfalfa, Lot LOW	Winchester, Ind. F	98.44	0.40	77.0	14.0	5-34	1,458	F Curled dock 18
4960	Boone Grove Grain Co., Boone Grove	Goodrich Bros. Co., C	99.56	......	85.0	10.0	3-33	....	C None
	Common Alfalfa, Lot AG-56	Winchester, Ind. F	99.78	0.04	84.5	5.5	5-34	810	F None
5117	Dickey, H., Parker	Goodrich Bros. Co., C	99.5	......	85.0	10.0	12-33	....	C None
	Common Alfalfa, Lot Lark	Winchester, Ind. F	99.52	0.36	89.0	3.5	5-34	9	F Red sorrel 9
4857	Goodrich Bros. Co., Eaton	Goodrich Bros. Co., C	99.5	......	84.0	10.0	12-33	....	C None
	Alfalfa, Lot Lark	Winchester, Ind. F	99.62	0.26	85.5	6.0	5-34	180	F None

4258	Linwood Grain Co., Linwood, P. O. Alexandria	Goodrich Bros. Co.,	C	99.3	......	84.0	12.0	1-34	....	C	None
	Common Alfalfa, Lot AN-56	Winchester, Ind.	F	99.6	0.12	73.5	9.5	2-34	1,800	F	None
4819	Powell Grain Co., Losantville	Goodrich Bros. Co.,	C	99.5	......	85.0	10 0	12-33	....	C	None
	Common Alfalfa, Lot Lark	Winchester, Ind.	F	99.58	0.08	91.0	5.0	5-34	999	F	Red sorrel 9
4454	Tuxedo Feed & Supply Co., Aurora[18]	Haile & Sons, J. C.,	C	99.0	......	90.0	......	1-34	....	C	Yellow trefoil 110
	Kansas Alfalfa Clover, Lot Green Top	Cincinnati, Ohio	F	99.6	0.34	81.5	11.0	3-34	279	F	Curled dock 9
4638	Haynes Milling Co., The, Portland	Haynes Milling Co., The,	C	99.25	......	90.0	5.0	3-33	....	C	None
	Common Alfalfa, Lot 697	Portland, Ind.	F	99.36	0.41	87.0	4.5	4-34	189	F	Curled dock 9
4049	†Straughn Grain, Inc., Straughn[19]	Hazelrigg, J. S.,	C	99.5	......	88.0	3.0	9-32	....	C	None
	Alfalfa, Lot D-66-Bow	Cambridge City, Ind.	F	99.78	0.20	81.0	11.5	1-34	90	F	None
3982	Wyatt Feed & Seed Store, Petersburg[20]	Heldt Co., The	C	99.47	......	91.0	......	7-33	....	C	None
	Oklahoma Alfalfa, Lot 2801	Evansville, Ind.	F	99.5	0.26	79.0	12.5	11-33	1,098	F	Mustard 9; red sorrel 9
5136	Lynn Mill & Elevator Co., Lynn	Hirsch & Sons, Henry,	C	99.5	......	80.0	......	1-34	....	C	None
	Grimm Alfalfa, Lot 6297	Toledo, Ohio	F	99.44	0.20	67.0	28.0	5-34	288	F	Common plantain 162; wild carrot 36
4529	Armstrong-Landon Co., Kokomo	Hooton-Davis Seed Corporation	C	99.75	......	85.0	10.0	12-33	....	C	None
	Common Alfalfa, Lot 2436	Lebanon, Ind.	F	99.94	0.06	86.0	12.5	4-34	....	F	None
5118	Farmers Co-operative Co., Selma	Hooton-Davis Seed Corporation,	C	98.0	......	84.0	6 .0	1-34	....	C	None
	Grimm Alfalfa, Lot G447	Lebanon, Ind.	F	98.0	0.20	73.5	12.0	5-34	54	F	Buckhorn 36; wild carrot 18
5141	Farmers Grain & Supply Co., Modoc	Hooton-Davis Seed Corporation,	C	99.25	......	62.0	29.0	8-33	....	C	None
	Common Alfalfa	Lebanon, Ind.	F	99.83	0.17	76.0	17.5	5-34	....	F	None
4471	Hunter & Son, W. M., Versailles	Hooton-Davis Seed Corporation,	C	99.7	......	71.0	21.0	2-34	....	C	None
	Common Alfalfa, Lot F-352	Lebanon, Ind.	F	99.62	0.30	88.0	5.0	4-34	270	F	None
5138	Markleville Elevator Co., Emporia, P. O. Markleville	Hooton-Davis Seed Corporation,	C	99.5	......	80.0	10.0	1-34	....	C	None
	Common Alfalfa, Lot F-436	Lebanon, Ind.	F	99.92	0.06	85.0	11.5	5-34	....	F	None
5086	Maxwell Grain Co., Maxwell	Hooton-Davis Seed Corporation,	C	98.0	......	84.0	6 0	1-34	....	C	None
	Grimm Alfalfa, Lot G-447	Lebanon, Ind.	F	97.9	0.14	71.5	17.5	5-34	252	F	Buckhorn 36; curled dock 9; wild carrot 27
4811	†Shanklin Hdwe. Co., Frankfort	Hooton-Davis Seed Corporation,	C	99.5	......	85.0	10.0	12-33	....	C	None
	Common Alfalfa, Lot F-436	Lebanon, Ind.	F	99.88	0.08	90.0	6.0	5-34	....	F	None
5043	Huntertown Grain & Lumber Co., Huntertown[21]	Huntertown Grain & Lumber Co.,	C	97.87	......	69.5	19.0	2-34	....	C	None
	Affidavit Blackfoot Grimm Alfalfa, Lot 65178	Huntertown, Ind.	F	97.93	0.42	70.5	20 0	5-34	4,734	F	Buckhorn 36; common plantain 4,410; prickly lettuce 9, wild carrot 9
4064	Clark County Farm Bureau Co-operative Ass'n, Jeffersonville	Indiana Farm Bureau Co-Op. Ass'n, Inc.,	C	99.5	......	80.0	15.0	11-33	....	C	None
	(O.S.) Common Alfalfa, Lot K. C. A.	Indianapolis, Ind.	F	99.92	0.02	83.5	11.0	1-34	90	F	None
4249	Clay County Farm Bureau Co-operative Ass'n, Inc., Brazil[22]	Indiana Farm Bureau Co-Op. Ass'n, Inc.,‡	C	99.75	......	78.0	15.0	1-34	....	C	None
	Grimm Alfalfa, Lot 2058	Indianapolis, Ind.	F	99.98	0.02	48.0	46.0	2-34	....	F	None
3888	Clinton County Farm Bureau Co-operative Ass'n, Inc., Frankfort	Indiana Farm Bureau Co-Op. Ass'n, Inc.,	C	99.5	......	80.0	15.0	6-33	....	C	None
	Grimm Alfalfa, Lot GA-779-A	Indianapolis, Ind.	F	99.96	0 02	85 5	10 0	9-33	90	F	None

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*Not labeled.

†Certified by Retailer.

C and F stands, respectively, for Claimed and Found.

‡Agent of Farmers National Grain Corp., Chicago, Ill.

[16] Removed from sale. Misbranded. All sold.

[17] Distributed by Mulberry Grain Co., Mulberry, Ind.

[18] Not tagged. Labels furnished.

[19] Not tagged. Labels furnished.

[20] Removed from sale. Misbranded. Returned to distributor.

[21] Not tagged. Labels furnished. Removed from sale. Misbranded. Retagged.

[22] Removed from sale. Misbranded. Returned to distributor.

ALFALFA—Continued

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor	Purity, per cent	Inert Matter, per cent	Germination, per cent	Hard Seeds, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds	Number per Pound of each of the Noxious Weed Seeds Specified in the Law
4807	Clinton County Farm Bureau Co-operative Ass'n, Inc., Frankfort Grimm Alfalfa, Lot GA-779-B	Indiana Farm Bureau Co-Op. Ass'n, Inc., C Indianapolis, Ind. F	99.5 99.84	...... 0.08	80.0 86.5	15.0 7.5	11-33 5-34	 450	C None F None
5114	Farmers Co-operative Elevator, Selma[23] Grimm Alfalfa, Lot 2058	Indiana Farm Bureau Co-Op. Ass'n, Inc.,‡ C Indianapolis, Ind. F	99.75 99.88	...... 0.04	76.0 57.5	15.0 37.5	1– 5-34	 450	C None F None
4854	Grant County Farm Bureau Co-operative Ass'n, Inc., Marion O. S. Common Alfalfa, Lot KCA-874	Indiana Farm Bureau Co-Op. Ass'n, Inc., C Indianapolis, Ind. F	99.75 99.88	...... 0.12	80.0 80.5	15.0 9.0	1-34 5-34	....	C None F None
5083	Hamilton County Farm Bureau Co-operative Ass'n, Inc., Noblesville Grimm Alfalfa, Lot 2160	Indiana Farm Bureau Co-Op. Ass'n, Inc.,‡ C Indianapolis, Ind. F	99.65 99.56	...... 0.28	78.0 71.0	15.0 26.0	2-34 5-34	 360	C None F None
5084	Hamilton County Farm Bureau Co-operative Assn., Inc., Noblesville O. S. Common Alfalfa, Lot KCA-874	Indiana Farm Bureau Co-Op. Assn., Inc., C Indianapolis, Ind. F	99.75 99.76	...... 0.16	80.0 85.5	15.0 10.0	1-34 5-34	 180	C None F None
5069	Hancock County Farm Bureau Co-operative Assn., Inc., Greenfield Common Alfalfa, Lot CA-880	Indiana Farm Bureau Co-Op. Assn., Inc.,‡ C Indianapolis, Ind. F	99.5 99.44	...... 0.12	80.0 69.0	15.0 27.0	2-34 5-34	 900	C None F None
4722	Henry County Farm Bureau Co-operative Assn., Inc., Newcastle[22] Common Alfalfa, Lot CA-880	Indiana Farm Bureau Co-Op. Assn., Inc.,‡ C Indianapolis, Ind. F	99.5 99.64	...... 0.04	80.0 64.0	15.0 33.5	2-34 4-34	 630	C None F None
4527	Howard County Farm Bureau Co-operative Assn., Inc., Kokomo[23] Blue Tag Grimm Alfalfa, Lot 2160	Indiana Farm Bureau Co-Op. Assn., Inc.,‡ C Indianapolis, Ind. F	99.65 99.78	...... 0.06	75.0 59.0	15.0 34.5	2-34 4-34	 554	C None F Curled dock 9; dodder 5
4457	Jefferson County Farm Bureau Co-operative Assn., Inc., Madison[22] Common Alfalfa, Lot CA-881	Indiana Farm Bureau Co-op. Assn., Inc., C Indianapolis, Ind. F	99.5 98.07	...... 1.15	83.0 82.5	10.0 9.5	1-34 4-34	 2,610	C None F None
4229	Kosciusko County Farm Bureau Co-operative Assn., Inc., Warsaw[24]	Indiana Farm Bureau Co-op. Assn., Inc.,‡ C	99.75	......	78.0	15.0	1-34	......	C None
	Utah Fancy Blue Tag Grimm Alfalfa, Lot 2058	Indianapolis, Ind. F	99.86	0.12	45.0	48.0	2-34	90	F None
4190	Morgan County Farm Bureau Co-operative Assn., Inc., Martinsville[22] Grimm Alfalfa, Lot 2058	Indiana Farm Bureau Co-op. Assn., Inc.,‡ C Indianapolis, Ind. F	99.5 99.86	...... 0.10	78.0 50.0	15.0 44.5	1-34 2-34	 90	C None F None
4955	Porter County Farm Bureau Co-operative Assn., Inc., Valparaiso Dakota 12 Alfalfa, Lot CA-877-A	Indiana Farm Bureau Co-op. Assn., Inc.,‡ C Indianapolis, Ind. F	99.5 99.5	...... 0.20	85.0 95.0	10.0 0.5	1-34 5-34	 459	C None F Red sorrel 9
4463	Ripley County Farm Bureau Co-operative Assn., Inc., Osgood Common Alfalfa, Lot CA-879	Indiana Farm Bureau Co-op. Assn., Inc. C Indianapolis, Ind. F	99.5 99.45	...... 0.31	80.0 84.5	14.0 9.5	11-33 4-34	 374	C None F Dodder 14
4476	Ripley County Farm Bureau Co-operative Assn., Inc., Osgood[25] Grimm Alfalfa, Lot 2061	Indiana Farm Bureau Co-op. Assn., Inc.,‡ C Indianapolis, Ind. F	99.6 99.86	...... 0.04	80.0 63.5	14.0 26.5	2-34 4-34	 270	C None F None

4595	Sullivan County Farm Bureau Co-operative Assn., Inc., Sullivan[25] Grimm Alfalfa, Lot 2061	Indiana Farm Bureau Co-op. Assn., Inc.,‡ Indianapolis, Ind	C	99.6		80.0	14.0	2-34		C	None
			F	99.86	0.04	62.5	34.0	5-34	275	F	Dodder 5
5096	Tipton County Farm Bureau Co-operative Assn., Inc., Tipton Grimm Alfalfa, Lot 2160	Indiana Farm Bureau Co-op. Assn., Inc.,‡ Indianapolis, Ind	C	99.65		78.0	15.0	2-34		C	None
			F	99.92	0.02	64.5	31.0	5-34	360	F	None
5097	Tipton County Farm Bureau Co-operative Assn., Inc., Tipton Kansas Common Alfalfa, Lot CA-882	Indiana Farm Bureau Co-op. Assn., Inc.,‡ Indianapolis, Ind	C	99.74		88.0	6.0	1-34		C	None
			F	99.7	0.30	84.5	9.0	5-34		F	None
4700	Tri County Farm Bureau Co-operative Assn., Inc., Evansville[25] Grimm Alfalfa, Lot 2061	Indiana Farm Bureau Co-op. Assn., Inc.,‡ Indianapolis, Ind	C	99.6		80.0	15.0	2-34		C	None
			F	99.9	0.02	62.0	36.5	4-34	378	F	Curled dock 18
4756	Wayne County Farm Bureau Co-operative Assn., Inc., Richmond Grimm Alfalfa, Lot 2160	Indiana Farm Bureau Co-op. Assn., Inc.,‡ Indianapolis, Ind	C	99.85		78.0	15.0	2-34		C	None
			F	99.8	0.14	67.0	30.5	5-34	203	F	Curled dock 18; large seeded alfalfa dodder 5
4757	Wayne County Farm Bureau Co-operative Assn., Inc., Richmond Common Alfalfa, Lot CA882	Indiana Farm Bureau Co-op. Assn., Inc.,‡ Indianapolis, Ind	C	99.5		83.0	10.0	1-34		C	None
			F	99.82	0.16	87.0	6.5	5-34	99	F	Curled dock 9
4675	White County Farm Bureau Co-operative Assn., Inc., Monticello Grimm Alfalfa, Lot GA-779-B	Indiana Farm Bureau Co-op. Assn., Inc., Indianapolis, Ind	C	99.5		80.0	15.0	6-33		C	None
			F	99.86		87.5	8.5	4-34	360	F	None
4407	Combs, Gilbert, Bloomfield Common Alfalfa, Lot F-284	Indiana Seed Co., Indianapolis, Ind	C	99.6		80.0	12.0	12-33		C	None
			F	99.02	0.46	78.0	13.5	4-34	1,080	F	Yellow trefoil 900
5237	Crouch & Foster Hdwe. Co., Fortville[26] Grimm Alfalfa, Lot MA-73	Indiana Seed Co., Indianapolis, Ind	C	99.5		78.0	14.0	1-34		C	None
			F	99.72	0.02	87.5	5.0	4-34	90	F	None
5113	Farmers Co-operative Co., Selma Common Alfalfa, Lot 1-121	Indiana Seed Co., Indianapolis, Ind	C	99.6		82.0	10.0	1-34		C	None
			F	99.6	0.28	79.5	11.0	5-34	630	F	None
5130	Graft, C. V., Winchester Common Alfalfa, Lot MA-72	Indiana Seed Co., Indianapolis, Ind	C	99.75		78.0	15.0	1-34		C	None
			F	99.96	0.02	93.0	0.5	5-34	90	F	None
4037	Jay Grain Co., Elwood Common Alfalfa, Lot A192	Indiana Seed Co., Indianapolis, Ind	C	99.6		75.0	17.0	2-33		C	None
			F	99.66	0.20	85.5	7.0	1-34	729	F	Bracted plantain 9
4131	Lafayette Co-operative Elevator Co., Lafayette Common Alfalfa, Lot F-284	Indiana Seed Co., Indianapolis, Ind	C	99.6		80.0	12.0	12-33		C	None
			F	99.66	0.16	76.0	13.5	2-34	837	F	Dodder 27
4133	Lafayette Co-operative Elevator Co., Lafayette Common Alfalfa, Lot 1-121	Indiana Seed Co., Indianapolis, Ind	C	99.6		82.0	10.0	1-34		C	None
			C	99.62	0.20	82.0	10.0	2-34	900	F	None
4678	Logansport Elevator Co., Logansport Affidavit Grimm Alfalfa, Lot M A-73	Indiana Seed Co., Indianapolis, Ind	C	99.5		78.0	14.0	1-34		C	None
			F	99.62	0.12	86.5	6.0	4-34	90	F	None
4577	Riggs & Son, W. G., Sullivan Common Alfalfa, Lot MA-72	Indiana Seed Co., Indianapolis, Ind	C	99.75		78.0	15.0	1-34		C	None
			F	99.76	0.14	94.5	1.0	4-34	270	F	None
4198	Sunshine Feed Store, Rushville Grimm Alfalfa, Lot UB-5	Indiana Seed Co., Indianapolis, Ind	C	99.0		80.0	12.0	1-34		C	None
			F	99.58	0.20	71.0	25.5	2-34	999	F	Curled dock 9
4299	Union Hardware Co., Seymour Alfalfa, Lot 1-121	Indiana Seed Co., Indianapolis, Ind	C	99.6		82.0	10.0	1-34		C	None
			F	98.99	0.22	77.0	10.5	3-34	3,240	F	None
4729	Woodbury-Elliott Grain Co., Muncie Common Alfalfa, Lot F-932	Indiana Seed Co., Indianapolis, Ind	C	99.25		75.0	17.0	2-34		C	None
			F	99.14	0.26	88.0	5.5	4-34	1.350	F	None

*Not labeled.
†Certified by Retailer.
C and F stands, respectively, for Claimed and Found.
‡Agent of Farmers National Grain Corp., Chicago, Ill.

[23] Removed from sale. Misbranded. All sold.
[24] Removed from sale. Misbranded. Retagged.
[25] Removed from sale. Misbranded. All sold.
[26] Sample secured from Chas. Sparks, Fortville, Ind.

ALFALFA—Continued

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, per cent	Inert Matter, per cent	Germination, per cent	Hard Seeds, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds	Number per Pound of each of the Noxious Weed Seeds Specified in the Law
4735	Woodbury-Elliott Grain Co., Muncie	Indiana Seed Co.,	C	99.6	......	82.0	10.0	1-34	......	C None
	Common Alfalfa, Lot I-121	Indianapolis, Ind	F	99.4	0.24	84.5	10.0	5-34	1,350	F None
3870	Powell Grain Co., Losantville[27]	K. & A. Seed Co., Inc.,	C	99.5		80.0	12.0	3-33	......	C None
	Common Alfalfa, Lot AA-B-43	Ft. Wayne, Ind	F	99.55	0.10	89.5	2.0	9-33	1,630	F Dodder 10
3970	Bash & Co., C. E., Huntington	Kellogg-Kelly Seed Co.,	C	99.67	......	82.0	17.0	9-33	......	C None
	Kansas Alfalfa, Lot AK	St. Joseph, Mo	F	99.74	0.22	79.0	10.5	11-33	90	F None
4160	Dembufsky Seed Co., Goshen	Kellogg-Kelly Seed Co.,	C	99.74	......	79.0	10.5	11-33	......	C None
	New Crop Kansas Alfalfa, Lot AK	St. Joseph, Mo	F	99.88	0.12	80.0	11.0	2-34	5	F Field dodder 5
5039	Middlebury Grain Co., Middlebury	King & Sons, H. C.,	C	99.46	......	71.0	26.0	2-34	......	C None
	Grimm Alfalfa, Lot B-242	Battle Creek, Mich	F	99.86	0.04	83.0	10.5	5-34	18	F Buckhorn 18
4856	Hartford Milling Co., Hartford City[28]	Kraus, Sam,	C	99.0	......	85.0	9.0	11-33	......	C None
	Rocky Mountain Alfalfa, Lot T	Ft. Wayne, Ind	F	98.87	0.48	73.0	19.5	3-34	540	F None
4866	Hartford Milling Co., Hartford City[28]	Kraus, Sam,	C	99.0	......	87.0	8.0	11-33	......	C None
	L. O. W. Grimm Alfalfa, Lot N	Ft. Wayne, Ind	F	99.46	0.16	70.5	23.5	3-34	275	F Dodder 5
4740	Red Key Grain Co., Red Key[29]	Kraus, Sam,	C	99.5	......	95.0	6.0	11-33	......	C None
	Common Alfalfa, Lot S	Ft. Wayne, Ind	F	98.34	1.0	62.0	30.5	5-34	1,170	F None
5035	Steckley's Feed Mill, Kendallville[30]	Kraus, Sam,	C	99.0	......	87.0	8.0	11-33	......	C None
	L. O. W. Grimm Alfalfa, Lot N	Ft. Wayne, Ind	F	98.04	0.51	74.5	18.5	4-34	1,350	F None
4306	Farmers Co-op. Elevator Co., Seymour[31]	Lewis Implement and Seed Co.,	C	99.5	......	92.0	......	1-34	......	C None
	Alfalfa Clover, Lot Red Bird	Louisville, Ky	F	99.34	0.46	76.5	16.0	3-34	360	F None
4335	Lutz-Boyd Hdwe. Co., Charlestown[31]	Lewis Implement and Seed Co.,	C	99.5	......	85.0	10.0	1-34	......	C None
	Alfalfa, Lot Red Bird A-339	Louisville, Ky	F	99.78	0.08	61.5	31.0	3-34	810	F None
4370	Krick & Son, A., Milan	McCullough Seed Co., The J. Chas.,	C	99.6	......	77.0	17.0	8-33	......	C None
	Kansas Alfalfa, Lot 6875	Cincinnati, Ohio	F	99.74	0.22	88.5	5.5	4-34	180	F None
4372	Krick & Son, A., Milan	McCullough Seed Co., The J. Chas.,	C	99.5	......	90.0	3.0	8-33	......	C None
	Idaho Certified Grimm Alfalfa, Lot 6361	Cincinnati, Ohio	F	99.5	0.26	89.5	0.0	4-34	810	F None
4761	Wayne County Farm Bureau Co-operative Assn., Inc., Richmond	McCullough Seed Co., The J. Chas.,	C	99.7	......	86.0	8.0	12-33	......	C None
	Kansas Alfalfa, Lot 6957	Cincinnati, Ohio	F	99.64	0.32	81.5	7.0	3-34	180	F None
4764	Wayne County Farm Bureau Co-operative Assn., Inc., Richmond[32]	McCullough Seed Co., The J. Chas.,	C	96.0	......	68.0	28.0	10-33	......	C Yellow trefoil 90
	Ohio Growers Affidavit Grimm Alfalfa, Lot 6408	Cincinnati, Ohio	F	94.41	0.08	70.0	17.0	5-34	828	F Common plantain 108
4957	†McMahan Seed Co., Valparaiso[31]	Mangelsdorf & Bro., Ed. F.,	C	99.25	......	85.0	9.0	1-34	......	C None
	Montana Grimm Alfalfa, Lot 3236	St. Louis, Mo	F	98.58	0.82	65.5	27.0	5-34	1,620	F None
4962	†McMahan Seed Co., Valparaiso	Mangelsdorf & Bro., Ed. F.,	C	99.45	......	89.0	6.0	1-34	......	C None
	Montana Grimm Alfalfa, Lot 1219	St. Louis, Mo	F	99.72	0.18	76.0	14.0	5-34	90	F None
5316	McMahan Seed Co., Valparaiso[31]	Mangelsdorf & Bro., Ed. F.,	C	99.0	......	80.0	10.0	3-34	......	C None
	Wyoming Grimm Alfalfa, Lot 4019	St. Louis, Mo	F	98.83	0.93	68.5	6.0	7-34	207	F Mustard 117
5326	McMahan Seed Co., Valparaiso	Mangelsdorf & Bro., Ed. F.,	C	98.64	......	80.0	15.0	4-34	......	C None
	Colorado Grimm Alfalfa, Lot 9005	St. Louis, Mo	F	97.92	1.18	83.5	4.0	7-34	630	F None

5279	Rochester, Co-op. Elevator Co., Rochester	Mayer Grain Co.,	C	99 25		76.0	18.0	3-34		C	Buckhorn 90
	Grimm Alfalfa	South Whitley, Ind	F	99.38	0.06	72.0	20.0	5-34	81	F	Buckhorn 18; wild carrot 9; yellow trefoil 54
4074	†Carman Supply Co., Lynn	New Paris Elevator Co.,	C	99.5		85.0		11-33		C	None
	Common Alfalfa Clover, Lot GH	New Paris, Ohio	F	99.4	0.20	74.5	8.5	1-34	1,620	F	None
4079	†Carman Supply Co., Lynn[35]	New Paris Elevator Co.,	C	99.6		88.0	2.0	11-33		C	None
	Grimm Alfalfa	New Paris, Ohio	F	99.12	0.34	69.5	22.0	2-34	1,008	F	Curled dock 18
4057	Young & Cox, Richmond	New Paris Elevator Co.,	C	99.65		88.0	2.0	11-		C	None
	Grimm Alfalfa, Lot G-374	New Paris, Ohio	F	98.77	0.20	77.5	17.0	1-34	999	F	Mustard 9
4059	Young & Cox, Richmond	New Paris Elevator Co.,	C	99.65		85.0	5.0	11-33		C	None
	Common Alfalfa, Lot GH-2	New Paris, Ohio	F	99.94	0.06	84.0	12.5	1-34		F	None
4151	Preble Equity Exchange, Preble	Preble Equity Exchange,	C	97.76		65.0	24.0	12-33		C	Common plantain 900
	Common Alfalfa, Lot 1	Preble, Ind	F	97.32	0.24	68.5	24.5	2-34	2,070	F	Common plantain 1,530
3938	Graves Implement Store, Tell City	Purcell Seed Co.,	C	99.5		80.0	12.0	7-33		C	None
	Tru Val Oklahoma Alfalfa, Lot 2248	Evansville, Ind	F	99.72	0.24	82.5	9.0	11-33	90	F	None
3939	Graves Implement Store, Tell City[33]	Purcell Seed Co.,	C	99.5		81.0	11.0	7-33		C	None
	Tru Val Kansas Alfalfa, Lot 2247	Evansville, Ind	F	99.6	0.40	64.0	27.0	11-33		F	None
4768	Graves Implement Store, Tell City	Purcell Seed Co.,	C	99.5		82 0	5 0	1-34		C	None
	Tru Val Kansas Alfalfa, Lot 2685	Evansville, Ind	F	99.76	0.18	85.5	10.5	5-34	90	F	None
4014	Linkhart & Son, North Vernon	Ross Seed Co.,	C	98.41		74.0	17.0	2-33		C	None
	Grimm Alfalfa, Lot 969	Louisville, Ky	F	98.86	0.12	80.5	8.5	12-33	27	F	Common plantain 27
4354	Werst & Co., Peter, Brookville	Ross Seed Co.,	C	99.78		59.0	36.0	8-33		C	None
	Alfalfa, Lot 913	Louisville, Ky	F	99.94	0.04	82.5	16.0	4-34	90	F	None
4716	Poseyville Grain & Feed Co., Inc., Poseyville[34]	Salina Seed Co.,	C	99.69		82.0	12.0	1-34		C	None
	Common Alfalfa, Lot A-541	Salina, Kan	F	99.62	0.20	80.5	12.0	3-34	630	F	None
4433	Irwin Feed Store & Hatchery, Madison	Scott Seed Co.,	C	99.5		78.0	14.0	9-33		C	None
	Alfalfa, Lot 1529	New Albany, Ind	F	99.14	0.62	66.5	19.0	4-34	1,170	F	None
4322	James Seed Co., Jeffersonville	Scott Seed Co.,	C	99.0		80.0	10.0	9-33		C	None
	Alfalfa, Lot 1538	New Albany, Ind	F	99.62	0.30	79.5	4.5	2-34	18	F	Field dodder 18
4329	James Seed Co., Jeffersonville	Scott Seed Co.,	C	99.0		75.0	18.0	1-34		C	None
	Grimm Alfalfa, Lot 1540	New Albany, Ind	F	99.58	0.20	78.0	12.0	2-34	180	F	None
4428	Trow Co., W., Madison	Scott Seed Co.,	C	99.0		80.0	14.0	1-32		C	None
	Alfalfa, Lot 1518	New Albany, Ind	F	99.78	0.08	77.5	4.0	4-34	630	F	None
3884	Wynn, Arlie S., Rochester	Scott Seed Co.,	C	99.0		80.0	12.0	4-33		C	None
	Common Alfalfa, Lot 1529	New Albany, Ind	F	99.5	0.34	67.0	23.5	9-33	995	F	Large-seeded alfalfa dodder 5
4943	Farmers Co-operative Elevator, Westville	Standard Seed Co.,	C	99.7		70.0	24.0	2-34		C	None
	Alfalfa, Lot 10053	Chicago, Ill	F	99.7	0.12	68.5	28.0	5-34	5	F	Small-seeded alfalfa dodder 5
5170	Menaugh, Will H., Osceola	Standard Seed Co.,	C	99.6		82.0	11.0	2-34		C	None
	Alfalfa, Lot 10080	Chicago, Ill	F	99.78	0.20	92.5	4.0	4-34	90	F	None
3858	Troyer Seed Co., Goshen	Standard Seed Co.,	C	99.5		85.0	10.0	4-33		C	None
	Idaho State Certified Cass Alfalfa, Lot 10844[35]	Chicago, Ill	F	99.48	0 32	69.5	17.5	7-33	360	F	None
5005	Wynn, Arlie S., Rochester	Standard Seed Co.,	C	99 5		80 0	12.0	2-34		C	None
	Grimm Alfalfa, Lot 10115	Chicago, Ill	F	99 18	0 46	79 5	11.5	5-34	720	F	None

*Not labeled.

†Certified by Retailer.

C and F stands, respectively, for Claimed and Found.

[27] Distributed by George O'Brien & Sons, Greenville, Ohio.

[28] Distributed by Northern Field Seed Co., Winona, Minn.

[29] Distributed by Northern Field Seed Co., Winona, Minn. Removed from sale. Misbranded. All sold.

[30] Distributed by Northern Field Seed Co., Winona, Minn. Removed from sale. Misbranded. Retagged.

[31] Removed from sale. Misbranded. Retagged.

[32] Contains 5.15% Red Clover with a Germination of 88.50% and 9.00% Hard Seeds.

[33] Removed from sale. Misbranded. Retagged.

[34] Not tagged. Labels furnished.

[35] Removed from sale. Misbranded. Retagged.

ALFALFA—Continued

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, per cent	Inert Matter, per cent	Germination, per cent	Hard Seeds, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds	Number per Pound of each of the Noxious Weed Seeds Specified in the Law
5234	Monticello Feed & Seed Store, Monticello[36] Alfalfa, Lot 10135	Sun Field Seed Service, Chicago, Ill.	C	99.4	.....	90.0	.....	2-34	.....	C None
			F	99.61	0.12	74.0	16.5	4-34	2,530	F None
5238	Monticello Feed & Seed Store, Monticello Alfalfa, Lot 10095	Sun Field Seed Service, Chicago, Ill.	C	99.5	.....	80.0	13.0	2-34	.....	C None
			F	99.68	0.20	74.0	18.0	4-34	360	F None
3958	Syler & Syler, Nappanee Common Alfalfa, Lot 5843	Syler & Syler, Nappanee, Ind.	C	99.55	.....	88.0	8.0	7-33	.....	C None
			F	99.38	0.42	82.0	8.5	11-33	990	F None
4954	Brown Supply Co., Valparaiso Montana Alfalfa Variegated, Lot 5861 Badger	Teweles Seed Co., L., Milwaukee, Wis.	C	99.54	.....	85.0	10.0	2-34	.....	C None
			F	99.54	0.20	82.5	11.0	5-34	90	F None
5149	Graft, C. V., Winchester Grimm Alfalfa, Lot Badger 9571	Teweles Seed Co., L., Milwaukee, Wis.	C	99.61	.....	85.0	10.0	2-34	.....	C None
			F	99.64	0.34	74.5	14.0	6-34	.....	F None
4627	Hoosier Grain & Supply Co., Bluffton Idaho Grimm Alfalfa, Lot Badger Brand.	Teweles Seed Co., L., Milwaukee, Wis.	C	99.5	.....	86.0	10.0	1-34	.....	C None
			F	99.64	0.26	77.5	13.0	3-34	99	F Curled dock 9
4992	Lapaz Grain Co., Lapaz Northwestern Alfalfa, Lot Badger Brand.	Teweles Seed Co., L., Milwaukee, Wis.	C	99.6	.....	80.0	15.0	2-34	.....	C None
			F	99.62	0.20	70.5	21.5	5-34	360	F None
5013	Troyer Seed Co., Goshen Idaho Alfalfa, Lot Badger Brand	Teweles Seed Co., L., Milwaukee, Wis.	C	99.51	.....	81.0	14.0	2-34	.....	C None
			F	99.66	0.16	84.5	8.0	5-34	99	F Curled dock 9
4754	Whelan Feed & Seed Store, Richmond Montana Affidavit Grimm Alfalfa, Lot Badger Brand	Teweles Seed Co., L., Milwaukee, Wis.	C	99.61	.....	85.0	10.0	1-34	.....	C None
			F	99.82	0.12	79.0	18.5	5-34	360	F None
5031	Wolcottville Elevator Co., Wolcottville Northwestern Alfalfa, Lot Badger Brand.	Teweles Seed Co., L., Milwaukee, Wis.	C	99.6	.....	80.0	15.0	2-34	.....	C None
			F	99.82	0.08	80.5	13.0	5-34	275	F Dodder 5
3959	Wynn, Arlie S., Rochester Grimm Alfalfa, Lot 6320	Teweles Seed Co., L., Milwaukee, Wis.	C	99.53	.....	85.0	10.0	7-33	.....	C None
			F	99.42	0.16	81.0	3.0	11-33	185	F Dodder 5
4632	Dotterer & Son, H. G., Bluffton[37] Michigan Affidavit Grimm Alfalfa, Lot 6409	Wolf Seed Co., Ft. Wayne, Ind.	C	99.15	.....	81.5	12.5	1-34	.....	C None
			F	99.3	0.30	65.5	24.5	5-34	27	F Wild carrot 27
4634	Dotterer & Son, H. G., Bluffton Hy-Test Kansas Alfalfa, Lot 6127	Wolf Seed Co., Ft. Wayne, Ind.	C	99.6	.....	80.0	18.0	1-34	.....	C None
			F	99.84	0.12	82.0	8.0	4-34	180	F None
4661	Farmers Elevator Co., South Whitley[38] Affidavit Grimm Alfalfa, Lot 6396	Wolf Seed Co., Ft. Wayne, Ind.	C	99.5	.....	87.5	6.5	2-33	.....	C None
			F	99.18	0.10	68.0	24.5	4-34	522	F Buckhorn 90; common plantain 54; yellow trefoil 18
4138	Smock & Co., W. C., Burrows Idaho Utah Alfalfa, Lot 6011	Wolf Seed Co., Ft. Wayne, Ind.	C	99.0	.....	70.5	22.5	12-32	.....	C None
			F	98.21	0.04	64.5	1.0	2-34	1,899	F Dodder 9
5030	†Campbell & Co., Kendallville Michigan Grimm Alfalfa, Lot 204	Wolohan, Inc., Charles Birch Run, Mich.	C	99.75	.....	74.0	20.0	2-33	.....	C None
			F	99.94	0.02	81.5	9.0	5-34	99	F Buckhorn 9

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*Not labeled.
†Certified by Retailer.
C and F stands, respectively, for Claimed and Found.

[36] Sample secured from John Gilkerson, Monticello, Ind.
[37] Removed from sale. Misbranded. All sold.
[38] Removed from sale. Misbranded. Retagged.

BLUE GRASS

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor	Purity, per cent	Inert Matter, per cent	Germination, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds	Number per Pound of each of the Noxious Seed Seeds Specified in the Law
5254	Allied Seed Co., Inc., Ft. Wayne[39]	Allied Seed Co., Inc., C	83.0		81.0	3-34		C None
	21 lb. Kentucky Blue Grass, Lot 27	Ft. Wayne, Ind. F	84.21	15.6	78.5	5-34	3,735	F Curled dock 45; red sorrel 90
5270	Allied Seed Co., Inc., Ft. Wayne[40]	Allied Seed Co., Inc., C	83.0		80.0	1-34		C Red sorrel 360
	Blue Grass, Lot B-21	Ft. Wayne, Ind. F	81.55	18.15	70.5	5-34	3,060	F Red sorrel 360
5199	Kunberger Seed Co., Columbia City	Allied Seed Co., Inc., C	85.0		85.0	12-33		C None
	21 lb. Kentucky Blue Grass, Lot 27	Ft. Wayne, Ind. F	84.89	15.01	83.0	5-34	990	F Buckhorn 45; curled dock 45
5204	Kunberger Seed Co., Columbia City	Allied Seed Co., Inc., C	81.61		88.0	2-34		C None
	19 lb. Kentucky Blue Grass, Lot 15	Ft. Wayne, Ind. F	78.03	21.77	91.0	5-34	450	F None
4310	†Cordes Hardware Co., Seymour[41]	Brent Seed Co., C. S., C	85.36		82.0	8-33		C None
	Kentucky Blue Grass, Lot 8074	Lexington, Ky. F	75.54	24.36	84.5	3-34	3,960	F Buckhorn 360; red sorrel 900
4751	†Kindermann & Sons, Wm., Boonville[42]	Brent Seed Co., C. S., C	84.75		80.0	9-32		C None
	Blue Grass	Lexington, Ky. F	87.12	12.69	65.5	6-34	2,520	F Buckhorn 180; red sorrel 90
4314	Eberts Grain Co., Scottsburg	Chambers Seed Co., C	88.0		80.0	11-33		C Red sorrel 90
	Kentucky Blue Grass, Lot 170	Louisville, Ky. F	85.3	13.72	84.0	4-34	8,595	F Buckhorn 225; ox-eye daisy 90; red sorrel 180
5229	Penman Bros., Brazil[43]	Chambers Seed Co., C	80.0		75.0	1-34		C Red sorrel 220
	Blue Grass, Lot 174	Louisville, Ky. F	77.65	21.86	56.5	5-34	11,970	F Buckhorn 720; red sorrel 2,700
5160	Union Hardware Co., Seymour[44]	Chambers Seed Co., C	83.0		80.0	1-34		C None
	Blue Grass, Lot 174	Louisville, Ky. F	83.03	16.77	90.0	4-34	2,565	F Buckhorn 90; ox-eye daisy 225
4682	Emison Hardware Store, Vincennes	Corneli Seed Co., C	80.47		84.0	2-34		C None
	Kentucky Blue Grass, Lot A-300	St. Louis, Mo. F	85.38	14.13	84.0	5-34	1,395	F Buckhorn 135; curled dock 225; red sorrel 135
4835	Co-operative Elevator Co., Winamac	Crabbs Reynolds Taylor Co., C	85.0		84.0	1-34		C None
	21 lb. Blue Grass, Lot 9GO	Crawfordsville, Ind. F	79.05	20.75	76.0	7-34	3,375	F Buckhorn 225
5104	Crabbs Reynolds Taylor Co., Lafayette	Crabbs Reynolds Taylor Co., C	85.0		84.0	1-34		C None
	21 lb. Blue Grass, Lot 9GO	Crawfordsville, Ind. F	80.94	18.56	79.0	4-34	1,035	F Buckhorn 45; curled dock 90
4511	Farmers Feed & Coal Co., Bloomington	Crabbs Reynolds Taylor Co., C	78.0		78.0	1-34		C None
	19 lb. Blue Grass, Lot 3GO	Crawfordsville, Ind. F	80.6	19.0	87.5	5-34	2,700	F None
5205	Kunberger Seed Co., Columbia City	Crabbs Reynolds Taylor Co., C	85.0		82.0	11-33		C None
	21 lb. Blue Grass, Lot 1GO	Crawfordsville, Ind. F	86.2	13.08	84.5	5-34	3,780	F Buckhorn 45; curled dock 90; red sorrel 45
3864	Rich Valley Co-op. Elev. Co., Rich Valley[45]	Crabbs Reynolds Taylor Co., C	85.0		80.0	1-33		C None
	21 lb. Kentucky Blue Grass, Lot 5GK	Lafayette, Ind. F	80.23	19.57	71.5	9-33	3,285	F Curled dock 135
5179	Crawfordsville Seed Co., Crawfordsville[46]	Crawfordsville Seed Co., C	80.0		75.0	2-34		C None
	Kentucky Blue Grass, Lot 935	Crawfordsville, Ind. F	74.52	25.28	74.0	5-34	450	F None

*Not labeled.

†Certified by Retailer.

C and F stands, respectively, for Claimed and Found.

[39] Sample secured from Indiana State Highway Commission, Fort Wayne, Ind.

[40] Sample secured from Indiana State Highway Commission, Waterloo, Ind.

[41] Removed from sale. Misbranded. All sold.

[42] Removed from sale. Misbranded. Retagged.

[43] Sample secured from Indiana State Highway Commission, Terre Haute, Ind.

[44] Sample secured from Indiana State Highway Commission, Seymour, Ind.

[45] Not tagged. Labels furnished.

[46] Sample secured from Indiana State Highway Commission, Covington, Ind.

BLUE GRASS—Continued

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, per cent	Inert Matter, per cent	Germination, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds	Number per Pound of each of the Noxious Weed Seeds Specified in the Law
5182	Crawfordsville Seed Co., Crawfordsville Kentucky Blue Grass, Lot 935[47]	Crawfordsville Seed Co., Crawfordsville, Ind.	C	80.0	......	75.0	2-34	......	None
			F	75.06	24.74	77.0	5-34	495	Buckhorn 45
5228	Crawfordsville Seed Co., Crawfordsville[48] Kentucky Blue Grass, Lot 935	Crawfordsville Seed Co., Crawfordsville, Ind.	C	80.0	......	75.0	2-34	......	None
			F	71.81	27.99	76.0	6-34	1,350	None
3854	Gotto-Mathias Co., Michigan City[49] Kentucky Blue Grass, Lot 32687	Dickinson Co., The Albert, Chicago, Ill.	C	84.8	......	80.0	5-33	......	Buckhorn 64; curled dock 128
			F	76.91	22.19	79.5	9-33	7,020	Bracted plantain 45; curled dock 225
3988	Gotto-Mathias Co., Michigan City Kentucky Blue Grass, Lot 032442	Dickinson Co., The Albert, Chicago, Ill.	C	86.3	......	80.0	9-33	......	Buckhorn 96; curled dock 128; red sorrel 32
			F	85.03	14.68	82.5	1-34	3,915	Buckhorn 225; curled dock 45; red sorrel 45
4946	Heitschmidt, A. C., Michigan City Kentucky Blue Grass, Lot 032442	Dickinson Co., The Albert, Chicago, Ill.	C	86.3	......	80.0	9-33	......	Buckhorn 76; curled dock 128; white top 32
			F	81.8	17.91	82.0	7-34	3,735	Ox-eye daisy 90; red sorrel 45
3859	Menaugh, Will H., Osceola[50] Kentucky Blue Grass, Lot 39656	Dickinson Co., The Albert Chicago, Ill.	C	85.9	......	78.0	4-33	......	None
			F	81.33	18.47	73.5	9-33	450	None
4788	*Farmers Feed & Coal Co., Bloomington[51] Kentucky Blue Grass	Farmers Feed & Coal Co., Bloomington, Ind.	C	......	......	......	......	......	
			F	85.0	14.9	80.5	4-34	1,260	Buckhorn 135; curled dock 180; red sorrel 45
4699	Brizius Co., Chas. W., Evansville Thelco 21 lb. Blue Grass, Lot 2903	Heldt Co., The, Evansville, Ind.	C	85.12	......	80.0	1-34	......	Red sorrel 1,360
			F	88.82	10.98	70.5	5-34	450	None
4702	Brizius Co., Chas. W., Evansville 21 lb. Blue Grass, Lot 2827	Heldt Co., The, Evansville, Ind.	C	84.73	......	80.0	8-33	......	None
			F	91.64	8.46	71.5	6-34	720	Buckhorn 45; red sorrel 225
4676	Monticello Feed & Seed Store, Monticello Kentucky Blue Grass, Lot 8108	Hirsch & Sons, Henry, Toledo, Ohio	C	85.0	......	84.0	1-34	......	None
			F	80.08	19.43	83.0	5-34	5,850	Red sorrel 450
5156	Hooton-Davis Seed Corp., Lebanon[52] 21 lb. Kentucky Blue Grass, Lot 4676	Hooton-Davis Seed Corp., Lebanon, Ind.	C	87.0	......	40.0	1-34	......	Red sorrel 2,700
			F	83.71	15.89	42.5	4-34	9,360	Buckhorn 450; red sorrel 1,710
4804	Clinton Co. Farm Bureau Co-op. Assn., Inc., Frankfort Kentucky Blue Grass, Lot 2141	Indiana Farm Bureau Co-op. Assn., Inc.,‡ Indianapolis, Ind.	C	85.0	......	80.0	1-34	......	None
			F	86.95	12.56	77.5	5-34	4,950	None
5082	Hancock Co. Farm Bureau Co-op. Assn., Inc., Noblesville Kentucky Blue Grass, Lot 2141	Indiana Farm Bureau Co-op. Assn., Inc.,‡ Indianapolis, Ind.	C	85.0	......	80.0	1-34	......	None
			F	88.5	10.9	75.5	6-34	4,950	None
4621	Knox Co. Farm Bureau Co-op. Assn., Inc., Vincennes Kentucky Blue Grass, Lot 2141	Indiana Farm Bureau Co-op. Assn., Inc.,‡ Indianapolis, Ind.	C	85.0	......	80.0	1-34	......	None
			F	85.21	14.6	84.5	5-34	450	None
4526	Cloverdale Hdwe. & Lum. Co., Cloverdale Kentucky Blue Grass, Lot B-24	Indiana Seed Co., Indianapolis, Ind.	C	80.0	......	79.0	12-33	......	Common plantain 180
			F	80.12	19.78	84.5	5-34	1,440	Curled dock 45; red sorrel 45
4800	Norman & Roberts, G. M., Bedford Kentucky Blue Grass, Lot MP-259	Indiana Seed Co., Indianapolis, Ind.	C	81.0	......	80.0	1-34	......	None
			F	80.08	19.72	86.0	5-34	1,350	None
4810	Shanklin Hardware Co., Frankfort Kentucky Blue Grass, Lot MP-259	Indiana Seed Co., Indianapolis, Ind.	C	81.0	......	80.0	2-34	......	None
			F	82.26	17.54	84.5	5-34	2,700	None
4225	Sunshine Feed Store, Terre Haute	Indiana Seed Co., Indianapolis, Ind.	C	78.0	......	78.0	1-34	......	Curled dock 450; red sorrel 430
			F	84.68	15.12	84.5	3-34	945	Red sorrel 45

3967	Henderson Reed Bros. Co., Ft. Wayne	Kellogg-Kelly Seed Co.,	C	85.2	.....	85.0	8-33	......	C	None
	21 lb. Fancy Kentucky Blue Grass, Lot H-1	St. Joseph, Mo.	F	81.29	18.43	80.0	12-33	495	F	Curled dock 45
5103	Moore & Kemple, Lafayette	Kellogg-Kelly Seed Co.,	C	86.7	.....	85.0	8-33	....	C	None
	21 lb. Fancy Kentucky Blue Grass, Lot H	St. Joseph, Mo.	F	82.92	16.98	74.0	5-34	....	F	None
4510	Farmers Feed & Coal Co., Bloomington	Lewis Implement & Seed Co.,	C	83.0	.....	80.0	11-33	....	C	None
	Kentucky Blue Grass, Lot Red Bird	Louisville, Ky.	F	78.86	20.94	75.0	5-34	1,800	F	None
4787	Farmers Feed & Coal Co., Bloomington[53]	Lewis Implement & Seed Co.,	C	83.0	...	80.0	11-33	....	C	None
	Kentucky Blue Grass, Lot Red Bird	Louisville, Ky.	F	77.07	22.73	73.0	4-34	1,800	F	None
4480	Eckert & Palmer, Osgood[54]	McCullough & Sons Co., J. M.,	C	80.0	.....	80.0	8-33	....	C	None
	Kentucky Blue Grass	Cincinnati, Ohio	F	64.37	32.97	49.0	3-34	72,450	F	Buckhorn 900; red sorrel 45,000
3908	McMahan Seed Co., Valparaiso	Mangelsdorf & Bro., Ed. F.,	C	86.0	....	82.0	10-33	....	C	None
	Kentucky Blue Grass, Lot 59	St. Louis, Mo.	F	87.29	12.26	82.5	11-33	1,710	F	Red sorrel 360
5152	Standard Hatcheries, Terre Haute	Mangelsdorf & Bro., Ed. F.,	C	85.0	......	85.0	2-34	......	C	None
	Kentucky Blue Grass, Lot 4036	St. Louis, Mo.	F	82.8	16.6	87.5	6-34	10,350	F	Red sorrel 4,500
5281	Goldblatt Bros., Inc., Hammond	Ostberg Seed Co.,	C	85.5	.....	85.1	3-34	....	C	Buckhorn 326; red sorrel 320
	Kentucky Blue Grass, Lot 12	Chicago, Ill.	F	82.4	15.8	85.0	6-34	7,290	F	Curled dock 45; red sorrel 45
4386	Walker & Co., W. A., Loogootee	Purcell Seed Co.,	C	83.3	....	80.0	12-33	....	C	Red sorrel 1,350
	True Val Kentucky Blue Grass, Lot 2306	Evansville, Ind.	F	84.96	14.34	82.5	4-34	5,985	F	Buckhorn 90; curled dock 45; red sorrel 4,500
4766	Graves Implement Co., Tell City	Ross Seed Co.,	C	85.0	......	70.0	1-34	......	C	Buckhorn 450; ox-eye daisy 450; red sorrel 450
	Blue Grass	Louisville, Ky.	F	84.3	15.4	74.5	5-34	7,200	F	Buckhorn 720; red sorrel 1,080
4345	McCampbell, Ralph, French Lick	Ross Seed Co.,	C	86.0	...	70.0	1-34	....	C	Buckhorn 450; red sorrel 450
	Blue Grass, Lot 818	Louisville, Ky.	F	84.11	15.59	72.5	5-34	3,465	F	Buckhorn 315; red sorrel 450
5164	Elnora Elevator Co., Elnora[55]	Scott Seed Co.,	C	81.0	...	78.0	7-33	...	C	None
	Kentucky Blue Grass, Lot 50	New Albany, Ind.	F	84.75	15.05	70.5	5-34	1,800	F	None
5094	Foster-Kendall Co., Carmel[56]	Scott Seed Co.,	C	83.0	.	78.0	7-33	.....	C	None
	Blue Grass, Lot 50	New Albany, Ind.	F	82.04	17.86	80.5	4-34	900	F	None
5277	Hootton-Davis Seed Corp., Lebanon[57]	Scott Seed Co.,	C	83.0	....	78.0	7-33	......	C	None
	Blue Grass, Lot 50	New Albany, Ind.	F	80.6	19.1	73.0	6-34	1,350	F	None
4327	James Seed Co., Jeffersonville	Scott Seed Co.,	C	81.0		77.0	7-33	.....	C	None
	Kentucky Blue Grass, Lot 50	New Albany, Ind.	F	81.09	18.71	73.5	3-34	3,600	F	None
4793	Ragsdale & Co., Chas., Bedford	Scott Seed Co.,	C	81.0	.....	77.0	7-33	......	C	None
	Kentucky Blue Grass, Lot 50	New Albany, Ind.	F	78.93	20.97	73.5	5-34	1,800	F	None
4802	Scarlett, Elmer, West Baden	Scott Seed Co.,	C	81.0	.....	77.0	7-33	....	C	None
	Blue Grass, Lot 50	New Albany, Ind.	F	77.84	21.86	77.5	6-34	5,850	F	None
3954	Wynn, Arlie S., Rochester	Scott Seed Co.,	C	85.00	....	80.0	12-32	....	C	None
	Kentucky Blue Grass, Lot 50	New Albany, Ind.	F	80.87	18.93	78.0	1-34	450	F	None
5208	Sun-Field Seed Service, Chicago, Ill.[58]	Sun-Field Seed Service,	C	83.0	.....	80.0	2-34	......	C	None
	Kentucky Blue Grass, Lot 9161	Chicago, Ill.	F	78.4	20.9	87.5	5-34	900	F	None
5260	Glen Park Hardware, Gary[59]	Teweles Seed Co., L.,	C	85.84	...	88.0	4-34	....	C	None
	Kentucky Blue Grass, Lot Badger Brand	Milwaukee, Wis.	F	77.27	15.87	62.0	6-34	990	F	Red sorrel 90
4206	Vonnegut Hardware Co., Indianapolis	Whitney-Eckstein Seed Co.,	C	90.08	.....	80.0	1-34	....	C	None
	Kentucky Blue Grass	Buffalo, N. Y.	F	86.02	13.88	85.5	3-34	540	F	Red sorrel 90

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*Not labeled.

†Certified by Retailer.

C and F stands, respectively, for Claimed and Found.

[47] Sample secured from Indiana State Highway Commission, Crawfordsville, Ind.

[48] Sample secured from Indiana State Highway Commission, Greencastle, Ind.

[49] Removed from sale. Misbranded. Retagged.

[50] Not tagged. Labels furnished.

[51] Sample secured from Indiana State Highway Commission, Bloomington, Ind.

[52] Sample secured from Indiana State Highway Commission, Frankfort, Ind.

‡Agent of Farmers National Grain Corp., Chicago, Ill.

‡Agent of Farmers National Grain Corp., Chicago, Ill.

[53] Sample secured from Indiana State Highway Commission, Bloomington, Ind.

[54] Not tagged. Labels furnished. Removed from sale. Misbranded. Retagged.

[55] Sample secured from Indiana State Highway Commission, Linton, Ind.

[56] Sample secured from Indiana State Highway Commission, Tipton, Ind.

[57] Distributed by Foster-Kendall Co., Carmel, Ind.

[58] Sample secured from Indiana State Highway Commission, Warsaw, Ind.

[59] Removed from sale. Misbranded. Retagged. Contains 6.36% Canada Blue Grass with a Germination of 88.00%.

ALSIKE CLOVER

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor	Purity, per cent	Inert Matter, per cent	Germination, per cent	Hard Seeds, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds	Number per Pound of each of the Noxious Weed Seeds Specified in the Law
4840	Farmers Grain & Supply Co., Thornhope, P. O. Oak	Allied Seed Co., Inc., C	98.9	......	78.0	12.0	1-34	....	C None
	Alsike Clover, Lot B-205	Ft. Wayne, Ind. F	99.0	0.50	81.25	15.5	5-34	486	F Curled dock 18; yellow trefoil 18
4165	Wolf & Son, North Judson[60]	Allied Seed Co., Inc., C	99.0	......	82.0	11.0	12-32	....	C None
	Alsike Clover, Lot B-50	Ft. Wayne, Ind. F	99.21	0.49	81.25	10.25	2-34	576	F Buckhorn 18; curled dock 18; red sorrel 90
4499	Atlanta Grain Co., Atlanta	Atlanta Grain Co., C	97.0	......	92.0	......	1-34	....	C Common plantain 150; curled dock 100; red sorrel 90
	Alsike Clover	Atlanta, Ind. F	99.45	0.40	90.0	8.0	4-34	....	F None
4316	Eberts Grain Co., Scottsburg	Chambers Seed Co., C	96.0	......	85.0	......	11-33	....	C Red sorrel 90
	Alsike Clover, Lot 46	Louisville, Ky. F	97.52	0.30	81.75	2.5	3-34	5,148	F Curled dock 18; red sorrel 180
3978	†Wyatt Feed & Seed Store, Petersburg	Chambers Seed Co., C	98.62	......	75.0	20.0	10-32	....	C None
	Alsike Clover, Lot 42	Louisville, Ky. F	98.76	0.10	70.5	12.25	12-33	261	F Common plantain 18; curled dock 18
4127	Crabbs Reynolds Taylor Co., Lafayette	Crabbs Reynolds Taylor Co., C	99.16	......	84.0	9.0	8-33	....	C None
	Alsike Clover, Lot 5 AM	Crawfordsville, Ind. F	99.61	0.24	76.25	12.0	2-34	54	F Buckhorn 18; curled dock 36
5109	Crabbs Reynolds Taylor Co., Linden	Crabbs Reynolds Taylor Co., C	99.16	......	84.0	9.0	1-34	....	C None
	Alsike Clover, Lot 5 AM	Crawfordsville, Ind. F	99.3	0.35	87.25	7.25	5-34	243	F Common plantain 18
4720	Newcastle Elevator Co., Newcastle	Crabbs Reynolds Taylor Co., C	99.16	......	84.0	9.0	1-34	....	C None
	Alsike Clover, Lot 5 AM	Crawfordsville, Ind. F	99.35	0.15	87.5	8.5	4-34	450	F None
4843	Co-operative Elevator Co., Francesville	Crawfordsville Seed Co., C	99.0	......	80.0	12.0	2-34	....	C None
	Alsike Clover, Lot 370	Crawfordsville, Ind. F	99.71	0.05	82.0	8.0	5-34	261	F Curled dock 36
4585	Crawfordsville Seed Co., Crawfordsville[61]	Crawfordsville Seed Co., C	98.91	......	75.0	20.0	2-34	....	C None
	Alsike Clover, Lot 374	Crawfordsville, Ind. F	99.31	0.39	85.25	11.25	3-34	36	F Curled dock 36
4434	Sample, John L., Madison	Crawfordsville Seed Co., C	99.0	......	80.0	12.0	1-34	....	C None
	Alsike Clover, Lot 369	Crawfordsville, Ind. F	99.35	0.25	75.5	24.5	4-34	180	F Yellow trefoil 180
4552	Shelby County Farm Bureau Co-operative Assn., Inc., Shelbyville	Crawfordsville Seed Co., C	99.0	......	80.0	12.0	1-34	....	C None
	Alsike Clover, Lot 369	Crawfordsville, Ind. F	99.05	0.35	81.25	9.0	4-34	288	F Yellow trefoil 288
4916	Brown Supply Co., Valparaiso	Dickinson Co., The Albert, C	98.75	......	84.0	10.0	3-34	....	C Yellow trefoil 240
	Alsike Clover, Lot 21521	Chicago, Ill. F	98.82	0.34	87.75	6.75	5-34	2,097	F Curled dock 18; wild carrot 18; yellow trefoil 36
5006	Lapaz Grain Co., Lapaz	Dickinson Co., The Albert, C	97.75	......	80.0	16.0	2-34	....	C Yellow trefoil 320
	Alsike Clover, Lot O-21829	Chicago, Ill. F	97.52	1.24	89.25	8.75	5-34	720	F Canada thistle 36; common plantain 18; curled dock 36; yellow trefoil 180
5172	Mishawaka Grain & Coal Co., Mishawaka	Dickinson Co., The Albert, C	98.75	......	84.0	10.0	3-34	....	C Yellow trefoil 240
	Alsike Clover, Lot 21530	Chicago, Ill. F	99.15	0.45	84.75	8.5	5-34	990	F Curled dock 36; yellow trefoil 54
5148	Farmers Grain & Supply Co., Modoc[62]	Farmers Grain & Supply Co., C	99.0	......	92.0	......	2-34	....	C None
	Alsike Clover, Lot 10	Modoc, Ind. F	99.75	0.15	78.25	9.25	5-34	468	F Curled dock 18
4815	Galveston Farmers Elevator, Galveston	Foster-Kendall Co., C	96.5	......	88.0	7.0	1-34	....	C Red sorrel 90
	Alsike Clover	Carmel, Ind. F	96.66	0.20	86.0	7.75	5-34	1,782	F Buckhorn 108; curled dock 108; red sorrel 216

4044	Jay Grain Co., Elwood	Foster-Kendall Co.,	C	98.5	......	88 0	7 0	12-32	......	C	None
	Alsike Clover	Carmel, Ind.	F	99.0	0 50	85 25	12 5	1-34	1,287	F	Yellow trefoil 1,062
4525	Lizton Grain & Lumber Co., Lizton	Foster-Kendall Co.,	C	96 52	......	88 0	7 0	12-33	......	C	Red sorrel 90
	Alsike Clover	Carmel, Ind	F	96.87	0 30	84.75	6.0	4-34	2,268	F	Buckhorn 216; common plantain 18; curled dock 180; red sorrel 504
5089	Maxwell Grain Co., Maxwell	Foster-Kendall Co.,	C	99.0	......	85 0	10 0	1-34	......	C	None
	Alsike Clover	Carmel, Ind	F	98 79	0.43	88.0	8.75	5-34	1,224	F	Buckhorn 72; curled dock 198; red sorrel 36; yellow trefoil 18
4556	Sellars Grain Co., Russiaville	Foster-Kendall Co.,	C	99 0	......	88 0	10 0	1-34	......	C	Curled dock 90
	Alsike Clover, Lot A-41	Carmel, Ind	F	99.58	0.20	82 75	12 25	4-34	2,304	F	Buckhorn 36; common plantain 18; curled dock 396; red sorrel 54
5054	Shirley, O. C., Knightstown[62]	Foster-Kendall Co.,	C	96 52	......	88 0	7.0	1-34	......	C	None
	Alsike Clover	Carmel, Ind	F	97.32	0.19	92 5	4 5	5-34	2,223	F	Buckhorn 18; curled dock 36; red sorrel 576; yellow trefoil 18
5079	Westport Elevator, Westport	Foster-Kendall Co.,	C	97.65	......	72 0	20 0	1-34	......	C	None
	Alsike Clover	Carmel, Ind	F	98 65	0.65	90 75	7 5	5-34	3,168	F	Red sorrel 18; yellow trefoil 2,700
4181	Garten Feed Co., The, Indianapolis	Garten Feed Co., The	C	99.0	......	84 0	7.0	8-32	......	C	None
	Alsike Clover, Lot A-10	Indianapolis, Ind	F	99.2	0.15	79 0	13 75	2-34	630	F	Yellow trefoil 180
4365	Belle Elevator Co., Cottage Grove	Goodrich Bros. Co.,	C	99 4	......	88 0	8 0	12-33	......	C	None
	Alsike Clover, Lot Lark	Winchester, Ind	F	99 25	0.20	85 75	9 0	4-34	1,701	F	Curled dock 18; yellow trefoil 108
4834	Co-operative Elevator Co., Winamac	Goodrich Bros. Co.,	C	99 5	......	85 0	10 0	12-33	......	C	None
	Alsike Clover, Lot Lark	Winchester, Ind	F	99 01	0.20	83 25	13 0	5-34	918	F	Curled dock 18
4818	Economy Co-operative Co., Economy	Goodrich Bros. Co.,	C	99 0	......	90 0	....	1-34	......	C	None
	Alsike Clover	Winchester, Ind	F	98 21	0 35	87 5	9.75	5-34	6,165	F	Curled dock 90
4858	Goodrich Bros. Co., Eaton	Goodrich Bros. Co.,	C	98.0	....	91 0	......	1-34	......	C	None
	Alsike Clover, Lot 319	Winchester, Ind	F	97.65	1.20	88 0	8.75	5-34	......	F	Common plantain 18
4260	Linwood Grain Co., P. O., Alexandria	Goodrich Bros. Co.,	C	98.0	......	90 0	......	1-34	......	C	None
	Alsike Clover, Lot Lark	Winchester, Ind	F	99 0	0 50	86 75	9 25	2-34	918	F	Curled dock 18
4404	Worthington Grain Co., Worthington	Goodrich Bros. Co.,	C	99.04	......	82 0	14.0	11-33	......	C	Red sorrel 2,375
	Alsike Clover, Lot Thrush	Winchester, Ind	F	99 15	0 55	80 0	12.0	4-34	2,700	F	Buckhorn 162; curled dock 18; red sorrel 2,070
5132	Graft, C. V., Winchester	Graft, C. V.,	C	99 35	......	90 0	......	1-34	......	C	None
	Alsike Clover, Lot H	Winchester, Ind	F	99 3	0 15	79 0	19 25	5-34	1,197	F	Curled dock 72
4631	Haynes Milling Co., The, Portland	Haynes Milling Co., The	C	98 2	......	88 0	6 0	2-34	......	C	Curled dock 315
	Alsike Clover, Lot A	Portland, Ind	F	97.25	0 75	75.5	18 5	5-34	3,177	F	Common plantain 36; curled dock 198; red sorrel 18
4698	†Heldt & Voelker Co., The, Evansville	Heldt Co., The	C	98 57	......	84 0	10 0	8-32	......	C	Buckhorn 450; curled dock 225
	Alsike Clover, Lot 2567	Evansville, Ind	F	98 17	1 63	74 0	15 25	5-34	963	F	Curled dock 252; red sorrel 36
5093	Hobbs Grain Co., Hobbs[63]	Hobbs Grain Co.,	C	96 0	......	88 0	8 0	1-34	......	C	None
	Alsike Clover, Lot 1	Hobbs, Ind	F	83.63	0 49	76.25	22 25	4-34	148,806	F	Common plantain 208; curled dock 3,375; wild carrot 18
3909	Holmes Supply Co., Kingsbury[64]	Holmes Supply Co.,	C	94 03	......	70 5	27.0	4-33	......	C	Curled dock 36; red sorrel 22,500
	Alsike Clover, Lot 1	Kingsbury, Ind	F	94 2	0.40	42 75	16 75	10 33	47,943	F	Buckhorn 18; red sorrel 46,575
4535	Armstrong-Landon Co., Kokomo	Hooton-Davis Seed Corporation,	C	98 98	......	81 0	10 0	1-34	......	C	None
	Alsike Clover, Lot A-380	Lebanon, Ind	F	98 75	0 50	86.75	9 25	4-34	2,628	F	Buckhorn 18; yellow trefoil 810
4559	Beck Grain & Feed Co., Shelbyville	Hooton-Davis Seed Corporation,	C	98.88	......	81 0	10 0	1-	......	C	None
	Alsike Clover Seed, Lot A-380	Lebanon, Ind	F	98.98	0 58	85 25	7 5	4-34	1,458	F	Common plantain 18; yellow trefoil 990

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*Not labeled.

†Certified by Retailer.

C and F stands, respectively, for Claimed and Found.

[60] Not tagged. Labels furnished.

[61] Sample secured from Purdue Soils and Crops Department, Lafayette, Ind.

[62] Removed from sale. Misbranded. All sold.

[63] Sample secured from Indiana State Highway Commission, Tipton, Ind. Not tagged. Labels furnished.

[64] Removed from sale. Misbranded.

ALSIKE CLOVER—Continued

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor	Purity, per cent	Inert Matter, per cent	Germination, per cent	Hard Seeds, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds	Number per Pound of each of the Noxious Weed Seeds Specified in the Law
4594	Farmers Co-op. Elevator Co., Clay City	Hooton-Davis Seed Corporation, C	99 0	....	80 0	10 0	1 34	......	C None
	Alsike Clover, Lot A-441	Lebanon, Ind. F	99.4	0.25	88 75	8 0	4-34	540	F Buckhorn 72; red sorrel 18
4748	Hagerstown Grain Co., Hagerstown	Hooton-Davis Seed Corporation, C	98.0	......	81.0	9 0	1-34	......	C Buckhorn 36; curled dock 198; red sorrel 54
	Alsike Clover, Lot A-442	Lebanon, Ind. F	98.48	0 64	84.75	12 5	5-34	2,079	F Buckhorn 18; common plantain 36; curled dock 198; red sorrel 252
4813	†Shanklin Hardware Co., Frankfort	Hooton-Davis Seed Corporation, C	98.98	......	87 0	11.0	12-33	......	C None
	Alsike Clover, Lot A-380	Lebanon, Ind. F	98.92	0.49	84.0	9.75	5 34	1,728	F Yellow trefoil 378
4070	Clark County Farm Bureau Co-operative Assn., Inc., Jeffersonville	Indiana Farm Bureau Co-op. Assn., Inc., C	98.5	......	83 0	12.0	11-33	......	C None
	Alsike Clover, Lot K-472	Indianapolis, Ind. F	99.06	0.10	84.0	10.75	1-34	198	F Buckhorn 126; curled dock 72
4746	Henry County Farm Bureau Co-operative Assn., Inc., Newcastle[65]	Indiana Farm Bureau Co-op. Assn., Inc., C	99.25	......	83.0	12.0	1-34	......	C None
	Alsike Clover, Lot 482	Indianapolis, Ind. F	98.21	0.25	84.5	12.0	4-34	918	F Yellow trefoil 18
5029	Lagrange County Farm BureauCo-operative Assn., Inc., Lagrange	Indiana Farm Bureau Co-op. Assn., Inc.,‡ C	98.7	......	85.0	6.0	1-34	....	C None
	Alsike Clover, Lot K-482	Indianapolis, Ind. F	99.01	0.20	81 5	13.75	5-34	315	F Curled dock 36; yellow trefoil 54
4664	Wabash County Farm Bureau Co-operative Assn., Inc., Wabash	Indiana Farm Bureau Co-op. Assn., Inc., C	98.5	......	83 0	12.0	11-33	......	C None
	Alsike Clover, Lot K-472	Indianapolis, Ind. F	98.66	0.10	84 75	11.5	4-34	837	F Buckhorn 90; curled dock 72
4038	Chance Bros., Connersville	Indiana Seed Co., C	99.0	......	85 0	7.0	9-33	......	C Common plantain 90; curled dock 90
	Alsike Clover, Lot F-323	Indianapolis, Ind. F	99.22	0.49	78.0	11.5	1-34	1,836	F Curled dock 36
4677	Logansport Elevator Co., Logansport	Indiana Seed Co., C	99.45	......	88.0	4.0	1-34	......	C None
	Alsike Clover, Lot 1-340	Indianapolis, Ind. F	99.56	0.34	78 25	16.0	4-34	522	F Curled dock 72
4738	Roller, W. M., Greens Fork	Indiana Seed Co., C	99.4	......	88 0	4.0	1-34	....	C None
	Alsike Clover, Lot 1-340	Indianapolis, Ind. F	99.25	0.50	77 75	15.0	4-34	288	F Curled dock 234; yellow trefoil 54
4222	Sunshine Feed Store, Terre Haute	Indiana Seed Co., C	99.45	......	88 0	4.0	1-34	......	C None
	Alsike Clover, Lot 1-340	Indianapolis, Ind. F	99.65	0.10	79.0	15 25	2-34	783	F Yellow trefoil 108
4273	Throckmorton Seed Store, Franklin	Indiana Seed Co., C	93.0	......	75.0	10 0	1-34	......	C Common plantain 270; curled dock 180
	Alsike Clover, Lot 1-343	Indianapolis, Ind. F	94.43	3.57	64.5	19.75	2-34	4,932	F Bracted plantain 18; buckhorn 72; common plantain 144; curled dock 108; red sorrel 72; yellow trefoil 18
4346	Hoosier Hardware Co., Paoli[66]	Lewis Implement & Seed Co., C	98.53	......	90.0	5.0	12-33	......	C Buckhorn 32; curled dock 170
	Alsike Clover, Lot Red Bird	Louisville, Ky. F	98.4	0.55	62 75	33.25	4-34	3,339	F Buckhorn 234; red sorrel 1,530
4286	Tower & Merryman, Marengo[67]	Lewis Implement & Seed Co., C	98.0	......	92.0	......	12-33	......	C Buckhorn 32; curled dock 75; red sorrel 300
	Alsike Clover, Lot Red Bird	Louisville, Ky. F	98.86	0.54	65.5	32.5	2-34	2,349	F Bracted plantain 1,080; buckhorn 54; curled dock 36; red sorrel 36; wild carrot 18

4762	Wayne County Farm Bureau Co-operative Assn., Inc., Richmond	McCullough Seed Co., The J. Chas.,	C	95.1	......	75.0	16.0	10-33	......	C	Buckhorn 18; curled dock 225; red sorrel 225; yellow trefoil 225
	Alsike Clover, Lot 6829	Cincinnati, Ohio	F	95.75	1.04	72.0	12.5	5-34	1,197	F	Buckhorn 54; common plantain 18; curled dock 90; red sorrel 360
5222	Mayer Grain Co., Denver	Mayer Grain Co.,	C	99.0	......	86.0	6.0	1-34	......	C	None
	Alsike Clover	South Whitley, Ind	F	99.6	0.30	87.5	5.75	5-34	......	F	None
5004	†Mayer Grain Co., Fulton	Mayer Grain Co.,	C	99.0	......	86.0	6.0	1-34	......	C	None
	Alsike Clover	South Whitley, Ind	F	99.4	0.50	87.5	6.5	5-34	450	F	None
4075	†Carman Supply Co., Lynn[68]	New Paris Elevator Co.,	C	99.1	......	90.0	4.0	11-33	......	C	None
	Alsike Clover, Lot Mer-2	New Paris, Ohio	F	94.75	1.29	59.25	18.5	1-34	1,278	F	Buckhorn 126; common plantain 666; red sorrel 18; yellow trefoil 18
5135	†Carman Supply Co., Lynn	New Paris Elevator Co.,	C	99.0	......	93.0	....	1-33	......	C	None
	Alsike Clover, Lot 1	New Paris, Ohio	F	99.36	0.05	82.0	14.5	5-34	504	F	Buckhorn 18; common plantain 18; yellow trefoil 18
4220	†Standard Hatcheries, Terre Haute	Quinlan Seed Store,	C	97.0	......	88.0	5.0	11-33	......	C	Curled dock 200
	Alsike Clover	Terre Haute, Ind	F	96.94	1.48	87.75	8.5	2-34	702	F	Bracted plantain 18; buckhorn 468; common plantain 54; curled dock 162
4610	Strate-Pielemeier Hdwe. Co., Freelandville[69]	Quinlan Seed Store,	C	96.1	......	84.0	7.0	1-34	......	C	Buckhorn 1,125
	Alsike Clover, Lot 49954	Terre Haute, Ind	F	98.71	1.14	76.5	16.5	3-34	315	F	Buckhorn 36; common plantain 18; curled dock 36
4971	Linkhart & Son, North Vernon	Ross Seed Co.,	C	98.0	......	68.0	28.0	1-34	......	C	Red sorrel 2,700
	Alsike Clover	Louisville, Ky	F	99.0	0.25	74.5	19.0	5-34	4,923	F	Bracted plantain 18; buckhorn 90; curled dock 90; red sorrel 4,500
4783	Farmers Feed & Coal Co., Bloomington[70]	Schultz Seed Co., J. M.,	C	97.8	......	90.0	......	11-33	......	C	Buckhorn 9; curled dock 61; red sorrel 2
	G. S. Alsike Clover	Dieterich, Ill	F	97.48	1.48	77.0	13.75	3-34	2,700	F	Bracted plantain 54; buckhorn 198; curled dock 612; red sorrel 36
4431	Irwin Feed Store & Hatchery, Madison	Scott Seed Co.,	C	98.0	......	75.0	18.0	1-34	......	C	None
	Alsike Clover, Lot 395	New Albany, Ind	F	97.98	0.25	79.5	14.75	4-34	5,427	F	Common plantain 18; curled dock 54; red sorrel 162; yellow trefoil 18
4792	Ragsdale & Co., Chas., Bedford	Scott Seed Co.,	C	98.0	......	75.0	18.0	1-34	......	C	None
	A. B. Alsike Clover, Lot 395	New Albany, Ind	F	98.77	0.10	87.5	11.0	5-34	2,790	F	Red sorrel 90
4917	Farmers Co-op. Elevator, Westville	Standard Seed Co.,	C	98.5	......	75.0	17.0	2-34	......	C	None
	Alsike Clover, Lot 11213	Chicago, Ill	F	97.92	1.78	75.5	22.5	5-34	225	F	None
5176	†Menaugh, Will H., Osceola	Standard Seed Co.,	C	98.85	......	85.0	9.0	2-34	......	C	None
	Alsike Clover, Lot 11213	Chicago, Ill	F	98.55	1.30	82.25	15.5	4-34	......	F	None
4808	Clinton County Farm Bureau Co-operative Assn., Inc., Frankfort	Steckel, M. S.,	C	96.76	......	52.75	37.25	9-33	......	C	None
	Alsike Clover	Mulberry, Ind	F	96.65	0.45	53.25	41.25	5-34	2,160	F	Buckhorn 36; curled dock 324
4654	Syler, Clay, North Manchester	Syler, Clay,	C	96.82	......	74.0	20.0	2-34	......	C	Curled dock 1,350; red sorrel, 7425
	Alsike Clover	North Manchester, Ind	F	97.31	0.70	84.25	14.75	4-34	9,675	F	Curled dock 2,250; red sorrel 6,975

*Not labeled.
†Certified by Retailer.
‡Agent of Farmers National Grain Corp., Chicago, Ill.
C and F stands, respectively, for Claimed and Found.
[65] Removed from sale. Misbranded. Returned to distributor.
[66] Removed from sale. Misbranded. All sold.
[67] Removed from sale. Misbranded. Retagged.
[68] Removed from sale. Misbranded. Returned to distributor.
[69] Not tagged. Labels furnished.
[70] Sample secured from Indiana State Highway Commission, Bloomington, Ind.

ALSIKE CLOVER—*Continued*

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, per cent	Inert Matter, per cent	Germination, per cent	Hard Seeds, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds	Number per Pound of each of the Noxious Weed Seeds Specified in the Law
4845	Phillips, J. C., Star City[71] Alsike Clover, Lot 42	Syler & Syler, Plymouth, Ind	C F	98.91 93.37	.... 0.25	89.0 87.25	5.0 7.25	12-33 5-34	 10,845	C Red sorrel 450 F Buckhorn 1,008; curled dock 162; red sorrel 9,225
5033	Wilson Grain & Coal Co., Rochester[71] Alsike Clover, Lot 26	Syler & Syler, Plymouth, Ind	C F	98.4 96.97	...... 0.05	89.0 84.0	6.0 12.75	2-34 5-34	 2,268	C Red sorrel 180 F Buckhorn 36; common plantain 18; curled dock 18; red sorrel 1,728; yellow trefoil 18
3948	Wynn, Arlie, Rochester Alsike Clover	Syler & Syler, Plymouth, Ind	C F	97.22 97.92	.... 0.60	90.0 78.25	3.8 9.25	1-33 11-33	 7,047	C Yellow trefoil 7,875 F Buckhorn 36; yellow trefoil 3,186
4958	†McMahan Seed Co., Valparaiso Alsike Clover, Lot Fitz	Tyler, James Elwood, Ill	C F	97.83 98.43	.... 1.42	87.0 85.25	12.0 13.0	1-34 5-34	....	C None F None
4598	Asdell & Asdell, Sullivan[72] Alsike Clover	Wilson, John, Sullivan, Ind	C F	95.77 91.67	...... 1.49	..... 56.5	.... 40.5	2-34 4-34	 1,809	C Buckhorn 225 F Bracted plantain 144; buckhorn 684; common plantain 18; curled dock 180; red sorrel 108

*Not labeled.
†Certified by Retailer.
C and F stands, respectively, for Claimed and Found.

[71] Removed from sale. Misbranded. All sold.

[72] Tag incomplete. Contains 5.01% White Clover with a Germination of 39.50% and 58.00% Hard Seeds. Removed from sale. Misbranded. Returned to distributor.

KOREAN CLOVER

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, per cent	Inert Matter, per cent	Germination, per cent	Hard Seeds, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds	Number per Pound of each of the Noxious Weed Seeds Specified in the Law
5255	Allied Seed Co., Inc., Ft. Wayne[73] Korean Lespedeza, Lot 12	Allied Seed Co., Inc., Ft. Wayne, Ind	C F	99.5 99.3	..... 0.53	88.0 95.0	2.0 3.0	3-34 4-34	 90	C None F None
4847	Farmers Grain & Supply Co., Thornhope, P. O. Oak Korean Lespedeza, Lot 8	Allied Seed Co., Inc., Ft. Wayne, Ind	C F	98.5 98.01	..... 1.33	80.0 83.0	..... 14.5	12-33 5-34	 2,025	C Bracted plantain 45 F Bracted plantain 126; buckhorn 9
4853	Farmers Grain & Supply Co., Thornhope, P. O. Oak Kobe Lespedeza, Lot B-5	Allied Seed Co., Inc., Ft. Wayne, Ind	C F	96.43 97.6	..... 0.84	75.0 63.0	6.0 11.5	1-34 5-34	 3,060	C None F None

5169	Elnora Elevator Co., Elnora[74] Korean Lespedeza, Lot 2	Bean, E. W., Elnora, Ind	C	91.0	....	92.0	....	3-34	....	C	None
			F	97.25	1.06	82.0	5.5	4-34	4,410	F	Bracted plantain 9; buckhorn 9; curled dock 225; dodder 198; red sorrel 9
4312	Eberts Grain Co., Scottsburg Korean Clover, Lot 1404	Chambers Seed Co., Louisville, Ky	C	98.0	....	80.0	10.0	12-33	....	C	Bracted plantain 28
			F	99.03	0.34	90.0	6.5	3-34	1,548	F	Bracted plantain 63; curled dock 18; large-seeded alfalfa dodder 27
5230	Penman Bros., Brazil[75] Korean Clover, Lot 1439	Chambers Seed Co., Louisville, Ky	C	98.0	....	80 0	10 0	1-34	....	C	Buckhorn 90; dodder 16
			F	97.31	0.18	90.5	5.0	4-34	8,388	F	Bracted plantain 7,380; buckhorn 36; common plantain 153; curled dock 9
4877	Reid, Volney T., Salem Korean Clover	Chambers Seed Co., Louisville, Ky	C	99.0	....	80 0	15.0	1-34	....	C	Bracted plantain 100
			F	99.1	0.39	82.0	13.5	5-34	1,152	F	Bracted plantain 216; curled dock 36
4413	Perry, Chas. S., Linton[76] Japan Common Lespedeza, Lot 2083	Corneli Seed Co., St. Louis, Mo	C	99.1	....	80 0	15 0	2-34	....	C	None
			F	96.19	1 38	87 5	6.5	4-34	16,938	F	Bracted plantain 9; buckhorn 9
4417	Perry, Chas. S., Linton Keystone Korean Clover, Lot 1651	Corneli Seed Co., St. Louis, Mo	C	99.44	....	77.0	18 0	2-34	....	C	Dodder 16
			F	99.6	0.20	84.5	4 5	4-34	576	F	Dodder 36
4422	Weed Hdwe. Co., Vincennes[76] Korean Lespedeza, Lot B	Corneli Seed Co., St. Louis, Mo	C	99 34	....	78 0	16.0	1-34	....	C	None
			F	98.65	0.60	96 0	1.5	4-34	311	F	Dodder 41
4875	†Lucas, Henry, Brownstown Korean Lespedeza, Lot Crabb	Crabb, Cyres, Brownstown, Ind	C	95 44	....	88.5	4.3	1-34	....	C	Buckhorn 90; curled dock 180
			F	96.12	1.08	95.0	2.5	5-34	5,610	F	Buckhorn 9; common plantain 108; curled dock 153; dodder 30
4416	Burdsall, E. M., Lyons Korean Lespedeza, Lot 1-PF	Crabbs Reynolds Taylor Co., Crawfordsville, Ind	C	99.56	....	87.0	8.0	1-34	....	C	None
			F	99.72	0.26	83.0	15.5	5-34	135	F	Buckhorn 27; dodder 18
4504	Cloverdale Hdwe. & Lumber Co., Cloverdale Korean Lespedeza, Lot 1-PF	Crabbs Reynolds Taylor Co., Crawfordsville, Ind	C	99.56	....	87 0	8.0	1-34	....	C	None
			F	99.56	0.20	85.0	13.5	4-34	708	F	Buckhorn 18; common plantain 54; dodder 6
5180	Crabbs Reynolds Taylor Co., Crawfordsville[77] Korean Lespedeza, Lot 2-PF	Crabbs Reynolds Taylor Co., Crawfordsville, Ind	C	99 62	....	90 0	5 0	2-34	....	C	None
			F	99.4	0.38	85 0	8.5	4-34	333	F	Bracted plantain 63
5271	Crabbs Reynolds Taylor Co., Crawfordsville[78] Korean Lespedeza, Lot 2-PG	Crabbs Reynolds Taylor Co., Crawfordsville, Ind	C	99 66	....	80 0	10.0	3-34	....	C	None
			F	99 16	0.32	79 0	17.0	5-34	666	F	Curled dock 18; dodder 18
4784	Farmers Feed & Coal Co., Bloomington[79] Korean Lespedeza, Lot 1-PF	Crabbs Reynolds Taylor Co., Crawfordsville, Ind	C	99 56	....	87 0	8.0	1-34	....	C	None
			F	99.7	0.10	83 5	14 5	3-34	540	F	Buckhorn 36; common plantain 54
4801	Heise Bros. & Co., Mitchell Korean Lespedeza, Lot 1-PF	Crabbs Reynolds Taylor Co., Crawfordsville, Ind	C	99.56	....	87 0	8.0	1-34	....	C	None
			F	99 7	0.02	85 5	13.0	5-34	774	F	Buckhorn 54
4964	Morocco Grain & Lumber Co., Morocco[80] Korean Lespedeza, Lot 2-PF	Crabbs Reynolds Taylor Co., Crawfordsville, Ind	C	99 62	....	90 0	5.0	2-34	....	C	None
			F	99.08	0.32	82 5	16 0	5-34	2,457	F	Bracted plantain 207; dodder 2,160
4726	Newcastle Elevator Co., Newcastle[80] Certified Korean Lespedeza, Lot 8-PE	Crabbs Reynolds Taylor Co., Crawfordsville, Ind	C	98 49	....	86 5	8 5	1-34	....	C	None
			F	98 24	1.07	80 5	10 5	5 34	2,331	F	Bracted plantain 117; dodder 54
5183	Crawfordsville Seed Co., Crawfordsville[81] Korean Lespedeza, Lot K-2	Crabbs Reynolds Taylor Co., Crawfordsville, Ind	C	98 5	....	70 0	20 0	2-34	....	C	None
			F	98 76	0.46	73 0	21 5	4-34	1,764	F	Dodder 54

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*Not labeled.

†Certified by Retailer.

C and F stands, respectively, for Claimed and Found.

[73] Sample secured from Indiana State Highway Commission, Fort Wayne, Ind.

[74] Sample secured from Indiana State Highway Commission, Linton, Ind. Not tagged. Labels furnished.

[75] Sample secured from Indiana State Highway Commission, Terre Haute, Ind.

[76] Removed from sale. Misbranded. All sold.

[77] Sample secured from Indiana State Highway Commission, Crawfordsville, Ind.

[78] Sample secured from Indiana State Highway Commission, Waterloo, Ind.

[79] Sample secured from Indiana State Highway Commission, Bloomington, Ind.

[80] Removed from sale. Misbranded. All sold.

[81] Sample secured from Indiana State Highway Commission, Covington, Ind.

KOREAN CLOVER—Continued

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, per cent	Inert Matter, per cent	Germination, per cent	Hard Seeds, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds		Number per Pound of each of the Noxious Weed Seeds Specified in the Law
4924	Kiest Milling Co., Knox Korean Lespedeza, Lot 2018	Dickinson Co., The Albert, Chicago, Ill.	C	99.1		74.0	14.0	2-34		C	None
			F	99.12	0.28	86.5	11.0	5-34	1,692	F	Bracted plantain 18; buckhorn 18; curled dock 18; dodder 18
4172	Knapp, C. E., South Bend Korean Lespedeza, Lot O-20102	Dickinson Co., The Albert, Chicago, Ill.	C	99.46		74.0	20.0	3-33		C	None
			F	98.65	0.68	77.0	11.0	2-34	2,070	F	None
3956	Lapaz Grain Co., Lapaz Korean Lespedeza, Lot 2011	Dickinson Co., The Albert, Chicago, Ill.	C	99.11		63.0	20.0	3-33		C	None
			F	99.26	0.66	89.0	8.0	12-33	540	F	None
4999	Lapaz Grain Co., Lapaz Korean Lespedeza, Lot 2018	Dickinson Co., The Albert, Chicago, Ill.	C	99.0		74.0	14.0	2-34		C	None
			F	98.65	0.56	87.0	8.0	5-34	1,980	F	Bracted plantain 36; curled dock 18; dodder 36
4553	Indiana Farm Bureau Co-operative Assn., Inc., Indianapolis Korean Lespedeza, Lot M-58749	Farmers National Grain Corporation, Chicago, Ill.	C	99.2		90.0		11-33		C	None
			F	98.69	0.46	86.5	7.5	3-34	1,647	F	Bracted plantain 135; common plantain 135; curled dock 27
4540	Carnery Hatcheries, Greensburg Korean Lespedeza	Foster-Kendall Co., Carmel, Ind.	C	99.3		90.0		1-34		C	None
			F	99.36	0.40	80.5	11.5	4-34	684	F	Bracted plantain 18; buckhorn 27; dodder 9
4459	Carnery Hatcheries, Osgood Korean Lespedeza	Foster-Kendall Co., Carmel, Ind.	C	99.3		90.0		1-34		C	None
			F	99.56	0.28	85.5	8.0	4-34	459	F	Bracted plantain 72; buckhorn 18; curled dock 9
5074	Jennings County Farm Bureau Co-operative Assn., Inc., North Vernon[82] Korean Lespedeza	Foster-Kendall Co., Carmel, Ind.	C	99.0		75.0	17.0	12-33		C	None
			F	99.17	0.26	87.5	7.0	5-34	1,377	F	Bracted plantain 54; buckhorn 54; curled dock 27; dodder 72
5080	Westport Elevator, Westport Korean Lespedeza	Foster-Kendall Co., Carmel, Ind.	C	99.0		75.0	17.0	12-33		C	None
			F	99.01	0.65	82.0	9.0	5-34	684	F	Bracted plantain 36; buckhorn 18
4347	Johnson & Chenoweth, Shoals[82] Korean Lespedeza, Lot RMC	Giltner Seed Co., Eminence, Ky.	C	97.0		82.0	16.0	12-33		C	Bracted plantain 26; horse nettle 6
			F	97.28	1.21	67.0	11.5	4-34	3,051	F	Bracted plantain 18; common plantain 54; curled dock 45; dodder 225; prickly lettuce 9
4385	Reynolds-Brooks Hdwe. Co., Loogootee[83] Korean Lespedeza, Lot MB	Giltner Seed Co., Eminence, Ky.	C	98.5		80.0	15.0	12-33		C	None
			F	98.8	0.52	81.5	12.0	4-34	1,143	F	Dodder 153
4262	†Linwood Grain Co., Linwood, P. O. Alexandria Korean Lespedeza	Goodrich Bros. Co., Winchester, Ind.	C	98.0		75.0	20.0	1-34		C	None
			F	97.91	1.49	78.5	14.5	2-34	2,403	F	Bracted plantain 270; buckhorn 27; dodder 36
4901	†Miller Grain Co., Inc., Bainbridge Lespedeza, Lot 1	Green, Robert, Galletin, Tenn., R. 3	C	99.0		90.0		1-34		C	None
			F	99.04	0.32	83.0	11.5	5-34	914	F	Dodder 14
5190	Hardin & Lewman, Louisville, Ky[84] Korean Lespedeza, Lot H	Hardin & Lewman, Louisville, Ky.	C	98.0		85.0	5.0	1-34		C	None
			F	99.36	0.44	85.5	13.5	4-34	401	F	Bracted plantain 27; dodder 14

4613	Murphy & Co., Princeton Korean Lespedeza, Lot 2891	Heldt Co., The, Evansville, Ind	C F	98.05 97.18	.... 1.53	80.0 93.5	12.0 3.5	1-34 5-34	 3,501	C Bracted plantain 1,890; common plantain 396; curled dock 45; horse nettle 9 F Bracted plantain 1,980; buckhorn 9; common plantain 63; curled dock 9
5162	Hooton-Davis Seed Corp., Lebanon[85] Korean Lespedeza, Lot 1-1828	Hooton-Davis Seed Corporation, Lebanon, Ind	C F	98.0 98.86	.... 0.62	25.0 88.5	15.0 9.5	1-34 4-34	 1,710	C None F Bracted plantain 162; curled dock 9; dodder 99
4891	Lucas, Henry, Brownstown Korean Clover, Lot K-448	Hooton-Davis Seed Corporation, Lebanon, Ind	C F	95.0 96.5	.... 1.83	60.0 69.0	.... 8.5	1-34 5-34	 5,409	C None F Bracted plantain 9
4812	Shanklin Hdwe. Co., Frankfort[86] Korean Clover, Lot IND	Hooton-Davis Seed Corporation, Lebanon, Ind	C F	99.0 95.19	.... 2.18	80.0 85.5	.... 12.0	1-34 5-34	 13,707	C None F Bracted plantain 27; buckhorn 990; common plantain 90
5308	†Shanklin Hdwe. Co., Frankfort[87] Korean Clover, Lot 1828	Hooton-Davis Seed Corporation, Lebanon, Ind	C F	98.0 96.1	.... 1.95	75.0 88.0	15.0 7.0	1-34 6-34	 9,171	C None F Bracted plantain 18; buckhorn 288; common plantain 81; dodder 54
4618	Strate Pielemeier Hdwe. Co., Freelandville[88] Korean Clover	Hottle, Dean Bruceville, Ind	C F	 96.02	.... 2.20	.... 86.0	.... 6.0	 3-34	 8,415	C F Bracted plantain 2,430; buckhorn 144; curled dock 450; dodder 81; red sorrel 2,880
4246	Clay County Farm Bureau Co-operative Assn., Inc., Brazil Korean Lespedeza, Lot 2152	Indiana Farm Bureau Co-op. Assn., Inc., Indianapolis, Ind	C F	99.0 99.06	.... 0.20	90.0 83.0	.... 5.0	1-34 3-34	 1,521	C None F Bracted plantain 279; curled dock 126; dodder 36
5085	Hamilton County Farm Bureau Co-operative Assn., Inc., Noblesville[86] Korean Lespedeza, Lot 1494	Indiana Farm Bureau Co-op. Assn., Inc., Indianapolis, Ind	C F	98.0 96.4	.... 3.08	84.0 82.5	10.0 5.0	3-33 5-34	 3,780	C None F None
5067	Hancock County Farm Bureau Co-operative Assn., Inc., Greenfield Korean Lespedeza, Lot 2163	Indiana Farm Bureau Co-op. Assn., Inc., Indianapolis, Ind	C F	99.0 98.39	.... 0.66	80.0 90.5	14.0 7.0	2-34 5-34	 1,980	C None F Bracted plantain 18; common plantain 36; dodder 36
5075	Jennings County Farm Bureau Co-operative Assn., Inc., North Vernon Korean Lespedeza, Lot 2152	Indiana Farm Bureau Co-op. Assn., Inc., Indianapolis, Ind	C F	99.0 99.4	.... 0.20	90.0 85.0	.... 6.0	1-34 5-34	 639	C None F Bracted plantain 144; buckhorn 36; curled dock 99
4919	LaPorte County Farm Bureau Co-operative Assn., Inc., LaPorte[86] Korean Lespedeza, Lot 1494	Indiana Farm Bureau Co-op. Assn., Inc., Indianapolis, Ind	C F	99.5 96.44	.... 2.14	84.0 79.0	10.0 9.5	3-33 5-34	 5,265	C None F Bracted plantain 36; buckhorn 9
4506	Owen County Farm Bureau Co-operative Assn., Inc., Spencer[86] Korean Lespedeza, Lot 2163	Indiana Farm Bureau Co-op. Assn., Inc., Indianapolis, Ind	C F	99.0 97.21	.... 1.00	80.0 84.0	14.0 4.0	2-34 4-34	 10,350	C None F Common plantain 2,700

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*Not labeled.
†Certified by Retailer.
C and F stands, respectively, for Claimed and Found.
[82] Removed from sale. Misbranded. All sold.
[83] Removed from sale. Misbranded. Retagged.
[84] Sample secured from Robert Elston, Bedford, Ind.
[85] Sample secured from Indiana State Highway Commission, Frankfort, Ind.
[86] Removed from sale. Misbranded. All sold.
[87] Removed from sale. Misbranded. Retagged.
[88] Not tagged. Labels furnished.

KOREAN CLOVER—Continued

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor	Purity, per cent	Inert Matter, per cent	Germination, per cent	Hard Seeds, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds	Number per Pound of each of the Noxious Weed Seeds Specified in the Law
4470	Ripley County Farm Bureau Co-operative Assn., Inc., Osgood....... Korean Lespedeza, Lot 2152.......	Indiana Farm Bureau Co-op. Assn., Inc.,....C	99.0	......	90.0	......	1-34	....	C None
		Indianapolis, Ind.......F	98.99	0.26	90.0	5.0	4-34	1,512	F Bracted plantain 180; buckhorn 18; curled dock 144
4579	Sullivan County Farm Bureau Co-operative Assn., Inc., Sullivan....... Korean Lespedeza, Lot 2152.......	Indiana Farm Bureau Co-op. Assn., Inc.,....C	99.0	......	90.0	......	1-34	....	C None
		Indianapolis, Ind.......F	98 98	0.48	84.5	5.5	3-34	1,611	F Buckhorn 207; common plantain 18; curled dock 36
4647	Wabash County Farm Bureau Co-operative Assn., Inc., Wabash[89]....... Korean Lespedeza, Lot 2163.......	Indiana Farm Bureau Co-op. Assn., Inc.,....C	99.0	......	90.0	......	2-34	....	C None
		Indianapolis, Ind.......F	97.55	0.86	88.5	4.5	5-34	7,308	F Bracted plantain 9; buckhorn 9; common plantain 4,680
4758	Wayne County Farm Bureau Co-operative Assn., Inc., Richmond....... Korean Lespedeza, Lot 2152.......	Indiana Farm Bureau Co-op. Assn., Inc.,....C	99.0	......	90.0	......	1-34	....	C None
		Indianapolis, Ind.......F	99.3	0.36	93.5	0.0	5-34	612	F Bracted plantain 81; curled dock 81
4760	Wayne County Farm Bureau Co-operative Assn., Inc., Richmond[90]....... Certified Korean Lespedeza, Lot 2163....	Indiana Farm Bureau Co-op. Assn., Inc.,....C	99.0	......	90.0	......	2-34	....	C None
		Indianapolis, Ind.......F	98.3	0.39	92.5	6.0	5-34	3,785	F Common plantain 900; dodder 5
4674	White County Farm Bureau Co-operative Assn., Inc., Monticello[89]....... Korean Lespedeza, Lot 2163.......	Indiana Farm Bureau Co-op. Assn., Inc.,....C	99.0	......	80.0	14.0	2-34	....	C None
		Indianapolis, Ind.......F	98.33	0.34	95.5	4.0	5-34	5,427	F Bracted plantain 27; common plantain 2,070
5057	Furry, V. H., Greenfield....... Korean Lespedeza, Lot 1418.......	Indiana Seed Co.,.......C	99.4	......	76.0	14.0	1-34	....	C None
		Indianapolis, Ind.......F	99.26	0.38	91.5	3.5	5-34	801	F Bracted plantain 18; common plantain 63
5063	Furry, V. H., Greenfield[90]....... Korean Lespedeza, Lot I-1828.......	Indiana Seed Co.,.......C	98.75	......	75.0	15.0	1-34	....	C None
		Indianapolis, Ind.......F	97.6	1.12	83.0	12.5	5-34	5,958	F Buckhorn 270; common plantain 153; dodder 45
4624	Griffin Hdwe. Co., Carlisle[91]....... Korean Lespedeza, Lot I-1827.......	Indiana Seed Co.,.......C	98.59	......	76.0	14.0	2-34	....	C None
		Indianapolis, Ind.......F	98.7	0.40	80.5	11.5	5-34	3,033	F Bracted plantain 27; dodder 126
5232	Indiana Seed Co., Indianapolis[92]....... Korean Lespedeza, Lot I-1828.......	Indiana Seed Co.,.......C	98.75	......	75.0	15.0	1-34	....	C None
		Indianapolis, Ind.......F	97.31	1.18	88.0	5.0	4-34	4,059	F Bracted plantain 9; buckhorn 99; common plantain 54; dodder 27
5145	Markleville Elevator Co., Markleville....... Korean Lespedeza, Lot I-1824.......	Indiana Seed Co.,.......C	98.5	......	75.0	16.0	1-34	....	C None
		Indianapolis, Ind.......F	98.78	0.62	76.5	18.5	5-34	540	F None
4903	Miller Grain Co., Greencastle[93]....... Korean Lespedeza, Lot I-1816.......	Indiana Seed Co.,.......C	98.0	......	75.0	10.0	3-33	....	C None
		Indianapolis, Ind.......F	99.34	0.64	91.0	6.0	5-34	90	F None
4573	Riggs & Son, W. G., Sullivan....... Korean Lespedeza, Lot 1418.......	Indiana Seed Co.,.......C	99.4	......	76.0	14.0	2-34	....	C None
		Indianapolis, Ind.......F	99.04	0.64	85.0	7.0	3-34	923	F Bracted plantain 9; common plantain 81; dodder 23
5062	Risk, C. B., Knightstown....... Korean Lespedeza, Lot I-1828.......	Indiana Seed Co.,.......C	98.75	......	75.0	15.0	1-34	....	C None
		Indianapolis, Ind.......F	98.63	0.40	90.0	6 5	5-34	2,201	F Bracted plantain 18; common plantain 18; dodder 5

4721	Roller, W. M., Greens Fork	Indiana Seed Co.,	C	99.1	.....	80.0	11.0	1–34	....	C None
	Korean Lespedeza, Lot I-418	Indianapolis, Ind.	F	98.96	0.92	86.5	10.5	5–34	303	F Curled dock 9; dodder 24
4895	Calvin Bros. Hdwe., Nashville[94]	Kentucky Lespedeza Growers Assn.,	C	98.28	.....	78.0	21.0	1–34	....	C Buckhorn 48
	Korean Lespedeza, Lot W. E. Bu	Eminence, Ky	F	99.0	0.60	86.0	11.0	5–34	995	F Bracted plantain 153; buckhorn 9; common plantain 36; curled dock 63; dodder 104
4771	Bohnert & Son, A. M., Jasper	Lewis Implement & Seed Co.,	C	98.18	.....	85.0	5.0	12–33	....	C Bracted plantain 50; common plantain 50; dodder 50
	Korean Lespedeza, Lot Red Bird	Louisville, Ky	F	98.84	0.54	90.5	6.5	5–34	1,440	F Bracted plantain 252; common plantain 162; curled dock 27; dodder 9
4307	Crescent Mills, Crothersville	Lewis Implement & Seed Co.,	C	98.19	.....	80.0	10.0	12–33	....	C Bracted plantain 50; common plantain 50; dodder 50
	Korean Lespedeza, Lot Red Bird	Louisville, Ky	F	98.83	0.43	86.5	4.5	3–34	1,161	F Bracted plantain 378; common plantain 36; curled dock 27
4798	Heise Bros. & Co., Mitchell	Lewis Implement & Seed Co.,	C	98.0	.....	85.0	5.0	12–33	....	C Bracted plantain 50; common plantain 50
	Korean Lespedeza, Lot Red Bird	Louisville, Ky	F	98.88	0.48	87.5	6.0	5–34	1,458	F Bracted plantain 333; common plantain 171; curled dock 18; dodder 36
4349	Hoosier Hdwe. Co., Paoli[95]	Lewis Implement & Seed Co.,	C	99.0	.....	90.0	.....	12–33	....	C Bracted plantain 50; common plantain 50
	Korean Lespedeza, Lot Red Bird	Louisville, Ky	F	98.27	0.72	90.5	7.5	4–34	4,401	F Bracted plantain 540; buckhorn 9; common plantain 1,710; curled dock 45; dodder 207
4795	Johnson & Burton, Orleans	Lewis Implement & Seed Co.,	C	98.0	.....	85.0	10.0	2–34	....	C None
	Korean Lespedeza, Lot Red Bird	Louisville, Ky	F	98.82	0.94	80.5	14.5	5–34	779	F Common plantain 306; dodder 23
4333	Lutz-Boyd Hdwe. Co., Charlestown	Lewis Implement & Seed Co.,	C	98.0	.....	83.0	12.0	1–34	....	C Bracted plantain 180
	Korean Lespedeza, Lot Red Bird	Louisville, Ky	F	97.78	0.89	89.5	7.5	3–34	3,375	F Bracted plantain 189; dodder 36
4291	Wiseman & Son, Wm. H. P., Corydon[96]	Lewis Implement and Seed Co.,	C	98.0	.....	80.0	5.0	1–34	....	C Bracted plantain 180; dodder 99
	Korean Lespedeza, Lot Red Bird	Louisville, Ky	F	96.62	1.09	90.5	5.0	3–34	5,661	F Bracted plantain 270; curled dock 81; dodder 90
4688	*McCarty Hdwe. Co., Ft. Branch[97]	McCarty, Chas.,	C	.....	.....	.....	.....	.....	....	C
	Korean Lespedeza	Ft. Branch, Ind	F	97.49	0.32	84.5	12.0	3–34	5,445	F Bracted plantain 9; common plantain 216
5153	Standard Hatcheries, Terre Haute	McCarty Seed Co., J. A.,	C	99.5	.....	90.0	.....	1–34	....	C Bracted plantain 8; curled dock 15
	State Certified Korean Lespedeza, Lot 642	Evansville, Ind	F	99.34	0.18	94.0	4.0	5–34	1,053	F Bracted plantain 99; curled dock 54
5155	Standard Hatcheries, Terre Haute	McCarty Seed Co., J. A.,	C	99.0	.....	90.0	.....	1–34	....	C None
	L. J. Non-Certified Korean Lespedeza, Lot 1006	Evansville, Ind	F	98.94	1.02	83.5	14.0	5–34	162	F Common plantain 63; curled dock 9
5261	†Standard Hatcheries, Terre Haute[98]	McCarty Seed Co., J. A.,	C	99.5	.....	90.0	.....	1–34	....	C None
	State Certified Korean Lespedeza, Lot 6429-MC	Evansville, Ind	F	99.38	0.14	90.0	7.0	5–34	1,080	F Bracted plantain 108; curled dock 63; red sorrel 9
4461	Eckert-Palmer, Osgood[99]	McCullough & Sons Co., J. M.,	C	98.0	.....	70.0	20.0	1–34	....	C Buckhorn 24
	Korean Lespedeza, Lot 1004	Cincinnati, Ohio	F	92.52	3.34	70.5	11.5	4–34	2,448	F Bracted plantain 324; buckhorn 27; curled dock 9; dodder 18

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*Not labeled.

†Certified by Retailer.

C and F stands, respectively, for Claimed and Found.

[89] Removed from sale. Misbranded. All sold.

[90] Removed from sale. Misbranded. Returned to distributor.

[91] Removed from sale. Misbranded. Used on own farm.

[92] Sample secured from Indiana State Highway Commission, Greenfield, Ind.

[93] Distributed by Miller Grain Co., Brainbridge, Ind.

[94] Removed from sale. Misbranded. Used on own farm.

[95] Removed from sale. Misbranded.

[96] Removed from sale. Misbranded. Retagged.

[97] Used on own farm.

[98] Not tagged. Labels furnished.

[99] Removed from sale. Misbranded. Retagged.

KOREAN CLOVER—Continued

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor	Purity, per cent	Inert Matter, per cent	Germination, per cent	Hard Seeds, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds	Number per Pound of each of the Noxious Weed Seeds Specified in the Law
4018	Linkhart & Son, North Vernon[100]	McCullough & Sons Co., J. M., C	90.0	.....	85.0	10.0	3-33	.....	C None
	Korean Lespedeza	Cincinnati, Ohio F	93.39	0.76	77.5	12.5	1-34	22,176	F Bracted plantain 27; dodder 909
4950	†McMahan Seed Co., Valparaiso[99]	Mangelsdorf & Bro., Ed. F., C	99.5	.....	93.0	.....	2-34	.....	C None
	Korean Lespedeza, Lot 3129	St. Louis, Mo F	98.89	0.54	78.5	17.5	6-34	2,430	F None
4399	Reynolds-Brooks Hdwe Co., Loogootee[99]	Mangelsdorf & Bro., Ed. F., C	95.0	.....	70.0	.....	1-34	.....	C Bracted plantain 64
	Common Lespedeza, Lot 3465	St. Louis, Mo F	92.03	4.62	84.5	9.0	4-34	17,001	F Bracted plantain 252; prickly lettuce 9
4403	Worthington Grain Co., Worthington[101]	Mangelsdorf & Bro., Ed. F., C	99.0	.....	76.0	15.0	1-34	.....	C None
	Korean Lespedeza, Lot 3178	St. Louis, Mo F	98.96	0.84	91.0	4.5	4-34	1,161	F Bracted plantain 45; curled dock 162; dodder 45; red sorrel 9
5227	Miller Grain Co., Greencastle[102]	Miller Grain Co., C	99.0	.....	90.0	.....	1-34	.....	C None
	Korean Clover	Greencastle, Ind F	99.62	0.24	82.5	12.5	5-34	405	F Dodder 45
4401	†Bloomfield Mill & Elevator Co., Bloomfield	Porter, W. E., C	96.53	.....	73.5	21.0	1-34	.....	C Dodder 1,170
	Korean Clover, Lot A	Lewisburg, Tenn F	95.31	1.30	76.5	15.5	4-34	7,569	F Bracted plantain 9; dodder 900
4580	†Neal, Chas., Jasonville[103]	Puckett, Chas., C	98.29	.....	84.5	8.5	2-34	.....	C Common plantain 540; dodder 270; red sorrel 90
	Korean Clover, Lot 10	Jasonville, Ind F	96.55	0.34	89.5	8.5	3-34	8,910	F Bracted plantain 9; buckhorn 36; common plantain 1,233; curled dock 27; dodder 351; red sorrel 234
4619	Davis County Farm Bureau Co-operative Assn., Inc., Petersburg	Purcell Seed Co., C	97.74	.....	78.0	10.0	1-34	.....	C Bracted plantain 1,800; curled dock 90
	Korean Lespedeza, Lot 2670	Evansville, Ind F	99.3	0.52	83.5	14.5	5-34	846	F Bracted plantain 189; buckhorn 9; common plantain 99; curled dock 9
4607	Kell, R. C., Oakland City	Purcell Seed Co., C	99.0	.....	80.0	10.0	1-34	.....	C None
	Tru Val Korean Lespedeza, Lot 2609	Evansville, Ind F	99.56	0.04	82.5	15.5	5-34	549	F Buckhorn 9
4711	Moll, J. J., Mount Vernon[104]	Purcell Seed Co., C	99.0	.....	90.0	.....	3-33	.....	C Bracted plantain 270
	"Judge" Korean Lespedeza, Lot 1920	Evansville, Ind F	99.16	0.56	84.0	14.0	5-34	972	F Bracted plantain 18; buckhorn 9; dodder 45
4601	Farmers Co-op. Elevator Co., Clay City	Quinlan Seed Store, C	99.0	.....	70.0	20.0	1-34	.....	C None
	Korean Lespedeza, Lot 1420	Terre Haute, Ind F	99.52	0.42	84.0	14.0	5-34	189	F Dodder 9
4066	Bollinger, George, Henryville	Ross Seed Co., C	97.38	.....	70.0	20.0	11-33	.....	C Curled dock 180; horse nettle 90
	Korean Clover	Louisville, Ky F	98.48	1.36	82.5	11.5	1-34	1,152	F Bracted plantain 45; curled dock 27
4878	Brownstown Feed Exchange, Brownstown	Ross Seed Co., C	99.58	.....	60.0	30.0	1-34	.....	C Curled dock 90
	Korean Clover	Louisville, Ky F	99.68	0.20	93.0	5.5	5-34	216	F Curled dock 126
4974	Hallawell's Feed Store, North Vernon	Ross Seed Co., C	99.0	.....	65.0	29.0	1-34	.....	C Curled dock 90
	Korean Clover	Louisville, Ky F	98.82	0.34	71.0	9.5	5-34	1,818	F Buckhorn 9; common plantain 9
4979	Hallawell's Feed Store, North Vernon	Ross Seed Co., C	99.0	.....	66.0	20.0	1-34	.....	C None
	Korean Clover	Louisville, Ky F	99.88	0.10	93.0	5.0	5-34	81	F Curled dock 81
4462	Hunger, C. G., Madison	Ross Seed Co., C	98.5	.....	60.0	15.0	1-34	.....	C Bracted plantain 720
	Japan Clover	Louisville, Ky F	98.23	0.72	84.0	9.0	4-34	3,420	F None

4479	Hunger, C. G., Madison	Ross Seed Co.,	C	99.0		65.0	29.0	1-34		C Curled dock 75
	Korean Clover	Louisville, Ky	F	99.61	0.35	92.0	7.0	4-34	99	F Curled dock 99
4344	McCampbell, Ralph, French Lick	Ross Seed Co.,	C	98.0		65.0	30.0	1-34		C Curled dock 112; horse nettle 90
	Korean Clover, Lot 1612	Louisville, Ky	F	97.03	1.49	89.5	8.5	4-34	3,024	F Bracted plantain 189; curled dock 45; horse nettle 180
4435	Sample, John L., Madison	Ross Seed Co.,	C	99.0		65.0	29.0	1-33		C None
	Korean Clover, Lot 763	Louisville, Ky	F	99.68	0.16	92.5	4.5	4-34	135	F Bracted plantain 9; curled dock 36
4436	Sample, John L., Madison	Ross Seed Co.,	C	99.0		65.0	29.0	1-34		C Curled dock 90
	Korean Clover, Lot 1600	Louisville, Ky	F	98.11	0.56	83.0	7.5	4-34	5,670	F None
4505	Farmers Feed & Coal Co., Bloomington[105]	Schultz Seed Co., J. M.,	C	99.0		80.0		11-33		C Curled dock 7
	Reliable Korean	Dieterich, Ill	F	99.32	0.20	77.5	9.0	4-34	1,026	F Bracted plantain 126; buckhorn 54; common plantain 54; curled dock 27; dodder 315
4713	Poseyville Grain & Feed Co., Inc., Poseyville[105]	Schultz Seed Co., J. M.,	C	99.0		80.0		1-34		C Curled dock 7
	Korean Lespedeza	Dieterich, Ill	F	97.95	1.81	85.5	5.5	5-34	941	F Bracted plantain 315; curled dock 63; dodder 23
4447	Aurora Flour & Feed Co., Aurora	Scott Seed Co.,	C	99.0		70.0	20.0	1-34		C Bracted plantain 90
	Korean Clover, Lot 122-A	New Albany, Ind	F	98.98	0.36	88.5	5.5	4-34	1,472	F Dodder 23; red sorrel 9
4295	Bulleit & Son, V. H., Corydon[106]	Scott Seed Co.,	C	99.0		70.0	20.0	1-34		C Bracted plantain 90
	Korean Clover, Lot 122-A	New Albany, Ind	F	95.4	0.32	84.5	8.0	3-34	2,867	F Bracted plantain 459; buckhorn 27; dodder 41
4890	Cauble, O. L., Pekin[106]	Scott Seed Co.,	C	99.0		70.0	20.0	1-34		C Bracted plantain 90; buckhorn 90
	Korean Lespedeza, Lot 122-A	New Albany, Ind	F	99.11	0.18	87.0	7.0	5-34	1,755	F Bracted plantain 63; buckhorn 99; dodder 63
5168	Elnora Elevator Co., Elnora[107]	Scott Seed Co.,	C	97.0		70.0	10.0	1-34		C Common plantain 180
	Japanese Clover (Common Japan) Lot 135	New Albany, Ind	F	75.3	0.98	71.0	8.5	4-34	8,532	F Bracted plantain 36; common plantain 9; curled dock 54; dodder 63
4319	Farmers Feed Store, Scottsburg[108]	Scott Seed Co.,	C	98.0		75.0	15.0	12-33		C Bracted plantain 180
	Korean Lespedeza, Lot 122-A	New Albany, Ind	F	98.96	0.24	82.5	11.0	3-34	2,246	F Bracted plantain 45; buckhorn 225; common plantain 126; curled dock 9; dodder 41
4972	Hardy, Maurice, Blocher[109]	Scott Seed Co.,	C	99.0		70.0		1-34		C None
	Korean Clover, Lot 122-A	New Albany, Ind	F	98.7	0.68	85.0	10.0	5-34	1,539	F Bracted plantain 9
4975	Hayes & Dodds, Campbellsburg[108]	Scott Seed Co.,	C	99.0		70.0	20.0	1-34		C Bracted plantain 90
	Korean Clover, Lot 122-A	New Albany, Ind	F	99.43	0.51	93.0	1.5	5-34	225	F Dodder 45
4467	Hunter & Son, W. M., Versailles	Scott Seed Co.,	C	99.0		70.0	20.0	1-34		C Bracted plantain 90
	Korean Lespedeza, Lot 122-A	New Albany, Ind	F	99.39	0.20	82.5	11.5	4-34	828	F Bracted plantain 9; curled dock 9
4437	Irwin Feed Store & Hatchery, Madison	Scott Seed Co.,	C	98.0		75.0	10.0	12-33		C Bracted plantain 270; dodder 480
	Choice Korean Clover, Lot 122	New Albany, Ind	F	99.15	0.30	86.0	9.0	3-34	1,035	F Dodder 45
4455	Irwin Feed Store & Hatchery, Madison	Scott Seed Co.,	C	99.0		75.0	15.0	12-33		C Bracted plantain 90
	Korean Clover, Lot 122-A	New Albany, Ind	F	99.3	0.30	85.5	8.0	3-34	873	F Bracted plantain 9; curled dock 36; dodder 18

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*Not labeled.

†Certified by Retailer.

C and F stands, respectively, for Claimed and Found.

[100] Removed from sale. Misbranded.

[101] Removed from sale. Misbranded. All sold.

[102] Sample secured from Indiana State Highway Commission, Greencastle, Ind.

[103] Not tagged. Labels furnished. Removed from sale. Misbranded. All sold.

[104] Removed from sale. Misbranded. Returned to distributor.

[105] Removed from sale. Misbranded. Returned to distributor.

[106] Removed from sale. Misbranded. All sold.

[107] Not tagged. Labels furnished. Contains 22.45% Korean Clover with 83.00% Germination and 8.00% Hard Seeds. Samples secured from Indiana State Highway Commission, Linton, Ind.

[108] Removed from sale. Misbranded. Retagged.

[109] Distributed by Scott Co. Farm Bureau Coop. Ass'n, Inc., Scottsburg, Ind.

KOREAN CLOVER—Continued

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, per cent	Inert Matter, per cent	Germination, per cent	Hard Seeds, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds	Number per Pound of each of the Noxious Weed Seeds Specified in the Law
4338	James Seed Co., Jeffersonville Korean Clover, Lot 122-A	Scott Seed Co., New Albany, Ind	C	99.0	......	70.0	20.0	1-34	....	Bracted plantain 90
			F	99.68	0.08	85.5	10.0	3-34	477	Bracted plantain 9; dodder 18
4781	Scarlett, Elmer, West Baden[110] Korean Lespedeza, Lot 122-A	Scott Seed Co., New Albany, Ind	C	99.0	......	70.0	20.0	.....	....	Bracted plantain 90
			F	99.22	0.40	88.5	8.5	5-34	846	Bracted plantain 27; dodder 99
4442	Trow Co., W., Madison Korean Clover, Lot 122-A	Scott Seed Co., New Albany, Ind	C	99.0	......	70.0	25.0	12-33	....	Bracted plantain 90
			F	99.12	0.52	85.0	10.5	3-34	675	Buckhorn 9; dodder 36
4290	Turley & Co., James E., English[106] Korean Lespedeza, Lot 122-A	Scott Seed Co., New Albany, Ind	C	99.0	......	70.0	20.0	1-34	....	Bracted plantain 90
			F	98.57	0.14	83.5	8.5	3-34	2,952	Bracted plantain 54; buckhorn 108; curled dock 9; dodder 81
3863	Holser, B. I., Walkerton[117] Korean Lespedeza, Lot 5093	Standard Seed Co., Chicago, Ill	C	99.0	......	92.0	......	4-33	....	None
			F	99.39	0.51	73.5	11.5	8-33	270	None
4928	Union Center Equity Exch., Union Center[118] Korean Lespedeza, Lot 5005	Standard Seed Co., Chicago, Ill	C	99.25	......	80.0	12.0	1-34	....	None
			F	98.97	0.30	79.5	16.5	5-34	2,025	Bracted plantain 45; buckhorn 9; curled dock 36; dodder 45
4923	Wolf & Sons, North Judson Korean Lespedeza, Lot 5009	Standard Seed Co., Chicago, Ill	C	99.2	......	80.0	12.0	2-34	....	None
			F	98.34	0.59	83.0	14.0	5-34	3,339	Bracted plantain 27; curled dock 36; dodder 36
4683	Strain Estate, A. F., Princeton[119] Korean Lespedeza, Lot 64444	Strain Estate, A. F., Princeton, Ind	C	97.47	......	87.0	......	1-34	....	None
			F	93.46	1.16	84.5	10.0	3-34	16,317	Bracted plantain 27
3920	Sunderman, Herman, Huntingburg[120] Korean Lespedeza	Sunderman, Herman, Huntingburg, Ind	C	......	......	......	......	......	....	
			F	99.64	0.20	64.0	20.0	11-33	1,764	Buckhorn 18; common plantain 9; curled dock 117
5209	Sun-Field Seed Service, Chicago, Ill[121] Korean Clover, Lot 5020	Sun-Field Seed Service, Chicago, Ill	C	99.0	......	85.0	5.0	2-34	....	None
			F	99.28	0.32	82.5	9.5	4-34	1,683	Buckhorn 9; common plantain 414
3862	Holser, B. I., Walkerton[117] Korean Lespedeza, Lot 16	Syler & Syler, Plymouth, Ind	C	98.6	......	85.0	6.0	3-33	....	None
			F	97.08	0.66	68.0	18.5	8-33	8,298	Bracted plantain 2,340; curled dock 9; red sorrel 9
4883	Cauble, O. L., Pekin	Wyatt Feed & Seed Store,	C	98.76	......	70.0	16.5	1-34	....	Buckhorn 220; common plantain 5,760
	Korean Clover	Petersburg, Ind	F	97.9	1.53	88.5	5.0	5-34	4,122	Buckhorn 63; common plantain 3,510; curled dock 9

*Not labeled.

†Certified by Retailer.

C and F stands, respectively, for Claimed and Found.

[110] Removed from sale. Misbranded. All sold. Tag incomplete.

[117] Removed from sale. Misbranded. Returned to distributor.

[118] Removed from sale. Misbranded. Retagged.

[119] Removed from sale. Misbranded.

[120] Not tagged. Labels furnished.

[121] Sample secured from Indiana State Highway Commission, Warsaw, Ind.

RED CLOVER

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, per cent	Inert Matter, per cent	Germination, per cent	Hard Seeds, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds	Number per Pound of each of the Noxious Weed Seeds Specified in the Law
5050	Corunna Feed Mill, Corunna	Allied Seed Co., Inc.,	C	99.6	......	90 0	......	1-34	....	C None
	Medium Red Clover, Lot B-1142	Ft. Wayne, Ind.	F	99.82	0.10	89 0	2.0	5-34	198	F Buckhorn 9; yellow trefoil 9
4860	Knecht Milling Co., Hartford City	Allied Seed Co., Inc.,	C	99.6	......	90.0	......	1-34	....	C None
	Medium Red Clover, Lot B-1142	Ft. Wayne, Ind.	F	99.68	0.06	95.5	1.0	5-34	....	F None
4904	Hillis Feed Co., Greencastle[122]	American Field Seed Co.,	C	98.8	......	92.0	......	12-33	....	C None
	Medium Red Clover, Lot 12329	Chicago, Ill.	F	97.06	0.44	80.0	7.5	4-34	3,096	F Bracted plantain 18; buckhorn 27; common plantain 54; curled dock 18; red sorrel 9; yellow trefoil 180
4498	Atlanta Grain Co., Atlanta[122]	Atlanta Grain Co.,	C	98.0	......	95.0	......	1-34	....	C Buckhorn 40; curled dock 60
	English Clover	Atlanta, Ind.	F	98.26	0.77	94.5	4.0	4-34	3,645	F Buckhorn 729; common plantain 72; curled dock 2,160; wild carrot 54
4500	Atlanta Grain Co., Atlanta[122]	Atlanta Grain Co.,	C	99.0	......	96.0	......	1-34	....	C Buckhorn 50; curled dock 50
	Red Clover	Atlanta, Ind.	F	97.53	0.30	89.0	5.5	4-34	4,338	F Common plantain 342; curled dock 36
5188	Berry Seed Co., Clarinda, Iowa[123]	Berry Seed Co.,	C	98.86	......	93.0	......	12-33	....	C None
	World Brand Red Clover, Lot 12065	Clarinda, Iowa	F	98.82	0.58	89.5	5.0	4-34	2,637	F Buckhorn 27; common plantain 63; curled dock 27
5126	*Jennings, H. E., Newcastle[124]	Berry Seed Co.,	C	95.0	......	89.0	......	10-33	....	C None
	Red Clover, Lot 12036	Clarinda, Iowa	F	94.19	0.96	75 0	20.0	3-34	18,180	F Common plantain 36; curled dock 45; prickly lettuce 9
4753	Boonville Implement Co., Boonville	Boonville Implement Co.,	C	98.48	......	89.0	7.0	2-34	....	C Buckhorn 900; dodder 270
	No. 1 Red Clover, Lot 12718	Boonville, Ind.	F	98.46	0.42	97 0	2.5	5-34	2,349	F Buckhorn 1,980; dodder 99
4270	Bottorff, D. M., Columbus	Bottorff, D. M.,	C	98.7	......	93.0	......	1-34	....	C Bracted plantain 190; curled dock 1,490
	Mammoth Clover, Lot M	Columbus, Ind.	F	98.77	0.26	92.0	5.5	2-34	3,600	F Buckhorn 27; curled dock 2,880; red sorrel 63
5000	Bremen Elevator, Bremen	Bremen Elevator,	C	99 5	......	90.0	0.5	3-34	....	C None
	Medium Clover, Lot 1	Bremen, Ind.	F	99.84	0 04	96.5	2.5	5-34	324	F Buckhorn 45; curled dock 9
4617	*Strate-Pielemeier Hdwe. Co., Freelandville	Buescher, Fred,	C	......	......				....	C
	Clover	Edwardsport, Ind.	F	97.63	2.29	73.5	16.5	3-34	297	F Buckhorn 297
5108	Busenbark Grain Co., Crawfordsville	Busenbark Grain Co.,	C	99 5	......	85.0	10.0	12-33	....	C None
	Medium Clover, Lot 1	Crawfordsville, Ind.	F	99.52	0 20	96.5	1.5	5-34	1,179	F Red sorrel 9
4516	Busenbark Grain Co., Jamestown	Busenbark Grain Co.,	C	99 25	......	88.0	6.0	12-33	....	C None
	Big English Clover, Lot 2	Crawfordsville, Ind.	F	99.38	0.57	85.0	5.5	4-34	90	F Bracted plantain 9; buckhorn 9; common plantain 45; curled dock 9; red sorrel 18
4518	Busenbark Grain Co., Jamestown	Busenbark Grain Co.,	C	99 5	......	86 0	7.0	12-33	....	C None
	Red Clover, Lot 1	Crawfordsville, Ind.	F	99.2	0.26	96.5	0 0	4-34	1,989	F Buckhorn 9

*Not labeled.
‡Certified by Retailer.
C and F stands, respectively, for Claimed and Found.

[122] Removed from sale. Misbranded. All sold.
[123] Sample secured from Chas. G. Colglazier, Bedford, Ind.
[124] Sample secured from Lewis Batt, Newcastle, Ind.

RED CLOVER—Continued

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, per cent	Inert Matter, per cent	Germination, per cent	Hard Seeds, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds		Number per Pound of each of the Noxious Weed Seeds Specified in the Law
5240	Byers Seed Co., Franklin English Clover, Lot M	Byers Seed Co., Franklin, Ind	C	99.0	......	92.0	......	2–34	....	C	None
			F	98.89	0.36	88.5	10.5	5–34	761	F	Buckhorn 36; curled dock 432; dodder 23
5241	Byers Seed Co., Franklin[125] Medium Red Clover, Lot Red 2	Byers Seed Co., Franklin, Ind	C	98.0	......	90.0	......	1–34	....	C	Buckhorn 63
			F	99.16	0.24	93.5	4.5	5–34	1,413	F	Buckhorn 306; common plantain 9; curled dock 126; dodder 495; wild carrot 27
5134	Carman Supply Co., Lynn[126] Little Red Clover, Lot H-1	Carman Supply Co., Lynn, Ind	C	99.75	......	94.0	......	1–34	....	C	None
			F	99.13	0.36	94.5	4.0	5–34	2,016	F	Buckhorn 45; common plantain 432; prickly lettuce 9
4982	Eberts Grain Co., Deputy Red Clover, Lot 225	Chambers Seed Co., Louisville, Ky	C	97.47	......	90.0	3.0	12–33	....	C	None
			F	96.73	0.10	96.5	1.0	5–34	540	F	Red sorrel 99; yellow trefoil 81
4313	Eberts Grain Co., Scottsburg Red Clover, Lot 225	Chambers Seed Co., Louisville, Ky	C	97.47	......	90.0	......	12–33	....	C	None
			F	97.3	0.14	95.5	1.0	3–34	549	F	Buckhorn 9; red sorrel 54; yellow trefoil 36
4317	Eberts Grain Co., Scottsburg Sapling Clover, Lot 388	Chambers Seed Co., Louisville, Ky	C	99.6	......	90 0	......	11–33	....	C	None
			F	99.54	0.26	85.5	0.5	3–34	558	F	Buckhorn 9; curled dock 9
4341	Hoosier Hdwe. Co., Paoli [127] Sapling Clover, Lot 389	Chambers Seed Co., Louisville, Ky	C	99.0	......	80.0	10.0	10–33	....	C	None
			F	99.15	0.20	86.5	5.0	3–34	1,917	F	Buckhorn 1,620; curled dock 153; dodder 18; red sorrel 126
4343	Hoosier Hdwe. Co., Paoli [127] Red Clover, Lot 224	Chambers Seed Co., Louisville, Ky	C	97.0	......	80.0	10.0	11–33	....	C	Bracted plantain 64; buckhorn 640
			F	95.36	0.84	80.0	5.0	3–34	10,692	F	Bracted plantain 36; buckhorn 7,290; common plantain 1,980; curled dock 27; dodder 63; ox-eye daisy 9; red sorrel 27
4507	Brewer Milling Co., Gosport Medium Clover, Lot 2-RB	Crabbs Reynolds Taylor Co., Crawfordsville, Ind	C	99.12	......	93.0	2.0	1–34	....	C	None
			F	99.0	0.24	93.0	0.0	4–34	2,619	F	Buckhorn 9
4129	Crabbs Reynolds Taylor Co., Lafayette Medium Red Clover, Lot 3-RF	Crabbs Reynolds Taylor Co., Crawfordsville, Ind	C	99.54	......	92.0	......	1–34	....	C	None
			F	99.7	0.02	89.5	3.5	2–34	360	F	Buckhorn 27; curled dock 9; red sorrel 9; yellow trefoil 45
4132	Crabbs Reynolds Taylor Co., Lafayette Mammoth Clover, Lot 7-ML	Crabbs Reynolds Taylor Co., Crawfordsville, Ind	C	99.8	......	90.0	5.0	11–33	....	C	None
			F	99.64	0.20	94.5	4.0	2–34	90	F	Buckhorn 27; curled dock 45; red sorrel 18
5107	Crabbs Reynolds Taylor Co., Linden Medium Clover, Lot 8-RF	Crabbs Reynolds Taylor Co., Crawfordsville, Ind	C	99.51	......	90.0	......	1–34	....	C	Buckhorn 88
			F	99.54	0.30	91.0	0.5	5–34	311	F	Buckhorn 216; dodder 5
5111	Crabbs Reynolds Taylor Co., Linden Mammoth Clover, Lot 7-ML	Crabbs Reynolds Taylor Co., Crawfordsville, Ind	C	99.8	......	90.0	5.0	11–33	....	C	None
			F	99.48	0.26	95.5	1.0	5–34	63	F	Curled dock 45; red sorrel 18
4673	Farmers Elevator Co., Monticello [128] Medium Clover, Lot 5-RF	Crabbs Reynolds Taylor Co., Crawfordsville, Ind	C	99.72	......	93.0	3.0	1–34	....	C	None
			F	99.76	0.20	95.5	1.0	4–34	18	F	Buckhorn 18
4780	Heise Bros. & Co., Mitchell Medium Clover, Lot 9-RF	Crabbs Reynolds Taylor Co., Crawfordsville, Ind	C	99.54	......	93.0	3.0	2–34	....	C	None
			F	99.64	0.12	96.5	1.5	5–34	495	F	Buckhorn 36; curled dock 9

3900	Logansport Elevator Co., South Side, Logansport	Crabbs Reynolds Taylor Co.,	C	99.4	......	94.0	1.0	7-33	......	C None
	Red Clover, Lot 2-RB	Crawfordsville, Ind	F	99.14	0.20	94.0	2.0	9-33	2,646	F Buckhorn 36; curled dock 81; red sorrel 9
4907	Miller Grain Co., Bainbridge	Crabbs Reynolds Taylor Co.,	C	98.56	......	85.0	5.0	2-34	......	C None
	Medium Clover, Lot 6-RF	Crawfordsville, Ind	F	98.62	0.08	91.0	1.0	5-34	2,223	F Buckhorn 45; curled dock 18; red sorrel 90
4727	Newcastle Elevator Co., Newcastle	Crabbs Reynolds Taylor Co.,	C	99.72	......	93.0	3.0	1-34	......	C None
	Medium Clover, Lot 5-RF	Crawfordsville, Ind	F	99.92	0.06	97.5	0.5	5-34	68	F Buckhorn 54; dodder 14
4528	†Armstrong-Landon Co., Kokomo[129]	Crawfordsville Seed Co.,	C	99.75	......	90.5	0.5	12-33	......	C None
	Medium Red Clover, Lot 114	Crawfordsville, Ind	F	99.92	0.02	98.5	0.0	4-34	279	F Curled dock 9
3894	Chance Bros., Connersville	Crawfordsville Seed Co.,	C	99.75	......	90.0	5.0	5-33	......	C None
	Medium Clover, Lot 171	Crawfordsville, Ind	F	99.9	0.04	95.5	1.0	9-33	279	F Buckhorn 9
4231	Evans & Hedworth, Remington	Crawfordsville Seed Co.,	C	99.75	......	90.0	5.0	1-34	......	C None
	Medium Red Clover, Lot 171	Crawfordsville, Ind	F	99.94	0.02	97.5	0.5	2-34	99	F Buckhorn 9
4717	Farmers Elevator Co., Oakville	Crawfordsville Seed Co.,	C	99.75	......	90.0	3.0	2-34	......	C None
	Mammoth Clover, Lot 273	Crawfordsville, Ind	F	99.78	0.02	92.0	1.0	4-34	......	F None
4725	Farmers Elevator Co., Oakville	Crawfordsville Seed Co.,	C	98.75	......	88.0	4.0	1-34	......	C None
	Medium Clover, Lot 104	Crawfordsville, Ind	F	98.44	0.20	89.5	1.5	4-34	1,548	F Red sorrel 18
4743	Farmers Elevator Co., Oakville	Crawfordsville Seed Co.,	C	99.75	......	90.0	5.0	2-34	......	C None
	Medium Clover, Lot 124	Crawfordsville, Ind	F	99.92	0.00	94.5	0.5	4-34	288	F Buckhorn 9; curled dock 9
4520	New Ross Grain & Lumber Co., New Ross	Crawfordsville Seed Co.,	C	99.75	......	90.0	......	11-33	......	C None
	Medium Clover, Lot 171	Crawfordsville, Ind	F	99.98	0.00	98.0	0.0	4-34	90	F None
4033	Sedalia Elevator, Sedalia	Crawfordsville Seed Co.,	C	99.75	......	90.0	5.0	5-33	......	C None
	Medium Clover, Lot 171	Crawfordsville, Ind	F	99.92	0.02	97.5	0.5	1-34	108	F Buckhorn 9; curled dock 9
4530	Sedalia Elevator, Sedalia	Crawfordsville Seed Co.,	C	99.0	......	88.0	2.0	1-34	......	C None
	Medium Clover, Lot 117	Crawfordsville, Ind	F	99.24	0.06	96.0	0.0	4-34	594	F Buckhorn 9; yellow trefoil 45
4388	Daviess County Farm Bureau Co-operative Assn., Inc., Washington	Daviess Co. Farm Bur. Co-op. Assn., Inc.,	C	99.17	......	85.5	7.0	1-34	......	C Buckhorn 1,620; common plantain 90; dodder 9
	H. G. Red Clover, Lot 1	Washington, Ind	F	98.25	0.60	89.5	5.5	4-34	4,923	F Bracted plantain 9; buckhorn 3,150; common plantain 765; wild carrot 9
4482	Decatur County Co-op. Co., Greensburg	Decatur County Co-operative Co.,	C	99.5	......	85.0	8.0	1-34	......	C None
	Mammoth Clover, Lot 409	Greensburg, Ind	F	99.78	0.07	93.0	3.5	4-34	477	F Buckhorn 9; curled dock 18
4485	Decatur County Co-op. Co., Greensburg	Decatur County Co-operative Co.,	C	99.6	......	86.0	8.0	1-34	......	C None
	Medium Clover, Lot 410	Greensburg, Ind	F	99.86	0.04	87.0	9.5	4-34	270	F None
4486	Decatur County Co-op. Co., Greensburg	Decatur County Co-operative Co.,	C	99.75	......	87.0	8.0	12-33	......	C None
	Mammoth Clover, Lot 1328	Greensburg, Ind	F	99.58	0.16	92.5	0.5	4-34	279	F Buckhorn 18; common plantain 81
4489	Decatur County Co-op. Co., Greensburg	Decatur County Co-operative Co.,	C	99.5	......	88.0	7.0	12-33	......	C None
	Medium Clover, Lot 290	Greensburg, Ind	F	99.62	0.12	91.5	8.5	4-34	315	F Buckhorn 27; common plantain 9; curled dock 9
4492	Decatur County Co-op. Co., Greensburg	Decatur County Co-operative Co.	C	99.6	......	87.0	7.0	1-33	......	C None
	Medium Clover, Lot 213	Greensburg, Ind	F	99.82	0.04	93.0	3.5	4-34	333	F Buckhorn 63
4531	†Armstrong-Landon Co., Kokomo	Dickinson Co., The Albert.	C	99.24	......	82.0	13.0	12-33	......	C None
	Little Red Clover, Lot O-24771	Chicago, Ill	F	99.5	0.14	77.5	19.5	4-34	900	F None
4940	Brown Supply Co., Valparaiso[130]	Dickinson Co., The Albert,	C	98.28	......	70.0	22.0	2-34	......	C None
	Medium Red Clover, Lot 241131	Chicago, Ill	F	96.83	0.48	73.5	21.5	3-34	2,700	F None

*Not labeled.

†Certified by Retailer.

C and F stands, respectively, for Claimed and Found.

[125] Removed from sale. Misbranded. Shipped out of state.

[126] Removed from sale. Misbranded. Returned to distributor.

[127] Removed from sale. Misbranded. All sold.

[128] Distributed by Crabbs-Reynolds-Taylor Co., Lafayette, Ind.

[129] Sample secured from Clark Van Auhm, Forest, Ind.

[130] Not tagged. Labels furnished. Removed from sale. Misbranded. Retagged.

RED CLOVER—Continued

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, per cent	Inert Matter, per cent	Germination, per cent	Hard Seeds, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seed		Number per Pound of each of the Noxious Weed Seeds Specified in the Law
4948	Brown Supply Co., Valparaiso Mammoth Clover, Lot 2375	Dickinson Co., The Albert, Chicago, Ill.	C	99.5	......	90.0	4.0	3-34	......	C	None
			F	99.54	0.06	93.5	3.0	5-34	459	F	Curled dock 9
5023	Hagerman & Co., H. J., South Bend Medium Red Clover, Lot 241147	Dickinson Co., The Albert, Chicago, Ill.	C	99.0	......	82.0	11.0	3-34	......	C	None
			F	99.48	0.06	99.0	0.5	5-34	729	F	Curled dock 9
4174	Knapp, C. E., South Bend Mammoth Red Clover, Lot 2333	Dickinson Co., The Albert, Chicago, Ill.	C	99.32	......	92.0	3.0	4-33	......	C	Buckhorn 112; red sorrel 64
			F	99.34	0.10	94.0	1.0	2-34	261	F	Buckhorn 9; curled dock 45; red sorrel 27
4635	Dotterer & Son, H. G., Bluffton[131] Little Red Clover, Lot 600	Dotterer & Son, H. G., Bluffton, Ind.	C	99.10	......	90.0	6.0	1-34	......	C	None
			F	98.75	0.46	89.0	6.5	4-34	3,627	F	Buckhorn 9; common plantain 990; curled dock 18
4484	Schmocker, John, Batesville Little Red Clover, Lot 60623	Durckman, Henry Batesville, Ind.	C	99.04	......	88.0	7.5	1-33	......	C	Buckhorn 1,710; common plantain 180
			F	98.78	0.18	90.0	5.0	4-34	3,492	F	Buckhorn 3,060; common plantain 342
5246	†Byers Seed Co., Franklin[132] Little Red Clover, Lot Ohio	Durlin, Wm., Franklin, Ind.	C	99.0	......	92.0	......	1-34	......	C	None
			F	97.54	0.24	94.0	4.0	5-34	4,662	F	Buckhorn 225; common plantain 63; wild carrot 54
4446	Sample, John L., Madison Sapling Clover, Lot 64368	Elliott, Clyde, Burney, Ind.	C	98.79	......	80.0	10.0	1-34	......	C	Buckhorn 720; curled dock 450; wild carrot 360
			F	99.28	0.24	86.0	11.5	4-34	855	F	Bracted plantain 54; buckhorn 369; common plantain 72; curled dock 225; wild carrot 45
4448	Sample, John L., Madison Sapling Clover, Lot 64367	Elliott, Perry, Burney, Ind.	C	98.0	......	89.0	9.0	1-34	......	C	None
			F	98.93	0.20	85.5	10.5	4-34	567	F	Bracted plantain 18; buckhorn 153; curled dock 126
4230	Evans & Hedworth, Remington Medium Clover, Lot 171	Evans & Hedworth, Remington, Ind.	C	99.75	......	90.0	5.0	2-33	......	C	None
			F	99.94	0.02	95.0	1.5	2-34	180	F	None
5122	Farmers Co-operative Co., Matthews[133] Medium Red Clover, Lot Twing	Farmers Co-operative Co., Matthews, Ind.	C	98.82	......	......	......	......	......	C	Mustard 18; wild carrot 18
			F	97.75	1.67	90.5	6.0	3-34	4,212	F	Common plantain 243; curled dock 9; prickly lettuce 225; wild carrot 315
4741	Red Key Grain Co., Red Key[134] Medium Red Clover, Lot 12	Farmers Equity Exchange, Van Buren, Ind.	C	98.84	......	85.5	10.5	12-33	......	C	Buckhorn 90
			F	97.23	1.39	87.5	6.5	5-34	5,391	F	Common plantain 351
4641	Finch & Weisel Elevator Co., Portland[135] Medium Clover, Lot T	Finch & Weisel Elevator Co., Portland, Ind.	C	98.0	......	90.0	......	2-34	......	C	None
			F	99.66	0.16	84.0	9.0	4-34	342	F	Common plantain 72; dodder 270
4567	†Armstrong-Landon Co., Kokomo Medium Red Clover, Lot R-94	Foster-Kendall Co., Carmel, Ind.	C	99.5	......	90.0	7.0	12-33	......	C	None
			F	99.48	0.22	89.0	8.5	4-34	189	F	Buckhorn 9
4276	Bottorff, D. M., Columbus Medium Red Clover, Lot R-94	Foster-Kendall Co., Carmel, Ind.	C	99.5	......	86.0	10.0	12-33	......	C	None
			F	99.78	0.14	92.0	7.5	2-34	36	F	Buckhorn 9; common plantain 27
4542	Central States Grain Assn., Shelbyville Medium Red Clover	Foster-Kendall Co., Carmel, Ind.	C	99.5	......	88.0	7.0	12-33	......	C	None
			F	99.74	0.22	91.5	1.0	4-34	135	F	Buckhorn 45; common plantain 90
4549	Central States Grain Assn., Shelbyville Medium Red Clover	Foster-Kendall Co., Carmel, Ind.	C	99.6	......	90.0	7.0	12-33	......	C	None
			F	99.7	0.12	92.0	5.5	4-34	504	F	Buckhorn 54

4828	Farmers Co-operative Co., Shideler	Foster-Kendall Co.,	C	99.4	......	90.0	7.0	12-33	....	C	None
	Medium Red Clover	Carmel, Ind.	F	99.68	0.20	93.0	3.5	5-34	45	F	Buckhorn 18; curled dock 27
4816	Farmers Elevator Co., Galveston	Foster-Kendall Co.,	C	99.6	......	90.0	7.0	12-33	....	C	None
	Medium Clover	Carmel, Ind.	F	99.58	0.04	93.0	3.0	5-34	306	F	Buckhorn 27; curled dock 9
4092	Foster-Kendall Co., Carmel	Foster-Kendall Co.,	C	99.16	......	95.0	4.0	12-33	....	C	Buckhorn 90
	Medium Red Clover, Lot R-95	Carmel, Ind.	F	98.6	0.40	89.0	9.0	1-34	360	F	None
4093	Foster-Kendall Co., Carmel	Foster-Kendall Co.,	C	99.3	......	89.0	8.0	12-33	....	C	Buckhorn 97; dodder 27
	Medium Red Clover, Lot R-76	Carmel, Ind.	F	99.4	0.02	88.5	5.5	1-34	1,850	F	Buckhorn 1,170; common plantain 27; dodder 23
4098	Foster-Kendall Co., Carmel	Foster-Kendall Co.,	C	99.5	......	92.0	5.0	12-33	....	C	Buckhorn 90; common plantain 18; dodder 9
	Medium Red Clover, Lot R-90	Carmel, Ind.	F	99.6	0.34	86.5	7.0	1-34	108	F	Buckhorn 72; curled dock 9; dodder 18; wild carrot 9
4100	Foster-Kendall Co., Carmel	Foster-Kendall Co.,	C	99.4	......	89.0	7.0	12-33	....	C	Buckhorn 90
	Medium Red Clover, Lot R-93	Carmel, Ind.	F	99.2	0.60	89.0	4.5	1-34	306	F	Buckhorn 117; common plantain 171; red sorrel 9; wild carrot 9
4104	Foster-Kendall Co., Carmel	Foster-Kendall Co.,	C	99.6	......	88.0	7.0	12-33	....	C	Buckhorn 18
	Medium Red Clover, Lot R-94	Carmel, Ind.	F	99.6	0.16	88.5	7.5	1-34	369	F	Curled dock 9
4973	Hallawell's Feed Store, North Vernon	Foster-Kendall Co.,	C	99.5	......	88.0	7.0	12-33	....	C	None
	Medium Red Clover	Carmel, Ind.	F	99.8	0.06	92.0	6.5	5-34	387	F	Buckhorn 18; wild carrot 9
5076	Jennings County Farm Bureau Co-operative Assn., Inc., North Vernon	Foster-Kendall Co.,	C	99.4	......	90.0	7.0	12-33	....	C	None
	Medium Red Clover	Carmel, Ind.	F	99.6	0.20	94.5	3.5	5-34	36	F	Buckhorn 27; common plantain 9
4652	Logansport Elevator Co., Logansport	Foster-Kendall Co.,	C	99.4	......	85.0	10.0	12-33	....	C	None
	Medium Red Clover	Carmel, Ind.	F	99.04	0.04	93.5	4.5	4-34	270	F	None
4451	Masters, Chas. L., Brookville	Foster-Kendall Co.,	C	99.5	......	86.0	10.0	12-33	....	C	None
	Medium Red Clover, Lot 94	Carmel, Ind.	F	99.56	0.28	92.5	5.5	4-34	....	F	None
5090	Maxwell Grain Co., Maxwell	Foster-Kendall Co.,	C	99.6	......	90.0	7.0	12-33	....	C	None
	Medium Red Clover	Carmel, Ind.	F	99.46	0.14	93.0	2.0	5-34	387	F	Buckhorn 117; common plantain 81; red sorrel 9
4204	Rush County Hatchery, Rushville	Foster-Kendall Co.,	C	99.5	......	80.0	16.0	12-33	....	C	None
	Medium Red Clover	Carmel, Ind.	F	99.7	0.20	91.0	5.5	2-34	369	F	Buckhorn 9
4465	Trow Co., W., Madison	Foster-Kendall Co.,	C	99.5	......	88.0	7.0	1-34	....	C	None
	Medium Red Clover	Carmel, Ind.	F	99.66	0.20	92.0	3.5	4-34	180	F	Common plantain 63; curled dock 18; red sorrel 9
4899	Wilson, John, Roachdale	Foster-Kendall Co.,	C	99.45	......	84.0	10.0	1-34	....	C	None
	Medium Red Clover	Carmel, Ind.	F	99.78	0.02	90.0	3.0	5-34	207	F	Buckhorn 18; wild carrot 9
5010	Wynn, Arlie S., Rochester	Foster-Kendall Co.,	C	99.4	......	86.0	10.0	12-33	....	C	None
	Medium Red Clover, Lot 95	Carmel, Ind.	F	98.86	0.12	92.5	5.5	5-34	18	F	Yellow trefoil 18
5081	Goodrich Bros. Co., Durbin	Goodrich Bros. Co.,	C	99.26	......	94.0	6.0	2-34	....	C	Buckhorn 990; curled dock 990
	Mammoth Clover, Lot 2	Durbin, Ind.	F	98.42	0.76	94.5	3.5	5-34	1,629	F	Buckhorn 450; common plantain 9; curled dock 1,080
4870	Goodrich Bros. Co., Eaton[136]	Goodrich Bros. Co.,	C	99.3	......	80.0	10.0	1-34	....	C	Buckhorn 90
	Medium Clover, Lot Lark	Eaton, Ind.	F	98.26	0.82	84.5	7.5	5-34	4,716	F	Buckhorn 36; common plantain 1,170; wild carrot 180
4358	Bell Elevator Co., Cottage Grove	Goodrich Bros. Co.,	C	99.4	......	85.0	14.0	12-33	....	C	None
	Mammoth Clover, Lot "Phil"	Winchester, Ind.	F	99.18	0.22	90.5	7.0	4-34	963	F	Buckhorn 126; common plantain 36; curled dock 54; red sorrel 27

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*Not labeled.

†Certified by Retailer.

C and F stands, respectively, for Claimed and Found.

[131] Removed from sale. Misbranded. All sold.

[132] Removed from sale. Misbranded. Placed in summer storage.

[133] Not tagged. Labels furnished. Tag incomplete.

[134] Removed from sale. Misbranded. Retagged.

[135] Removed from sale. Misbranded. Returned to owner.

[136] Removed from sale. Misbranded. Retagged.

RED CLOVER—Continued

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor	Purity, per cent	Inert Matter, per cent	Germination, per cent	Hard Seeds, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds	Number per Pound of each of the Noxious Weed Seeds Specified in the Law
4359	Bell Elevator Co., Cottage Grove	Goodrich Bros. Co., C	99.5	.....	90.0	8.0	12-33	....	C None
	Medium Clover, Lot Lark	Winchester, Ind F	99.68	0.10	88.5	3.0	4-34	279	F Buckhorn 9; common plantain 90
4034	Chance Bros., Connersville	Goodrich Bros. Co., C	99.56	......	90.0	......	9-33	....	C Common plantain 180
	Medium Clover, Lot Lark	Winchester, Ind F	99.8	0.10	88.5	9.5	1-34	378	F Buckhorn 18; common plantain 153; wild carrot 18; yellow trefoil 9
4046	Chance Bros., Connersville	Goodrich Bros. Co., C	99.56	......	90.0	......	9-33	....	C Buckhorn 45; curled dock 45
	Medium Clover	Winchester, Ind F	99.66	0.20	89.5	6.0	1-34	477	F Buckhorn 72; common plantain 342; curled dock 54; wild carrot 9
5116	Dickey, H., Parker	Goodrich Bros. Co., C	99.38	......	90.0	5.0	12-33	....	C None
	Medium Red Clover, Lot L-2	Winchester, Ind F	99.5	0.32	89.5	4.0	5-34	486	F Buckhorn 9; common plantain 117
4515	Farmers Feed & Coal Co., Bloomington	Goodrich Bros. Co., C	99.25	......	85.0	14.0	12-33	....	C Curled dock 180
	Mammoth Clover, Lot Quail	Winchester, Ind F	99.01	0.26	88.5	8.5	4-34	918	F Buckhorn 81; common plantain 90; curled dock 54; red sorrel 63
4263	Linwood Grain Co., Linwood, P. O. Alexandria	Goodrich Bros. Co., C	99.5	.....	92.0	......	1-34	....	C None
	Medium Clover, Lot Lark-2485-50	Winchester, Ind F	99.62	0.20	92.0	1.0	2-34	225	F common plantain 45
4509	Pennington Feed Store, Bloomington	Goodrich Bros. Co., C	99.36	......	90.0	8.0	12-33	....	C Buckhorn 630; curled dock 90; red sorrel 90
	Medium Clover, Lot Quail	Winchester, Ind F	99.02	0.38	93.5	0.0	4-34	1,143	F Buckhorn 540; common plantain 27; curled dock 18; red sorrel 18
5133	Graft, C. V., Winchester	Graft, C. V., C	98.8	......	95.0	......	2-34	....	C Curled dock 270
	Mammoth Clover, Lot 1	Winchester, Ind F	99.46	0.20	93.0	5.0	5-34	324	F Buckhorn 45; common plantain 243; curled dock 18; wild carrot 18
5059	Hancock County Farm Bureau Co-operative Assn., Inc., Greenfield	Hancock Co. Farm. Bureau Co-op Assn., Inc C	99.75	......	87.0	7.0	2-34	....	C None
	Medium Red Clover, Lot B-751	Greenfield, Ind F	99.84	0.08	96.0	1.5	5-34	14	F Curled dock 9; dodder 5
5060	Hancock County Farm Bureau Co-operative Assn., Inc., Greenfield	Hancock Co. Farm Bureau Co-op. Assn., Inc C	99.5	......	87.0	7.0	2-34	....	C None
	Mammoth Clover, Lot B-742	Greenfield, Ind F	99.42	0.00	96.5	0.5	5-34	....	F None
4572	*Hart, Oscar, Jasonville	Hart, Oscar, C	......	......	......	......	......	....	C
	Red Clover	Jasonville, Ind F	99.38	0.54	88.0	10.5	3-34	405	F Common plantain 45
4628	Haynes Milling Co., The, Portland	Haynes Milling Co., The, C	99.9	......	92.0	4.0	2-34	....	C None
	Little Red Clover, Lot VR	Portland, Ind F	99.4	0.40	90.0	3.5	4-34	954	F Buckhorn 72; common plantain 549; curled dock 9; dodder 36; wild carrot 18
4642	Haynes Milling Co., The, Portland	Haynes Milling Co., The, C	99.0	......	94.0	2.0	2-34	....	C Curled dock 450
	Big English Clover, Lot B. C	Portland, Ind F	98.51	0.73	91.0	6.0	4-34	513	F Buckhorn 27; common plantain 54; curled dock 306; red sorrel 27; wild carrot 9

4701	Heldt & Voelker Co., Evansville Thelco Red Clover, Lot 12649	Heldt & Voelker Co., Evansville, Ind	C	99.69		87.0	9.0	1-34		C Buckhorn 405
			F	99.6	0.20	88.0	4.0	4-34	918	F Buckhorn 828
4616	Murphy & Co., Princeton Red Clover, Lot 2893	Heldt Co., The Evansville, Ind	C	96.01		85.0	12.0	1-34		C Buckhorn 11,250
			F	97.04	0.06	78.5	7.5	5-34	11,898	F Bracted plantain 54; buckhorn 10,260; common plantain 9; dodder 36; red sorrel 9
4623	Murphy & Co., Princeton Red Clover, Lot 2894	Heldt Co., The, Evansville, Ind	C	98.57		87.0	9.0	1-34		C Buckhorn 27; common plantain 1,152; curled dock 9
			F	98.96	1.00	75.0	10.0	4-34	414	F Buckhorn 18; common plantain 396
4640	Hoosier Grain & Supply Co., Bluffton Little Red Clover	Hoosier Grain & Supply Co., Bluffton, Ind	C	99.24		89.0	6.5	2-34		C Curled dock 180
			F	99.4	0.26	94.5	2.0	4-34	954	F Buckhorn 9; common plantain 45
4862	†Hoosier Grain & Supply Co., Inc., Montpelier Medium Red Clover, Lot 605	Hoosier Grain & Supply Co., Bluffton, Ind	C	99.28		92.0		2-34		C None
			F	99.54	0.32	94.0	2.0	5-34	711	F Buckhorn 9; common plantain 45; curled dock 27
4869	†Hoosier Grain & Supply Co., Inc., Montpelier Red Clover, Lot 30	Hoosier Grain & Supply Co., Bluffton, Ind	C	99.24		89.0		2-34		C None
			F	99.22	0.50	98.5	0.5	5-34	864	F Buckhorn 18; common plantain 108; curled dock 9; dodder 9
4724	Hagerstown Grain Co., Hagerstown Medium Clover, Lot M-388	Hooton-Davis Seed Corporation, Lebanon, Ind	C	99.5		87.0	3.0	1-34		C None
			F	99.56	0.18	92.0	4.0	5-34	896	F Buckhorn 36; curled dock 36; dodder 14
4543	Morrison & Deprez, Shelbyville Mammoth Clover, Lot E-384	Hooton-Davis Seed Corporation, Lebanon, Ind	C	99.5		89.0	3.0	9-33		C None
			F	99.62	0.04	92.5	2.5	4-34	108	F Curled dock 18
4554	Morrison & Deprez, Shelbyville Medium Clover, Lot M-388	Hooton-Davis Seed Corporation, Lebanon, Ind	C	99.5		89.0	3.0	9-33		C None
			F	99.48	0.20	91.0	5.0	4-34	558	F Buckhorn 81; curled dock 27
4062	Clark County Farm Bureau Co-operative Assn., Inc., Jeffersonville Medium Red Clover, Lot RC-182	Indiana Farm Bureau Co-op. Assn., Inc., Indianapolis, Ind	C	99.75		87.0	7.0	11-33		C None
			F	99.9	0.08	96.0	3.0	1-34	18	F Buckhorn 18
4071	Clark County Farm Bureau Co-operative Assn., Inc., Jeffersonville Mammoth Clover, Lot MC-282	Indiana Farm Bureau Co-op. Assn., Inc., Indianapolis, Ind	C	99.75		87.0	7.0	11-33		C None
			F	99.96	0.04	90.0	4.5	1-34	9	F Buckhorn 9
5119	Farmers Co-operative Co., Selma Medium Clover, Lot RC-184	Indiana Farm Bureau Co-op. Assn., Inc., Indianapolis, Ind	C	99.75		87.0	7.0	1-34		C None
			F	99.56	0.42	96.5	1.0	5-34	23	F Buckhorn 9; dodder 14
4863	Grant County Farm Bureau Co-operative Assn., Inc., Marion Medium Red Clover, Lot RC-185	Indiana Farm Bureau Co-op. Assn., Inc., Indianapolis, Ind	C	99.75		87.0	7.0	1-34		C None
			F	99.84	0.14	96.5	2.0	5-34		F None
4744	Henry County Farm Bureau Co-operative Assn., Inc., Newcastle Medium Red Clover, Lot RC-185	Indiana Farm Bureau Co-op. Assn., Inc., Indianapolis, Ind	C	99.25		87.0	7.0	1-34		C None
			F	99.85	0.09	93.0	5.5	5-34		F None
4555	Howard County Farm Bureau Co-operative Assn., Inc., Kokomo Medium Red Clover, Lot RC-184	Indiana Farm Bureau Co-op. Assn., Inc., Indianapolis, Ind	C	99.7		87.0	7.0	1-34		C None
			F	99.56	0.40	89.5	5.0	4-34	27	F Buckhorn 18; yellow trefoil 9
4474	Jefferson County Farm Bureau Co-operative Assn., Inc., Madison Mammoth Clover, Lot MC-281	Indiana Farm Bureau Co-op. Assn., Inc., Indianapolis, Ind	C	99.75		87.0	7.0	1-34		C None
			F	99.8	0.10	93.0	4.5	4-34	18	F common plantain 9; curled dock 9
4475	Ripley County Farm Bureau Co-operative Assn., Inc., Osgood Medium Red Clover, Lot RC-184	Indiana Farm Bureau Co-op. Assn., Inc., Indianapolis, Ind	C	99.75		87.0	7.0	1-34		C None
			F	99.82	0.04	91.0	6.0	4-34	90	F None

*Not labeled.
†Certified by Retailer.

C and F stands, respectively, for Claimed and Found.

[137] Removed from sale. Misbranded. Retagged.

RED CLOVER—Continued

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, per cent	Inert Matter, per cent	Germination, per cent	Hard Seeds, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds	Number per Pound of each of the Noxious Weed Seeds Specified in the Law
4478	Ripley County Farm Bureau Co-operative Assn., Inc., Osgood Mammoth Clover, Lot MC-281	Indiana Farm Bureau Co-op. Assn., Inc., Indianapolis, Ind.	C F	99.75 99.84	...... 0.04	87.0 91.0	7.0 2.5	1-34 4-34	....	C None F None
5099	Tipton County Farm Bureau Co-operative Assn., Inc., Tipton Medium Red Clover, Lot RC-184	Indiana Farm Bureau Co-op. Assn., Inc., Indianapolis, Ind.	C F	99.75 99.78	...... 0.16	87.0 93.5	7.0 5.0	1-34 5-34	 5	C None F Dodder 5
4667	Wabash County Farm Bureau Co-operative Assn., Inc., Wabash Medium Red Clover, Lot RC-185	Indiana Farm Bureau Co-op. Assn., Inc., Indianapolis, Ind.	C F	99.75 99.88	...... 0.10	87.0 96.0	7.0 1.0	1-34 4-34	 99	C None F Buckhorn 9
4765	Wayne County Farm Bureau Co-operative Assn., Inc., Richmond Medium Red Clover, Lot RC-185	Indiana Farm Bureau Co-op. Assn., Inc., Indianapolis, Ind.	C F	99.75 99.8	...... 0.20	88.0 94.0	6.0 2.5	2-34 5-34	 9	C None F Buckhorn 9
5129	Graft, C. V., Winchester Medium Clover, Lot I-1472	Indiana Seed Co., Indianapolis, Ind.	C F	99.35 99.58	...... 0.34	83.0 93.5	8.0 4.5	1-34 5-34	 212	C None F Bracted plantain 9; buckhorn 81; dodder 23; wild carrot 9
4488	Nading Grain Co., Wm., Greensburg Medium Clover, Lot I-73	Indiana Seed Co., Indianapolis, Ind.	C F	99.5 99.54	...... 0.20	82.0 88.5	12.0 5.0	1-34 4-34	 1,395	C None F Buckhorn 99; common plantain 27; wild carrot 9
4493	Nading Grain Co., Wm., Greensburg Mammoth Clover, Lot I-198	Indiana Seed Co., Indianapolis, Ind.	C F	99.6 99.6	...... 0.06	87.0 90.0	5.0 6.5	1-34 4-34	 162	C None F Buckhorn 27; curled dock 126; red sorrel 9
5065	Risk, C. B., Knightstown Medium Clover, Lot B-439	Indiana Seed Co., Indianapolis, Ind.	C F	97.0 96.41	...... 0.36	85.0 93.5	7.0 3.5	12-33 5-34	 3,942	C Buckhorn 167; common plantain 45 F Buckhorn 189; common plantain 108; wild carrot 9; yellow trefoil 36
4719	Roller, W. M., Greens Fork Medium Clover, Lot I-1472	Indiana Seed Co., Indianapolis, Ind.	C F	99.35 99.68	...... 0.20	83.0 86.0	8.0 8.5	1-34 4-34	 342	C None F Bracted plantain 9; buckhorn 27; common plantain 36
5070	Sunshine Feed Store, Greenfield Medium Clover, Lot B-1142	Indiana Seed Co., Indianapolis, Ind.	C F	99.7 99.52	...... 0.18	90.0 98.0	1.0 0.5	1-34 5-34	 329	C None F Common plantain 54; dodder 5
4191	Sunshine Feed Store, Rushville Medium Clover, Lot B-455	Indiana Seed Co., Indianapolis, Ind.	C F	99.5 99.88	...... 0.04	84.0 91.5	7.0 3.5	1-34 2-34	 198	C None F Buckhorn 9; curled dock 9
4201	Sunshine Feed Store, Rushville Mammoth Red Clover, Lot I-198	Indiana Seed Co., Indianapolis, Ind.	C F	99.6 99.6	...... 0.08	87.0 91.0	5.0 5.0	1-34 2-34	 333	C None F Buckhorn 18; common plantain 36; curled dock 81; red sorrel 18
4224	Sunshine Feed Store, Terre Haute Medium Clover, Lot B-455	Indiana Seed Co., Indianapolis, Ind.	C F	99.7 99.86	...... 0.08	90.0 94.5	2.0 4.0	1-34 2-34	 288	C None F Bracted plantain 9; buckhorn 9
4272	Throckmorton Seed Store, Franklin Medium Clover, Lot I-1491	Indiana Seed Co., Indianapolis, Ind.	C F	99.54 99.54	...... 0.36	84.0 89.0	6.0 7.0	1-34 2-34	 270	C None F Buckhorn 36; common plantain 144
4728	Woodbury-Elliott Grain Co., Muncie[188] Medium Clover, Lot I-1472	Indiana Seed Co., Indianapolis, Ind.	C F	99.35 99.5	...... 0.29	83.0 86.5	7.0 10.0	1-34 4-34	 846	C Buckhorn 63 F Buckhorn 54; curled dock 18; dodder 45; red sorrel 9

4742	Beach & Simmers, Albany Medium Red Clover, Lot C	Kraus, Sam, Ft. Wayne, Ind.	C	99.7	......	87.0	9.0	1-34	......	C	None
			F	99.78	0.20	83.0	13.5	5-34	54	F	Common plantain 54
5032	Steckley's Feed Mill, Kendallville[139] Medium Red Clover, Lot C	Kraus, Sam, Fort Wayne, Ind.	C	99.7	......	87.0	9.0	1-34	......	C	None
			F	99.98	0.00	92.5	4.5	5-34	41	F	Buckhorn 36; dodder 5
4130	Lafayette Co-op. Elevator Co., Lafayette Little Red Clover, Lot 1	Lafayette Co-operative Elevator Co., Lafayette, Ind.	C	99.75	......	94.0	1.0	12-33	......	C	None
			F	99.96	0.02	98.0	0.5	2-34	9	F	Curled dock 9
4288	Batman, A. J., Marengo[140] Red Clover, Lot Red Bird	Lewis Implement & Seed Co. Louisville, Ky.	C	99.0	......	85.0	10.0	1-34	......	C	Buckhorn 90
			F	98.56	0.34	89.0	8.0	2-34	4,041	F	Bracted plantain 90; buckhorn 162; common plantain 153; curled dock 45; dodder 63; wild carrot 18
4305	Briner, C. J., Crothersville[140] Sapling Clover, Lot Lisco	Lewis Implement & Seed Co., Louisville, Ky.	C	97.0	......	82.0	12.0	12-33	......	C	Buckhorn 130; red sorrel 122
			F	95.21	0.36	93.5	4.5	3-34	11,952	F	Buckhorn 1,080; common plantain 27; curled dock 603; dodder 9; red sorrel 117; wild carrot 36; yellow trefoil 7,380
4331	Lutz-Boyd Hdwe. Co., Charlestown[140] Sapling Clover, Lot Red Bird	Lewis Implement & Seed Co., Louisville, Ky.	C	98.39	......	92.0	5.0	1-34	......	C	Curled dock 40
			F	96.32	0.44	93.0	2.0	3-34	6,345	F	Common plantain 9; curled dock 225; red sorrel 81
4332	Lutz-Boyd Hdwe. Co., Charlestown Red Clover, Lot Red Bird	Lewis Implement & Seed Co., Louisville, Ky.	C	99.34	......	91.0	6.0	1-34	......	C	Buckhorn 400
			F	98.98	0.40	92.5	5.0	3-34	855	F	Buckhorn 288; curled dock 27
4259	Linwood Grain Co., Linwood, P. O. Alexandria[141] Medium Clover, Lot FC	Linwood Grain Co., Linwood, P. O., Alexandria, Ind.	C	98.96	......	94.0	......	......	......	C	Buckhorn 1,080; red sorrel 90
			F	98.7	0.68	89.0	8.0	2-34	3,024	F	Buckhorn 1,080; common plantain 567; curled dock 18; red sorrel 9
5264	Lowell Grain & Hay Co., Lowell Red Clover, Lot D	Lowell Grain & Hay Co., Lowell, Ind.	C	95.0	......	90.0	......	4-34	......	C	Buckhorn 1,000; common plantain 500; red sorrel 100
			F	98.46	0.10	91.0	7.5	4-34	5,229	F	Buckhorn 5,130; red sorrel 90; wild carrot 9
4965	Lyon & Hershman, Brook[142] Little Red Clover, Lot S-4965	Lyon & Hershman, Brook, Ind.	C	90.0	......	85.0	......	3-34	......	C	None
			F	97.99	1.41	81.0	9.0	5-34	5,697	F	Common plantain 2,160; wild carrot 567
4261	McCordsville Grain Co., McCordsville Big English Clover, Lot VR	McCordsville Grain Co., McCordsville, Ind.	C	99.84	......	85.5	10.0	12-33	......	C	Curled dock 81
			F	99.75	0.21	93.5	3.5	2-34	135	F	Curled dock 45
4373	Farm Bureau Feed Store, Milan Mammoth or Sapling Clover, Lot 1081	McCullough Seed Co., The J. Chas., Cincinnati, Ohio	C	99.6	......	86.0	9.0	12-33	......	C	None
			F	99.4	0.20	93.0	5.5	4-34	828	F	Buckhorn 9; chicory 9
4369	Krick & Son, A., Milan Mammoth or Sapling Clover, Lot 6932	McCullough Seed Co., The J. Chas., Cincinnati, ohio	C	99.58	......	91.0	5.0	9-33	......	C	None
			F	99.1	0.24	95.5	4.0	4-34	342	F	Buckhorn 18; curled dock 27; mustard 27
4376	Krick & Son, A., Milan Domestic Medium Red Clover, Lot 6633	McCullough Seed Co., The J. Chas., Cincinnati, Ohio	C	99.5	......	92.0	4.0	8-33	......	C	None
			F	99.44	0.20	92.0	6.5	4-34	396	F	Buckhorn 45; common plantain 72; dodder 9
4970	Linkhart & Son, North Vernon Domestic Medium Red Clover, Lot 1005	McCullough Seed Co., The J. Chas., Cincinnati, Ohio	C	99.32	......	92.0	4.0	12-33	......	C	None
			F	99.64	0.16	94.5	4.5	5-34	765	F	Buckhorn 36; curled dock 9
4951	McMahan Seed Co., Valparaiso Medium Clover, Lot 1	McMahan Seed Co., Valparaiso, Ind.	C	99.65	......	93.0	4.0	1-34	......	C	None
			F	99.76	0.20	93.5	2.5	5-34	198	F	Buckhorn 9; common plantain 36; curled dock 9; red sorrel 9; wild carrot 45

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*Not labeled.
†Certified by Retailer.
C and F stands, respectively, for Claimed and Found.
[138] Removed from sale. Misbranded. All sold.

[139] Distributed by Williams Co. Farm Bureau, Montpelier, Ohio.
[140] Removed from sale. Misbranded. Retagged.
[141] Tag incomplete.
[142] Not tagged. Labels furnished. Removed from sale. Misbranded. Retagged.

RED CLOVER—Continued

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, per cent	Inert Matter per cent	Germination, per cent	Hard Seed, per cent	Date of Germination	Total Number, Weed Seeds per lb. of Seeds		Number per Pound of each of the Noxious Weed Seeds Specified in the Law
4952	McMahan Seed Co., Valparaiso Medium Red Clover, Lot Halberg	McMahan Seed Co., Valparaiso, Ind	C	99.5		93.0	1.0	2-34		C	None
			F	99.62	0.12	89.5	2.5	5-34	225	F	Buckhorn 27; common plantain 18
4937	Tuholski Feed Co., Michigan City Red Clover	McMahan Seed Co., Valparaiso, Ind	C	99.69		93.0	3.0	1-34		C	None
			F	99.9	0.08	95.0	2.5	5-34	63	F	Buckhorn 63
4439	Aurora Flour & Feed Co., Aurora Red Clover, Lot VEB-1	Market Gardener Seed Co., The, Cincinnati, Ohio	C	99.4		90.0	3.0	10-33		C	Buckhorn 540
			F	99.2	0.30	88.5	8.5	3-34	2,088	F	Buckhorn 585; common plantain 900; curled dock 9; prickly lettuce 9; wild carrot 45
4441	Tuxedo Feed & Supply Co., Aurora [143] Sapling Clover, Lot VEB-513	Market Gardener Seed Co., The, Cincinnati, Ohio	C	99.5		89.0	5.0	9-33		C	None
			F	99.18	0.22	84.5	6.5	3-34	10,647	F	Bracted plantain 9; buckhorn 117; common plantain 45; curled dock 54; red sorrel 333; wild carrot 9
4445	Tuxedo Feed & Supply Co., Aurora [143] Red Clover, Lot 1-VEB	Market Gardener Seed Co., The, Cincinnati, Ohio	C	99.4		90.0	3.0	10-33		C	Buckhorn 540
			F	99.3	0.22	89.0	7.5	3-34	2,484	F	Buckhorn 360; common plantain 1,530; curled dock 18; wild carrot 36
5087	Maxwell Grain Co., Maxwell[144] Mammoth Clover	Maxwell Grain Co., Maxwell, Ind	C	99.5		93.0		12-33		C	None
			F	97.24	0.36	91.5	4.5	5-34	1,566	F	Buckhorn 180; common plantain 459; curled dock 333; wild carrot 324
5223	Mayer Grain Co., Denver Medium Red Clover, Lot R	Mayer Grain Co., South Whitley, Ind	C	99.75		86.0	6.0	1-34		C	None
			F	99.46	0.38	95.5	3.0	5-34	126	F	Buckhorn 27; curled dock 9
5003	†Mayer Grain Co., Fulton Medium Clover	Mayer Grain Co., South Whitley, Ind	C	99.75		86.0	6.0	1-34		C	None
			F	99.42	0.30	94.5	2.0	5-34	243	F	Common plantain 63
4076	†Carman Supply Co., Lynn Mammoth Clover, Lot MER-3	New Paris Elevator Co., New Paris, Ohio	C	98.38		89.0	2.0	11-33		C	Buckhorn 360; curled dock 180
			F	98.24	0.90	79.0	8.0	2-34	369	F	Common plantain 162; curled dock 27
4077	†Carman Supply Co., Lynn [145] Medium Red Clover, Lot GR-4	New Paris Elevator Co.,	C	98.38		88.0	5.0	11-33		C	Buckhorn 450; common plantain 540
		New Paris, Ohio	F	96.91	0.66	86.0	7.0	1-34	7,997	F	Buckhorn 2,610; common plantain 522; dodder 5
5142	†Carman Supply Co., Lynn Mammoth Clover, Lot Mer-3	New Paris Elevator Co., New Paris, Ohio	C	98.38		89.0		11-33		C	Buckhorn 360; curled dock 180
			F	97.67	0.32	92.5	3.5	5-34	792	F	Buckhorn 45; common plantain 162; curled dock 36; mustard 9
4050	Young & Cox, Richmond [145] Medium Red Clover, Lot GR-4	New Paris Elevator Co.,	C	98.38		89.0	5.0	12-33		C	Buckhorn 180; common plantain 240
		New Paris, Ohio	F	98.92	0.26	85.5	10.5	1-34	3,555	F	Buckhorn 594; common plantain 900; dodder 45; wild carrot 36
3931	*New Ross Grain & Lumber Co., New Ross Little Red Clover, Lot Walker	New Ross Grain & Lumber Co., New Ross, Ind	C							C	
			F	98.84	0.48	63.0	31.5	11-33	3,385	F	Buckhorn 990; common plantain 1,440; curled dock 126; wild carrot 9

5040	Noragon & Son, Butler Medium Clover	Noragon & Son, Butler, Ind	C	99.18		82.0	10.0	2–34		C	Buckhorn 990; common plantain 90
			F	99.44	0.27	88.0	6.0	5–34	441	F	Buckhorn 216; common plantain 108; curled dock 9; wild carrot 108
4392	Wheatland Grain Co., Wheatland[146] Rex Red Clover, Lot B-14	Ohio Valley Seed Co., Evansville, Ind	C	99.0		90.0		1–34		C	Buckhorn 25
			F	99.56	0.12	95.5	0.0	4–34	1,080	F	Buckhorn 1,080
4402	Osburn, A. R., Bloomfield Medium Clover, Lot 3	Osburn A. R., Bloomfield, Ind	C	99.6		90.0	6.5	1–34		C	Buckhorn 720; common plantain 18
			F	99.48	0.20	87.5	7.5	4–34	1,620	F	Buckhorn 1,080; common plantain 531; curled dock 9
4405	Osburn, A. R., Bloomfield Mammoth Clover, Lot 2	Osburn, A. R.,	C	97.27		90.0	3.0	1–34		C	Buckhorn 90; curled dock 3,960; red sorrel 90
		Bloomfield, Ind	F	99.84	0.02	90.5	3.0	4–34	63	F	Bracted plantain 27; buckhorn 9; common plantain 9; curled dock 18
5021	Paxson, C. E., Elkhart[147] Mammoth Clover	Paxson, C. E., Elkhart, Ind	C	97.0		93.0		12–33		C	None
			F	99.22	0.02	93.0	5.0	5–34	5,139	F	Buckhorn 324; curled dock 225; red sorrel 4,590
5022	Paxson, C. E., Elkhart[148] Common Clover	Paxson, C. E., Elkhart, Ind	C	97.0		94.0		12–33		C	None
			F	98.54	0.56	90.0	8.5	5–34	2,592	F	Buckhorn 2,340; common plantain 162
4605	Griffin Hdwe. Co., Carlisle Medium Red Clover	Quinlan Seed Store, Terre Haute	C	99.72		94.0		12–33		C	Buckhorn 90
			F	99.72	0.24	91.5	5.5	4–34	324	F	Buckhorn 9; common plantain 27; curled dock 18
4892	Reid, V. T., Salem[148] Red Clover, Lot 2	Reid, V. T., Salem, Ind	C	99.0		90.0		2–34		C	Buckhorn 120
			F	98.28	0.32	86.0	9.0	3–34	4,959	F	Bracted plantain 180; buckhorn 4,770; common plantain 9
4945	Rogers & Link, Westville Medium Red Clover, Lot 63	Rogers & Link,	C	99.11		81.5	17.0	2–34		C	Buckhorn 2,160; common plantain 50; curled dock 50; red sorrel 50
		Westville, Ind	F	99.3	0.08	90.5	6.5	5–34	2,129	F	Buckhorn 1,170; curled dock 27; dodder 5; red sorrel 18; wild carrot 9
4109	Brownstown Feed Exchange, Brownstown Red Clover, Lot 534	Ross Seed Co., Louisville, Ky	C	99.5		80.0	10.0	11–33		C	None
			F	99.56	0.22	86.0	10.0	1–34	504	F	Common plantain 45; red sorrel 9
4112	Brownstown Feed Exchange, Brownstown Sapling Clover, Lot 455	Ross Seed Co., Louisville, Ky	C	99.5		80.0	10.0	11–33		C	None
			F	99.32	0.64	78.0	20.5	1–34	180	F	Curled dock 180
4887	Brownstown Feed Exchange, Brownstown Sapling Clover	Ross Seed Co., Louisville, Ky	C	99.5		78.0	14.0	1–34		C	Bracted plantain 90
			F	99.82	0.14	89.5	10.0	5–34	9	F	Bracted plantain 9
4300	Farmers Co-op. Elevator Co., Seymour Red Clover, Lot 534	Ross Seed Co., Louisville, Ky	C	99.5		80.0	10.0	11–33		C	None
			F	99.66	0.24	89.5	5.5	3–34	108	F	Bracted plantain 18
4460	Hunter & Son, W. M., Versailles Sapling Clover	Ross Seed Co., Louisville, Ky	C	99.43		88.0	11.0	1–34		C	Bracted plantain 90
			F	99.64	0.26	82.5	13.0	4–34	27	F	Bracted plantain 27
4466	Hunter & Son, W. M., Versailles Red Clover	Ross Seed Co., Louisville, Ky	C	99.5		78.0	17.0	1–34		C	None
			F	99.56	0.40	94.5	4.0	4–34	117	F	Buckhorn 9; curled dock 18
4350	McCampbell, Ralph, French Lick Red Clover, Lot 508	Ross Seed Co., Louisville, Ky	C	99.5		80.0	12.0	1–34		C	Buckhorn 1,080
			F	99.38	0.20	79.5	5.5	4–34	1,562	F	Buckhorn 1,251; common plantain 90; curled dock 27; dodder 14

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*Not labeled.

†Certified by Retailer.

C and F stands, respectively, for Claimed and Found.

[143] Removed from sale. Misbranded. Retagged.

[144] Removed from sale. Misbranded. All sold.

[145] Removed from sale. Misbranded. Returned to distributor.

[146] Removed from sale. Misbranded. Returned to distributor.

[147] Removed from sale. Misbranded. Retagged.

[148] Removed from sale. Misbranded. All sold.

RED CLOVER—Continued

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor	Purity, per cent	Inert Matter, per cent	Germination, per cent	Hard Seeds, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds	Number per Pound of each of the Noxious Weed Seeds Specified in the Law
4806	Clinton County Farm Bureau Co-operative Assn., Inc., Frankfort	Rothenberger, Geo., C	99.92	......	91.0	2.5	1-34	....	C None
	Mammoth Clover	Frankfort, Ind. F	99.3	0.12	92.5	2.5	5-34	36	F Buckhorn 18; curled dock 18
4712	Marvel, Byron O., Owensville[149]	Rushville Farmers Grain & Live Stock Co., C	99.7	......	89.0	7.0	2-34	....	C Curled dock 16
	Medium Red Clover, Lot 1	Rushville, Ill. F	99.64	0.16	89.5	10.0	3-34	621	F Bracted plantain 18; common plantain 54; curled dock 9
4614	*Strate-Pielemeier Hdwe. Co., Edwardsport	Sager, Alf., C	......	......	......	......	......	....	C
	Red Clover	Edwardsport, Ind. F	93.76	3.01	87.5	3.5	3-34	10,620	F Buckhorn 10,170
4483	Schmocker, John, Batesville	Schmocker, John, C	98.9	......	84.0	6.0	3-33	......	C Buckhorn 180
	Mammoth Clover, Lot 63860	Batesville, Ind. F	98.44	0.18	87.5	6.5	4-34	171	F Buckhorn 81
4686	Schultheis, A. M., Haubstadt	Schultheis, A. M., C	99.66	......	79.5	......	11-33	......	C Buckhorn 540
	Medium Red Clover, Lot 100	Haubstadt, Ind. F	99.88	0.02	86.0	7.0	4-34	477	F Buckhorn 432; common plantain 45
4983	Hayes & Dodds, Campbellsburg	Scott Seed Co., C	97.0	......	75.0	15.0	1-34	....	C Buckhorn 1,260; curled dock 360; red sorrel 270
	Sapling Clover, Lot 452	New Albany, Ind. F	97.04	0.38	83.0	2.5	5-34	6,786	F Bracted plantain 9; buckhorn 3,780; common plantain 27; curled dock 9; dodder 45; red sorrel 126
4429	Irwin Feed Store & Hatchery, Madison	Scott Seed Co., C	95.5	......	90.0	......	8-33	....	C Buckhorn 90; curled dock 180
	Red Clover, Lot 26-A	New Albany, Ind. F	93.34	0.96	91.0	1.5	4-34	9,414	F Buckhorn 18; Canada thistle 9; common plantain 18; curled dock 288; mustard 27; red sorrel 54
4324	James Seed Co., Jeffersonville	Scott Seed Co., C	99.0	......	75.0	20.0	11-33	....	C Buckhorn 180; curled dock 180
	A. B. Red Clover, Lot 108	New Albany, Ind. F	99.14	0.08	83.5	6.0	2-34	1,152	F Buckhorn 252; curled dock 54; mustard 45; red sorrel 18; yellow trefoil 423
4339	James Seed Co., Jeffersonville[150]	Scott Seed Co., C	97.0	......	80.0	12.0	12-33	....	C Buckhorn 540; curled dock 720; red sorrel 180
	Sapling Clover, Lot 447	New Albany, Ind. F	95.26	0.52	88.5	4.0	2-34	10,634	F Buckhorn 837; chicory 9; common plantain 27; curled dock 900; dodder 23; mustard 18; red sorrel 144; wild carrot 36; yellow trefoil 4,590
4340	James Seed Co, Jeffersonville	Scott Seed Co., C	95.5	......	75.0	15.0	8-33	....	C Buckhorn 90; curled dock 180
	Red Clover, Lot 26-A	New Albany, Ind. F	94.13	0.79	93.5	0.5	2-34	6,305	F Bracted plantain 18; buckhorn 45; Canada thistle 18; curled dock 252; dodder 5; mustard 27; red sorrel 72; wild carrot 9; yellow trefoil 9
4880	Reid, Volney T., Salem	Scott Seed Co., C	99.5	......	80.0	12.0	1-34	....	C Buckhorn 90
	Sapling Clover, Lot 458	New Albany, Ind. F	99.62	0.00	93.5	3.0	5-34	1,017	F Buckhorn 900; red sorrel 9; wild carrot 18

4799	Scarlett, Elmer, West Baden	Scott Seed Co.,	C	99.5		80.0	12.0	1–34		C Buckhorn 90
	Red Clover, Lot 60	New Albany, Ind	F	99.86	0.06	89.0	3.0	5–34	225	F Buckhorn 225
4292	Tower & Merryman, Marengo[150]	Scott Seed Co.,	C	96.0		75.0	18.0	3–33		C Buckhorn 90; curled dock 180
	Red Clover, Lot 26-A	New Albany, Ind	F	92.93	0.68	92.5	1.0	3–34	9,666	F Bracted plantain 9; buckhorn 9; common plantain 9; curled dock 324; mustard 63; red sorrel 72
4534	Sellars Grain Co., Russiaville	Sellars Grain Co.,	C	99.25		80.0	17.0	1–34		C None
	Medium Red Clover, Lot 1	Forest, Ind	F	99.66	0.20	87.5	6.5	4–34	1,125	F Bracted plantain 9; buckhorn 297; common plantain 81; red sorrel 9; wild carrot 9
4541	Sellars Grain Co., Russiaville	Sellars Grain Co.,	C	99.25		84.0	7.0	1–34		C Curled dock 180
	Mammoth Clover	Forest, Ind	F	99.54	0.08	83.5	3.0	4–34	567	F Buckhorn 9; common plantain 9; curled dock 351; red sorrel 18
4809	Shanklin Hdwe. Co., Frankfort	Shanklin Hdwe. Co.,	C	99.5		87.0	2.0	1–34		C None
	Medium Clover, Lot M-386	Frankfort, Ind	F	99.66	0.26	98.0	0.5	5–34	369	F Buckhorn 36; common plantain 54; curled dock 9
4546	Shelby County Farm Bureau Co-operative Assn., Inc., Shelbyville	Shelby Co. Farm Bur. Co-op. Assn., Inc.,	C	99.75		89.0	5.0	12–33		C None
	Mammoth Clover, Lot 1	Shelbyville, Ind	F	99.76	0.04	95.0	2.0	4–34	9	F Buckhorn 9
4547	Shelby County Farm Bureau Co-operative Assn., Inc., Shelbyville[150]	Shelby Co. Farm Bur. Co-op. Assn., Inc.,	C	99.75		89.0	5.0	12–33		C None
	Medium Red Clover, Lot 1-A	Shelbyville, Ind	F	99.78	0.04	94.5	3.5	4–34	1,139	F Buckhorn 99; common plantain 675; dodder 5
4440	Sample, John L., Madison	Sherer, Carl,	C	99.0		80.0	15.0	2–34		C None
	Red Clover, Lot 707	Mount Vernon, Ind	F	99.72	0.28	85.0	5.0	4–34	68	F Buckhorn 27; curled dock 18; dodder 14; red sorrel 9
4443	Sample, John L., Madison	Sherer, Carl,	C	99.0		85.0	10.0	11–33		C Buckhorn 560; curled dock 90
	Red Clover, Lot 7	Mount Vernon, Ind	F	99.62	0.04	79.5	14.5	4–34	1,755	F Buckhorn 549; common plantain 1,170; curled dock 36
4216	Standard Hatcheries, Terre Haute	Standard Hatcheries,	C	99.72		94.0		1–34		C Buckhorn 90
	Medium Clover	Terre Haute, Ind	F	99.72	0.24	81.0	16.0	2–34	90	F Buckhorn 90
4930	Farmers Co-op. Elevator, Westville[151]	Standard Seed Co.,	C	99.25		78.0	14.0	2–34		C None
	Medium Red Clover, Lot 12326	Chicago, Ill	F	98.16	0.16	66.0	32.0	5–34	2,367	F Curled dock 90; dodder 36; yellow trefoil 81
5173	†Mishawaka Grain & Coal Co., Mishawaka[152]	Standard Seed Co.,	C	99.25		92.0		2–34		C None
	Medium Red Clover, Lot 12326	Chicago, Ill	F	98.52	0.20	72.5	23.0	4–34	2,376	F Curled dock 18; yellow trefoil 108
5175	Mishawaka Grain & Coal Co., Mishawaka	Standard Seed Co.,	C	99.25		92.0		2–34		C None
	Medium Red Clover, Lot 12350	Chicago, Ill	F	99.2	0.26	93.5	3.0	4–34	1,098	F Buckhorn 18
4925	Union Center Equity Exchange, Union Center, P. O. Kingsbury[151]	Standard Seed Co.,	C	99.25		80.0	13.0	1–34		C None
	Medium Red Clover, Lot 12326	Chicago, I.ll	F	97.78	0.12	69.5	30.0	5–34	3,735	F Curled dock 72; dodder 45; yellow trefoil 18
5061	Sunshine Feed Store, Greenfield[153]	Sunshine Feed Store,	C	98.57		89.5	5.5	1–34		C None
	Mammoth Clover, Lot 64440	Greenfield, Ind	F	98.08	0.50	94.0	2.0	5–34	2,084	F Bracted plantain 18; buckhorn 1,260; common plantain 36; curled dock 351; dodder 5; wild carrot 144

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*Not labeled.
†Certified by Retailer.
C and F stands, respectively, for Claimed and Found.
[149] Not tagged. Labels furnished.

[150] Removed from sale. Misbranded. Retagged.
[151] Removed from sale. Misbranded. All sold.
[152] Removed from sale. Misbranded.
[153] Removed from sale. Misbranded. Retagged.

RED CLOVER—Continued

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, per cent	Inert Matter, per cent	Germination, per cent	Hard Seeds, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds		Number per Pound of each of the Noxious Weed Seeds Specified in the Law
4646	Syler, Clay, North Manchester[151]	Syler, Clay,	C	97.45		90.0	4.0	2-34		C	None
	Medium Clover, Lot 129	North Manchester, Ind.	F	98.6	0.29	89.5	7.0	4-34	4,464	F	Buckhorn 727; common plantain 468; curled dock 18; red sorrel 171
4662	Syler, Clay, North Manchester	Syler, Clay,	C	98.5		88.0	5.0	2-34		C	Bracted plantain 1,260; Buckhorn 450; curled dock 2,250
	Mammoth Clover, Lot 128	North Manchester, Ind.	F	99.26	0.21	91.0	6.5	4-34	1,881	F	Buckhorn 126; curled dock 1,260; red sorrel 495
4844	Phillips, J. C., Star City	Syler & Syler,	C	99.54		92.0	3.0	1-34		C	None
	Medium Red Clover, Lot 28	Plymouth, Ind.	F	99.66	0.06	89.0	9.0	5-34	1,098	F	Buckhorn 9; curled dock 9
4849	Phillips, J. C., Star City	Syler & Syler,	C	99.5		91.0	6.0	1-34		C	None
	Mammoth Clover, Lot 27	Plymouth, Ind.	F	99.84	0.02	92.0	5.5	5-34	522	F	Curled dock 234; red sorrel 18
4696	Tri-County Farm Bureau Co-operative Assn., Inc., Evansville	Tri-County Farm Bureau Co-op. Assn., Inc.,	C	99.0		76.0	14.0	1-34		C	None
	Red Clover	Evansville, Ind.	F	99.92	0.04	98.5	0.0	4-34	9	F	Buckhorn 9
4997	*Walker, W. Y., Lucerne	Walker, W. Y.,	C							C	
	Clover, Lot 1	Lucerne, Ind.	F	99.6	0.10	87.0	6.5	3-34	1,440	F	Buckhorn 126; common plantain 1,260; curled dock 54
5008	*Walker, W. Y., Lucerne	Walker, W. Y.,	C							C	
	Clover, Lot 3	Lucerne, Ind.	F	98.01	0.89	94.0	3.0	3-34	3,312	F	Bracted plantain 99; buckhorn 117; curled dock 2,700; red sorrel 216
5009	*Walker, W. Y., Lucerne	Walker, W. Y.,	C							C	
	Clover, Lot 2	Lucerne, Ind.	F	99.62	0.16	90.0	6.0	3-34	1,233	F	Buckhorn 180; common plantain 936; curled dock 27
4909	Wilson, John, Roachdale	Wilson, John,	C	99.5		78.0	18.5	2-34		C	Buckhorn 630
	Red Clover, Lot 15	Roachdale, Ind.	F	99.72	0.20	90.0	7.0	5-34	486	F	Buckhorn 306
4998	Wilson Grain Co., Rochester	Wilson Grain Co.,	C	99.88		94.5	5.5	2-34		C	Curled dock 6; red sorrel 2
	Red Clover, Lot 1	Rochester, Ind.	F	99.9	0.08	96.5	0.5	5-34	90	F	None
4281	Bottorff, D. M., Columbus	Winchester, Clyde M.,	C	99.72		85.5	5.5	1-34		C	None
	Little Red Clover, Lot Win	Greenwood, Ind.	F	99.62	0.32	91.5	6.0	2-34	333	F	Buckhorn 9; common plantain 225; curled dock 9
4568	Wyatt Feed & Seed Store, Petersburg	Wyatt Feed & Seed Store,	C	98.86		90.0	7.0	1-34		C	Bracted plantain 18; buckhorn 720; common plantain 1,008; dodder 45; red sorrel 2,250
	Mammoth Clover, Lot 12644	Petersburg, Ind.	F	98.96	0.12	93.0	2.5	4-34	5,292	F	Buckhorn 1,080; curled dock 756; dodder 36; red sorrel 2,790

*Not labeled.
†Certified by Retailer.
C and F stands, respectively, for Claimed and Found.

SWEET CLOVER

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor	Purity, per cent	Inert Matter, per cent	Germination, per cent	Hard Seeds, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds	Number per Pound of each of the Noxious Weed Seeds Specified in the Law
4708	Couch & Sons, Geo., New Harmony	Allied Seed Co., C	99.35		84.0	7.0	11-33		C None
	W. B. Sweet Clover, Lot P-407	East St. Louis, Ill. F	99.6	0.32	78.5	1.5	4-34	360	F None
5120	Farmers Co-operative Co., Matthews[154]	Allied Seed Co., Inc., C	99.7		81.0	9.0	1-34		C None
	W. B. Sweet Clover, Lot B-302	Fort Wayne, Ind. F	99.84	0.12	87.0	9.0	5-34	90	F None
4839	Farmers Grain & Supply Co., Thornhope,								
	P. O., Oak	Allied Seed Co., Inc., C	97.7		81.0	9.0	1-34		C None
	W. B. Sweet Clover, Lot B-302	Fort Wayne, Ind. F	99.8	0.12	88.5	9.5	5-34	117	F Mustard 18; red sorrel 9
5267	Hartford City Milling Co., Hartford City	Allied Seed Co., Inc., C	99.5		86.0	4.0	1-34		C None
	W. B. Sweet Clover, Lot 85	Fort Wayne, Ind F	99.52	0.28	82.0	3.0	5-34	477	F Mustard 27
5268	Hartford City Milling Co., Hartford City[155]	Allied Seed Co., Inc., C	99.7		80.0	10.0	2-34		C None
	W. B. Sweet Clover, Lot 314	Fort Wayne, Ind F	99.88	0.02	89.0	4.5	5-34	108	F Mustard 18
4852	Phillips, J. C., Star City	Allied Seed Co., Inc., C	99.5		89.0	2.0	1-34		C None
	Grundy Co. Sweet Clover, Lot 53	Fort Wayne, Ind F	99.76	0.16	87.0	4.0	5-34	450	F None
5047	Stiefel Grain Co., Avilla	Allied Seed Co., Inc., C	99.7		80.0	10.0	2-34		C None
	W. B. Sweet Clover, Lot B-314	Fort Wayne, Ind F	99.86	0.10	85.5	5.0	5-34		F None
4223	Sunshine Feed Store, Terre Haute	Allied Seed Co., C	99.65		88.0	5.0	1-34		C None
	W. B. Sweet, Lot P-442	Peoria, Ill. F	99.88	0.08	96.0	0.5	2-34	99	F Mustard 9
5233	American Field Seed Co., Chicago, Ill.[156]	American Field Seed Co., C	99.5		92.0		2-34		C None
	W. B. Sweet Clover, Lot 14566	Chicago, Ill F	93.88	4.50	57.5	6.5	4-34	7,299	F Bracted plantain 81; buckhorn 45; Canada thistle 9; curled dock 216; red sorrel 18
3897*	†Forbes, A. J., Westville[157]	American Field Seed Co., C							C
	W. B. Sweet Clover	Chicago, Ill. F	87.92	1.74	54.5	2.0	9-33	5,850	F Bracted plantain 27; Canada thistle 18; mustard 45
4896	Hillis Feed Store, Greencastle[158]	American Field Seed Co., C	98.0		86.0		1-34		C None
	W. B. Sweet Clover, Lot 14563	Chicago, Ill F	97.39	2.07	45.5	4.0	3-34	2,754	F Canada thistle 27; mustard 27
5251	Hillis Feed Store, Greencastle	American Field Seed Co., C	97.5		75.0	7.0	2-34		C Curled dock 34
	Y. B. Sweet Clover, Lot 14570	Chicago, Ill. F	97.56	2.06	73.5	3.0	4-34	486	F Curled dock 18; mustard 18
4591	Gibson County Shipping Assn., Princeton	Baumgart & Son, C	99.65		85.0	7.0	1-34		C None
	W. B. Sweet Clover, Lot P-450	Mt. Carmel, Ill F	99.56	0.20	85.0	2.5	3-34	108	F Mustard 18
5128	Berry Seed Co., Clarinda, Ia.[159]	Berry Seed Co., C	94.64		67.0	7.0	2-34		C None
	W. B. Sweet Clover, Lot 14136	Clarinda, Ia. F	95.07	3.05	60.5	11.0	3-34	10,836	F Curled dock, 9; mustard 27
5242	Byers Seed Co., Franklin[160]	Byers Seed Co., C	99.25		85.0		1-34		C None
	Y. B. Sweet Clover, Lot Y. B	Franklin, Ind. F	94.24	4.78	80.5	6.0	5-34	72	F Curled dock 54; mustard 18
5147	Carman Supply Co., Lynn	Carman Supply Co., C	99.25		85.0	7.0	11-33		C None
	W. B. Sweet Clover, Lot MS-15	Lynn, Ind F	99.78	0.08	77.0	0.5	5-34	423	F Mustard 63

*Not labeled.

†Certified by Retailer.

C and F stands, respectively, for Claimed and Found.

[154] Sample secured from Clyde Gossert, Fairmount, Ind.

[155] Sample secured from Harry Stallsmith, R. 5, Hartford City, Ind.

[156] Sample secured from Coty Bros., Remington, Ind.

[157] Contains 8.60% Alfalfa with a Germination of 18.00% and 7.50% Hard Seeds.

[158] Not tagged. Labels furnished. Removed from sale. Misbranded. All sold.

[159] Sample secured from Richard D. Decker, R. 6, Marion, Ind.

[160] Removed from sale. Misbranded. Placed in summer storage.

SWEET CLOVER—Continued

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor	Purity, per cent	Inert Matter, per cent	Germination, per cent	Hard Seeds, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds	Number per Pound of each of the Noxious Weed Seeds Specified in the Law
4391	Boonshot Hdwe. Co., Petersburg[161]	Chambers Seed Co., C	99.5		90.0		11-33		C None
	White Sweet Clover, Lot 1176	Louisville, Ky. F	99.44	0 26	72.0	6.0	4-34	1,026	F Mustard 36
4311	Eberts Grain Co., Scottsburg	Chambers Seed Co., C	99 25		85.0	5.0	11-33		C None
	White Sweet Clover, Lot 1176	Louisville, Ky. F	99.64	0.14	82.0	6.5	3-34	630	F None
4846	Co-operative Elevator Co., Francesville	Co-operative Elevator Co., C	98.96		43.0	52.5	1-34		C Curled dock 144; mustard 27; red sorrel 9
	W. B. Sweet Clover, Lot S-4170	Francesville, Ind. F	98.58	1.14	34.5	[illegible]0.0	5-34	2,079	F Curled dock 198; mustard 72; red sorrel 9
4419	Barr Grain Co., O. L., Bicknell	Crabbs Reynolds Taylor Co., C	99.58		87.0	4.0	1-34		C None
	W. B. Sweet Clover, Lot 1-SI	Crawfordsville, Ind. F	99.7	0.24	84.0	3.5	3-34	207	F Mustard 27
4302	Cordes Hdwe. Co., Seymour	Crabbs Reynolds Taylor Co., C	99.0		75.0	10.0	10-33		C None
	W. B. Sweet Clover, Lot 8-SG	Crawfordsville, Ind. F	99.16	0.52	66.5	8.0	3-34	270	F Curled dock 207; mustard 63
4242	Evans & Hedworth, Remington	Crabbs Reynolds Taylor Co., C	99.56		82.0	6.0	12-33		C None
	W. B. Sweet Clover, Lot 9-SH	Crawfordsville, Ind. F	99.7	0.24	80.0	3.5	2-34	369	F Mustard 9
4851	Farmers Co-op. Elevator, Royal Center	Crabbs Reynolds Taylor Co., C	99.52		83.0	6.0	2-34		C None
	W. B. Sweet Clover, Lot 3-SI	Crawfordsville, Ind. F	99.64	0 28	79.0	3.5	5-34	297	F Mustard 27
4884	Lucas, Henry, Brownstown	Crabbs Reynolds Taylor Co. C	99 26		75.0	7.0	2-34		C None
	White Sweet Clover, Lot 2-SI	Crawfordsville, Ind. F	99.3	0.40	67.0	4.0	5-34	360	F None
5137	Markleville Elevator Co., Emporia, P. O.								
	Markleville[162]	Crabbs Reynolds Taylor Co., C	99.0		80.0	10.0	12-33		C None
	Y. B. Sweet Clover, Lot 5-SH	Crawfordsville, Ind. F	98.76	0.84	52.0	41.0	5-34	153	F Curled dock 153
4248	Marshall Feed & Grain Co., Marshall	Crabbs Reynolds Taylor Co., C	99.58		87.0	4.0	1-34		C None
	W. B. Sweet Clover, Lot 1-SI	Crawfordsville, Ind. F	99.92	0.06	77.5	6.0	2-34	189	F Mustard 9
4906	Miller Grain Co., Bainbridge	Crabbs Reynolds Taylor Co., C	99.52		83.0	6.0	2-34		C None
	W. B. Sweet Clover, Lot 3-SI	Crawfordsville, Ind. F	99.25	0.57	76.0	3.0	5-34	405	F Mustard 45
4966	Morocco Grain & Lumber Co., Morocco	Crabbs Reynolds Taylor Co., C	99.58		87.0	4.0	1-34		C None
	W. B. Sweet Clover, Lot 1-SI	Crawfordsville, Ind. F	99 58	0.34	82.0	2.5	5-34	279	F Mustard 9
4730	Newcastle Elevator Co., Newcastle	Crabbs Reynolds Taylor Co., C	99.56		80.0	10.0	12-33		C None
	Grundy Co., Sweet Clover, Lot 3-SG	Crawfordsville, Ind. F	99.64	0.26	69.5	15.5	4-34	477	F Curled dock 117
4747	Newcastle Elevator Co., Newcastle	Crabbs Reynolds Taylor Co., C	99.58		87.0	4.0	1-34		C None
	W. B. Sweet Clover, Lot 1-SI	Crawfordsville, Ind. F	99.66	0.20	80.5	4.5	5-34	270	F None
4412	Osburn, A. R., Bloomfield	Crabbs Reynolds Taylor Co., C	99.58		87.0	4.0	1-34		C None
	W. B. Sweet Clover, Lot 1-SI	Crawfordsville, Ind. F	99.58	0.40	81.5	3.0	4-34	90	F None
5055	Shirley, O. C., Knightstown	Crabbs Reynolds Taylor Co., C	99.5		81.0	8.0	2-34		C None
	W. B. Sweet Clover, Lot 6-SI	Crawfordsville, Ind. F	99.66	0.28	79.0	2.0	5-34	297	F Mustard 27
4671	Crabbs Reynolds Taylor Co., Reynolds	Crabbs Reynolds Taylor Co., C	99.58		87.0	4.0	1-34		C None
	W. B. Sweet Clover, Lot 1-SI	Lafayette, Ind. F	99.58	0.36	86.0	5.0	4-34	117	F Mustard 27
4649	Farmers Elevator Co., Monticello	Crabbs Reynolds Taylor Co., C	99.58		87.0	4.0	1-34		C None
	W. B. Sweet Clover, Lot 1-SI	Lafayette, Ind. F	99.56	0.40	87.5	1.5	5-34	144	F Mustard 54
4353	Demoret Grain Co., Bath[163]	Crawfordsville Seed Co., C	99.5		85.0		12-33		C None
	Y. B. Sweet Clover, Lot 535	Crawfordsville, Ind. F	99.44	0.48	70.0	1.0	4-34		F None
4355	Demoret Grain Co., Bath	Crawfordsville Seed Co., C	99.5		85.0		12-33		C None
	W. B. Sweet Clover, Lot 534	Crawfordsville, Ind. F	99.88	0.00	85.0	8 5	4-34	378	F Canada thistle 18

4817	Logansport Elevator Co., South Side Logansport[164]	Crawfordsville Seed Co.,	C	99.6	......	80.0	5.0	1–33	....	C	None
	W. B. Sweet Clover, Lot 525	Crawfordsville, Ind.	F	99.58	0.28	65.0	4.0	5–34	549	F	Mustard 9
4218	Overpeck, H. M., Rockville	Crawfordsville Seed Co.,	C	99.5	......	80.0	8.0	7–33	......	C	None
	W. B. Sweet Clover, Lot 529	Crawfordsville, Ind.	F	99.78	0.14	77.5	7.5	2–34	306	F	Canada thistle 9; mustard 27
4221	Overpeck, H. M., Rockville	Crawfordsville Seed Co.,	C	99.5	......	85.0	......	1–34	....	C	None
	W. B. Sweet Clover, Lot 534	Crawfordsville, Ind.	F	99.7	0.02	83.0	13.0	2–34	630	F	None
5056	Shirley, O. C., Knightstown	Crawfordsville Seed Co.,	C	99.5	......	85.0	......	1–34	....	C	None
	W. B. Sweet Clover, Lot 534	Crawfordsville, Ind.	F	99.96	0.04	88.0	5.5	5–34	....	F	None
4944	Brown Supply Co., Valparaiso [165]	Dickinson Co., The Albert,	C	99.62	......	76.0	18.0	12–33	....	C	None
	W. B. Sweet Clover, Lot 25303	Chicago, Ill.	F	99.86	0.06	91.5	5.0	3–34	279	F	Mustard 9
4942	Heitschmidt, A. C., Michigan City	Dickinson Co., The Albert,	C	99.0	......	86.0	6.0	3–34	....	C	None
	W. B. Sweet Clover, Lot 25318	Chicago, Ill.	F	99.88	0.06	90.5	4.0	5–34	90	F	None
3861	Holser, B. I., Walkerton [165]	Dickinson Co., The Albert,	C	98.58	......	76.0	4.0	1–33	....	C	None
	W. B. Sweet Clover, Lot O-25385	Chicago, Ill.	F	99.43	0.41	72.5	1.0	8–33	666	F	Mustard 36
5325	McMahan Seed Co., Valparaiso	Dickinson Co., The Albert,	C	97.9	......	82.0	4.0	1–34	....	C	None
	W. B. Sweet Clover, Lot B-103	Chicago, Ill.	F	99.74	0.12	81.5	2.5	7–34	306	F	Mustard 36
3986	North Side Feed Store, Mishawaka	Dickinson Co., The Albert,	C	99.58	......	74.0	22.0	11–33	....	C	None
	Sweet Clover, Lot 25300	Chicago, Ill.	F	99.92	0.02	88.5	5.5	12–33	207	F	Mustard 27
4996	Stauffer Grain Co., Nappanee	Dickinson Co., The Albert,	C	99.62	......	76.0	18.0	12–33	....	C	None
	W. B. Sweet Clover, Lot 25303	Chicago, Ill.	F	99.8	0.08	93.0	1.5	5–34	720	F	None
4915	Union Center Equity Exchange, Union Center, P. O. Kingsbury[166]	Dickinson Co., The Albert,	C	99.32	......	84.0	3.0	7–33	....	C	None
	Sweet Clover, Lot 25287	Chicago, Ill.	F	99.6	0.32	68.5	3.0	3–34	189	F	Curled dock 9
4241	†Quinlan Seed Store, Terre Haute	Edgar County Seed Co.,	C	99.92	......	86.0	9.0	11–33	....	C	None
	W. B. Sweet Clover, Lot 96051	Paris, Ill.	F	99.86	0.08	88.0	4.5	2–34	279	F	Mustard 9
4536	Armstrong-Landon Co., Kokomo	Foster-Kendall Co.,	C	99.55	......	72.0	20.0	12–33	......	C	None
	Y. B. Sweet Clover, Lot Y-10	Carmel, Ind.	F	99.4	0.40	69.5	24.0	4–34	504	F	Curled dock 45; mustard 9
4278	Central States Elevator Corp., Morristown	Foster-Kendall Co.,	C	99.65	......	72.0	20.0	1–34	....	C	None
	Y. B. Sweet Clover	Carmel, Ind.	F	99.7	0.20	70.5	20.0	2–34	117	F	Curled dock 18; mustard 9
4282	Central States Elevator Corp., Morristown	Foster-Kendall Co.,	C	99.5	......	86.0	10.0	12–33	....	C	None
	W. B. Sweet Clover	Carmel, Ind.	F	100.0	0.00	89.0	5.0	2–34	36	F	Canada thistle 9; mustard 27
4544	Central States Grain Assn., Shelbyville	Foster-Kendall Co.,	C	99.5	......	86.0	10.0	12–33	....	C	None
	W. B. Sweet Clover	Carmel, Ind.	F	99.7	0.10	84.0	10.5	3–34	810	F	None
4558	Central States Grain Assn., Shelbyville	Foster-Kendall Co.,	C	99.65	......	72.0	20.0	1–34	....	C	None
	Y. B. Sweet Clover	Carmel, Ind.	F	99.76	0.16	68.5	20.0	4–34	45	F	Curled dock 45
4363	Chance Bros., Connersville	Foster-Kendall Co.,	C	99.6	......	89.0	6.0	12–33	....	C	None
	W. B. Sweet Clover, Lot 2000	Carmel, Ind.	F	99.78	0.12	93.0	0.0	4–34	18	F	Mustard 18
5112	Dickey, H., Parker	Foster-Kendall Co.,	C	99.25	......	72.0	20.0	1–34	....	C	None
	Y. B. Sweet Clover	Carmel, Ind.	F	99.78	0.22	76.5	2.5	5–34		F	None
4199	Farm Bureau Service, Columbus	Foster-Kendall Co.,	C	99.5	......	86.0	10.0	12–33	....	C	None
	W. B. Sweet Clover	Carmel, Ind.	F	99.9	0.08	92.0	2.5	2–34	27	F	Mustard 27
4980	Hallawell's Feed Store, North Vernon	Foster-Kendall Co.,	C	99.5	......	86.0	10.0	12–33	....	C	None
	W. B. Sweet Clover	Carmel, Ind.	F	99.72	0.06	77.5	15.0	5–34	720	F	None
4653	Huntington Equity Exchange, Huntington	Foster-Kendall Co.,	C	99.55	......	86.0	......	12–33	....	C	None
	W. B. Sweet Clover	Carmel, Ind.	F	99.86	0.06	87.5	2.5	4–34	90	F	None

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*Not labeled.

†Certified by Retailer.

C and F stands, respectively, for Claimed and Found.

[161] Removed from sale. Misbranded. Retagged.

[162] Removed from sale. Misbranded. All sold.

[163] Removed from sale. Misbranded. Refund.

[164] Removed from sale. Misbranded. Retagged. Due to the date of germination claimed the retailer is held responsible for the deficiency in germination instead of the distributor.

[165] Not tagged. Labels furnished.

[166] Not tagged. Labels furnished. Removed from sale. Misbranded. Retagged.

SWEET CLOVER—Continued

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor	Purity, per cent	Inert Matter, per cent	Germination, per cent	Hard Seeds, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds	Number per Pound of each of the Noxious Weed Seeds Specified in the Law
4196	Rush County Hatchery, Rushville	Foster-Kendall Co., C	99.65		72.0	2.0	1-34		C None
	Y. B. Sweet Clover	Carmel, Ind. F	99.88	0.04	66.5	21.0	2-34	288	F Mustard 18
4202	Rush County Hatchery, Rushville	Foster-Kendall Co., C	99.5		86.0	10.0	12-33		C None
	W. B. Sweet Clover	Carmel, Ind. F	99.84	0.12	92.5	2.5	2-34	18	F Mustard 18
4548	Shelby County Farm Bureau Co-operative Assn., Inc., Shelbyville	Foster-Kendall Co., C	99.65		72.0	20.0	1-34		C None
	Y. B. Sweet Clover	Carmel, Ind. F	99.68	0.18	68.0	24.5	4-34	117	F Curled dock 27
5102	Tipton County Farm Bureau Co-operative Assn., Inc., Tipton	Foster-Kendall Co., C	99.55		86 0	10 0	12-33		C None
	W. B. Sweet Clover	Carmel, Ind. F	99 66	0.04	92 5	4.0	5-34	387	F Curled dock 18; mustard 9
4523	Wall, N. A., Pittsboro	Foster-Kendall Co., C	99.55		86.0	10.0	12-33		C None
	W. B. Sweet Clover	Carmel, Ind. F	99.7	0.12	95.5	1.0	4-34	468	F Mustard 18
4360	Bell Elevator Co., Cottage Grove[167]	Goodrich Bros. Co., C	99 5		88.0	8.0	12-33		C None
	Y. B. Sweet Clover, Lot 3570	Winchester, Ind. F	99.5	0.24	52.5	45.0	4-34	189	F Bracted plantain 9; buckhorn 9; curled dock 63; mustard 18
4821	Economy Co-operative Co., Economy	Goodrich Bros. Co., C	99.25		85.0	10.0	11-33		C None
	W. B. Sweet Clover	Winchester, Ind. F	99 58	0.20	76.5	1.5	5-34	810	F None
4855	Goodrich Bros. Co., Eaton	Goodrich Bros. Co., C	99.5		85.0	10.0	1-34		C Curled dock 180
	Y. B. Sweet Clover, Lot 3525	Winchester, Ind. F	99.6	0 06	83.5	6.0	5-34	108	F Curled dock 18
4868	†Goodrich Bros. O., Eaton	Goodrich Bros. Co., C	99.5		87.0	10.0	1-34		C None
	W. B. Sweet Clover, Lot Lark	Winchester, Ind. F	99.82	0.10	78.0	0 5	5-34	207	F Mustard 27
4032	Hinshaw Grain Co., Summitville[168]	Goodrich Bros. Co., C	99.5		85.0	10.0	3-33		C None
	W. B. Sweet Clover, Lot Lark	Winchester, Ind. F	99.66	0 28	61.0	7.5	1.34	279	F Mustard 9
4257	Linwood Grain Co., Linwood, P. O. Alexandria	Goodrich Bros. Co., C	99.5		87.0	9.0	1-34		C None
	W. B. Sweet Clover, Lot Quail	Winchester, Ind. F	99.62	0.08	35.0	0.0	2-34	1,242	F Mustard 72
4140	Smock & Co., W. C., Burrows	Goodrich Bros. Co., C	99.6		84.0	12.0	4-33		C None
	W. B. Sweet Clover, Lot Lark	Winchester, Ind. F	99.56	0.20	82 0	0.0	2-34	990	F Mustard 90
4630	Haynes Milling Co., The, Portland[169]	Haynes Milling Co., The C	98.8		85.0	11.0	2-34		C Buckhorn 180; curled dock 180
	Y. B. Sweet Clover, Lot Y. B.	Portland, Ind. F	98.66	0.50	62.0	25.5	4-34	549	F Buckhorn 27; curled dock 252
4643	Haynes Milling Co., The, Portland [169]	Haynes Milling Co., The, C	99.6		76.0	20 0	2-34		C Curled dock 90
	W. B. Sweet Clover, Lot W. B.	Portland, Ind. F	99 82	0.10	52.5	39.5	4-34	72	F Curled dock 72
4383	Huebner Hdwe. Co., John, Loogootee[170]	Heldt Co., The, C	98.21		80.0	9.0	3-33		C Buckhorn 90; curled dock 360; mustard 90
	Comet W. B. Sweet Clover, Lot 2685	Evansville, Ind. F	98.42	1.00	50.0	11.0	4-34	2,601	F Bracted plantain 9; buckhorn 18; curled dock 45; wild carrot 9
4871	†Hoosier Grain & Supply Co., Montpelier[171]	Hoosier Grain & Supply Co., C	99.5		85.0	8.0	2-34		C None
	W. B. Sweet Clover	Bluffton, Ind. F	99.6	0.22	64.0	20.0	5-34	144	F Curled dock 108; mustard 36
4533	Armstrong-Landon Co., Kokomo[169]	Hooton-Davis Seed Corporation C	96.0		77 0	3 0	12-33		C None
	W. B. Sweet Clover, Lot W-410	Lebanon, Ind. F	99.2	0.60	60.5	10.5	4-34	630	F None
4550	Armstrong-Landon Co., Kokomo	Hooton-Davis Seed Corporation, C	99.5		77.0	12.0	1-34		C None
	W. B. Sweet Clover, Lot W-443	Lebanon, Ind. F	99.38	0 60	76.0	2.5	4-34	90	F None

4557	Beck Grain & Feed Co., Shelbyville W. B. Sweet Clover, Lot W-443	Hooton-Davis Seed Corporation, Lebanon, Ind.	C	99.25	.....	75.0	15.0	1-34	.....	None
			F	99.61	0.39	77.0	5.5	4-34	9	Mustard 9
4564	Beck Grain & Feed Co., Shelbyville[172] Y. B. Sweet Clover, Lot Y-444	Hooton-Davis Seed Corporation, Lebanon, Ind.	C	98.25	.....	77.0	12.0	1-34	.....	None
			F	98.11	0.58	77.5	6.0	4-34	4,590	None
4551	Morrison & Deprez, Shelbyville W. B. Sweet Clover, Lot W-410	Hooton-Davis Seed Corporation, Lebanon, Ind.	C	99.5	.....	70.0	3.0	-33	.....	None
			F	99.64	0.28	57.5	4.5	4-34	360	None
4067	Clark County Farm Bureau Co-operative Assn., Inc., Jeffersonville W. B. Sweet Clover, Lot SC-380	Indiana Farm Bureau Co-op. Assn., Inc.,‡ Indianapolis, Ind.	C	99.85	.....	88.0	6.0	11-33	.....	None
			F	99.92	0.02	79.5	14.5	1-34	189	Mustard 9
5121	Farmers Co-operative Co., Selma W. B. Sweet Clover, Lot SC-380	Indiana Farm Bureau Co-op. Assn., Inc.,‡ Indianapolis, Ind.	C	99.8	.....	80.0	15.0	1-34	.....	None
			F	99.96	0.04	83.0	10.0	5-34	.....	None
4861	Grant County Farm Bureau Co-operative Assn., Inc., Marion W. B. Sweet Clover, Lot SC-380	Indiana Farm Bureau Co-op. Assn., Inc.,‡ Indianapolis, Ind.	C	99.8	.....	80.0	15.0	1-34	.....	None
			F	99.88	0.04	76.5	18.0	5-34	90	None
4718	Henry County Farm Bureau Co.Operative Assn., Inc., Newcastle W. B. Sweet Clover, Lot SC-380	Indiana Farm BureauCo-op. Assn., Inc.,‡ Indianapolis, Ind.	C	99.80	.....	80.0	15.0	1-34	.....	None
			F	99.82	0.04	82.0	10.0	4-34	180	None
4608	Knox County Farm Bureau Co-operative Assn., Inc., Vincennes W. B. Sweet Clover, Lot SC-380	Indiana Farm Bureau Co-op. Assn.,Inc.,‡ Indanapolis, Ind.	C	99.8	.....	80.0	15.0	1-34	.....	None
			F	99.96	0.02	79.5	13.0	3-34	.....	None
4932	LaPorte County Farm Bureau Co-operative Assn., Inc., LaPorte[173] W. B. Sweet Clover, Lot SC-373	Indiana Farm Bureau Co-op. Assn., Inc., Indianapolis, Ind.	C	99.85	.....	88.0	6.0	4-33	.....	None
			F	99.82	0.10	68.5	2.5	5-34	.....	None
4934	LaPorte County Farm Bureau Co-operative Assn., Inc., LaPorte W. B. Sweet Clover, Lot SC-380	Ind ana Farm Burea Co-op. Assn., Inc.,‡ Indianapolis, Ind.	C	99.8	.....	80.0	15.0	1-34	.....	None
			F	99.86	0.10	78.5	14.5	5-34	369	Mustard 9
4219	Parke County Farm Bureau Co-operative Assn., Inc., Rockville W. B. Sweet Clover, Lot SC-380	Indiana Farm BureauCo-op. Assn., Inc.,‡ Indianapolis, Ind.	C	99.8	.....	80.0	15.0	1-34	.....	None
			F	99.92	0.04	81.0	12.0	2-34	270	None
5027	St. Joseph County Farm BureauCo-operative Assn., Inc., South Bend[174] W. B. Sweet Clover, Lot SC-380	Indiana Farm Bureau Co-op. Assn., Inc.,‡ Indianapolis, Ind.	C	99.8	.....	80.0	15.0	1-34	.....	None
			F	99.86	0.04	46.0	49.5	5-34	279	Mustard 9
4657	Wabash County Farm Bureau Co-operative Assn., Inc., Wabash W. B. Sweet Clover, Lot SC-380	Indiana Farm Bureau Co-op. Assn., Inc.,‡ Indianapolis, Ind.	C	99.75	.....	88.0	6.0	11-33	.....	None
			F	99.72	0.20	83.0	8.5	5-34	360	None
4659	Wabash County Farm Bureau Co-operative Assn., Inc., Wabash[173] Y. B. Sweet Clover, Lot YC-397	Indiana Farm Bureau Co-op. Assn., Inc.,‡ Indianapolis, Ind.	C	99.6	.....	85.0	10.0	1-34	.....	None
			F	98.98	0.40	61.5	0.5	4-34	.....	None
4763	Wayne County Farm Bureau Co-operative Assn., Inc., Richmond[173] Y. B. Sweet Clover, Lot YC-397	Indiana Farm Bureau Co-op. Assn., Inc.,‡ Indianapolis, Ind.	C	99.0	.....	85.0	10.0	1-34	.....	None
			F	99.54	0.28	63.5	0.5	5-34	180	None
4737	Anderson & Morgan, Dunkirk W. B. Sweet Clover, Lot I-208	Indiana Seed Co., Indianapolis, Ind.	C	99.6	.....	85.0	6.0	2-34	.....	None
			F	99.82	0.08	97.0	1.5	4-34	216	Mustard 36
4274	Bottorff, D. M., Columbus W. B. Sweet Clover, Lot I-207	Indiana Seed Co., Indianapolis, Ind.	C	99.6	.....	80.0	12.0	12-33	.....	None
			F	99.56	0.18	89.5	7.0	2-34	810	None
3916	Branch Grain & Seed Co., Martinsville W. B. Sweet Clover, Lot MS-13	Indiana Seed Co., Indianapolis, Ind.	C	99.6	.....	85.0	8.0	3-33	.....	None
			F	99.48	0.02	81.0	1.0	11-33	1,809	Mustard 9

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*Not labeled.

†Certified by Retailer.

C and F stands, respectively, for Claimed and Found.

‡Agent of Farmers National Grain Corp., Chicago, Ill.

[169] Removed from sale. Misbranded. Retagged.

[170] Removed from sale. Misbranded. Returned to distributor.

[171] Removed from sale. Misbranded. Part sold, part retagged.

[172] Sample secured from Herbert Coers, R. 6, Shelbyville, Ind.

[173] Removed from sale. Misbranded. All sold.

[174] Removed from sale. Misbranded. Returned to distributor.

SWEET CLOVER—Continued

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, per cent	Inert Matter, per cent	Germination, per cent	Hard Seeds, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds	Number per Pound of each of the Noxious Weed Seeds Specified in the Law
5115	Farmers Co-operative Co., Selma	Indiana Seed Co.,	C	99.6		80.0	12.0	1-34		C None
	W. B. Clover, Lot B-207	Indianapolis, Ind	F	99.58	0.06	87.5	6.5	5-34	1,080	F None
4723	Farmers Elevator Co., Oakville	Indiana Seed Co.,	C	99.6		80.0	12.0	1-34		C None
	W. B. Sweet Clover, Lot I-207	Indianapolis ,Ind	F	99.88	0.08	85.0	6.0	4-34	270	F None
5066	Furry, V. H., Greenfield	Indiana Seed Co.,	C	99.65		85.0	5.0	1-34		C None
	Y. B. Sweet Clover, Lot B-242	Indianapolis, Ind	F	99.54	0.42	90.5	0.0	5-34		F None
4177	†Garten Feed Co., The, Indianapolis	Indiana Seed Co.,	C	99.5		80.0	9.0	12-33		C None
	Y. B. Sweet Clover, Lot B63	Indianapolis, Ind	F	99.64	0.20	76.0	1.0	2-34	99	F Curled dock 9
4195	†Garten Feed Co., The, Indianapolis	Indiana Seed Co.,	C	99.6		80.0	12.0	1-34		C None
	W. B. Sweet Clover, Lot I-207	Indianapolis, Ind	F	99.86	0.00	80.5	10.0	2-34	549	F Mustard 9
4615	Griffin Hdwe. Co., Carlisle	Indiana Seed Co.,	C	99.6		80.0	11.0	2-34		C None
	W. B. Sweet Clover, Lot S-208	Indianapolis, Ind	F	100.0	0.00	95.5	0.0	4-34	9	F Mustard 9
4212	Martin Hdwe. Co., Clayton	Indiana Seed Co.,	C	99.25		79.0	9.0	1-34		C None
	W. B. Sweet Clover, Lot I-206	Indianapolis, Ind	F	99.06	0.66	71.0	2.0	2-34	414	F Common plantain 18; mustard 36
4496	Nading Grain Co., Wm., Greensburg	Indiana Seed Co.,	C	99.6		80.0	11.0	2-34		C None
	W. B. Sweet Clover, Lot I-208	Indianapolis, Ind	F	99.96	0.00	90.5	4.5	4-34	99	F Mustard 9
4497	Nading Grain Co., Wm., Greensburg	Indiana Seed Co.,	C	99.65		85.0	5.0	1-34		C None
	Y. B. Sweet Clover, Lot B-242	Indianapolis, Ind	F	99.7	0.16	95.0	0.0	4-34	9	F Curled dock 9
4827	Powell Grain Co., Losantville	Indiana Seed Co.,	C	99.6		85.0	6.0	2-34		C None
	W. B. Sweet Clover, Lot I-208	Indianapolis, Ind	F	99.88	0.08	93.0	4.5	5-34	99	F Mustard 9
4089	Pritchard & Rafert, Inc., Pendleton	Indiana Seed Co.,	C	99.6		80.0	12.0	1-34		C None
	W. B. Sweet Clover, Lot I-207	Indianapolis, Ind	F	99.56	0.26	85.0	4.5	1-34	828	F Curled dock 9; mustard 9
5071	Sunshine Feed Store, Greenfield	Indiana Seed Co.,	C	99.6		80.0	11.0	2-34		C None
	W. B. Sweet Clover, Lot I-208	Indianapolis, Ind	F	99.88	0.04	95.5	2.0	5-34	180	F None
5072	Sunshine Feed Store, Greenfield	Indiana Seed Co.,	C	99.65		85.0	5.0	1-34		C None
	Y. B. Sweet Clover, Lot B-242	Indianapolis, Ind	F	99.8	0.16	90.5	0.5	5-34	108	F Buckhorn 9; curled dock 9
4185	Sunshine Feed Store, Rushville	Indiana Seed Co.,	C	99.6		80.0	12.0	1-34		C None
	W. B. Sweet Clover, Lot I-207	Indianapolis, Ind	F	99.76	0.06	87.5	4.0	2-34	468	F Mustard 18
4200	Sunshine Feed Store, Rushville	Indiana Seed Co.,	C	99.5		80.0	5.0	12-33		C None
	Y. B. Sweet Clover, Lot B-63	Indianapolis, Ind	F	99.62	0.22	70.5	0.5	2-34	207	F Curled dock 9; mustard 18
4731	Woodbury-Elliott Grain Co., Muncie	Indiana Seed Co.,	C	99.65		85.0	5.0	1-34		C None
	Y. B. Sweet Clover, Lot B-242	Indianapolis, Ind	F	99.8	0.16	92.5	0.5	3-34	9	F Yellow trefoil 9
4733	Woodbury-Elliott Grain Co., Muncie	Indiana Seed Co.,	C	99.5		70.0	8.0	12-33		C None
	Y. B. Sweet Clover, Lot B-63	Indianapolis, Ind	F	99.52	0.24	66.0	0.0	5-34	207	F Mustard 27
4154	Berne Equity Exchange, Berne[175]	K. & A. Seed Co., Inc.,	C	99.63		75.0	10.0	4-33		C None
	W. B. Sweet Clover, Lot 61	Fort Wayne, Ind	F	99.34	0.64	59.0	7.0	2-34	90	F None
3873	Rochester Co-op. Elevator Co., Rochester	K. & A. Seed Co.,	C	99.75		80.0	10.0	3-33		C None
	W. B. Sweet Clover, Lot 62	Fort Wayne, Ind	F	99.88	0.04	76.0	9.5	9-33	99	F Mustard 9
4734	Red Key Grain Co., Red Key[176]	Kraus, Sam,	C	99.5		95.0	7.0	11-33		C None
	W. B. Sweet Clover, Lot W	Fort Wayne, Ind	F	99.96	0.02	89.5	4.5	5-34	90	F None
4791	Johnson & Burton, Inc., Orleans[175]	Lewis Implement & Seed Co.,	C	99.25		90.0		12-33		C None
	Yellow Sweet Clover, Lot Red Bird	Louisville, Ky	F	99.42	0.36	68.5	20.0	5-34		F None

4885	Lucas, Henry, Brownstown	Lewis Implement & Seed Co.,	C	99.7	......	90.0	......	8–33	......	C	None
	White Sweet Clover, Lot Red Bird	Louisville, Ky	F	99.91	0.08	79.0	8.5	5–34	90	F	None
4337	Lutz-Boyd Hdwe Co., Charlestown [177]	Lewis Implement & Seed Co.,	C	99.7	......	85.0	10.0	8–33	......	C	None
	White Sweet Clover, Lot Red Bird	Louisville, Ky	F	99.76	0.18	62.5	11.5	3–34	......	F	None
3977	†Wyatt Feed & Seed Store, Petersburg[178]	Lewis Implement & Seed Co.,	C	98.5	......	90.0	......	1–33	......	C	None
	W. B. Sweet Clover	Louisville, Ky	F	99.78	0.08	54.0	21.5	12–33	468	F	Canada thistle 9; quack grass 9
4390	Wyatt Feed & Seed Store, Petersburg	Lewis Implement & Seed Co.,	C	99.5	......	80.0	15.0	8–33	......	C	None
	White Sweet Clover, Lot Red Bird	Louisville, Ky	F	99.76	0.20	78.5	2.5	4–34	207	F	Mustard 27
4296	Bulleitt & Son, V. H., Corydon	Louisville Seed Co.,	C	99.0	......	90.0	......	12–33	......	C	None
	G. M. Y. B. Sweet Clover	Louisville, Ky	F	99.86	0.08	85.0	8.5	3–34	180	F	None
4967	Lyon and Hershman, Brook	Lyon & Hershman,	C	99.5	......	85.0	......	1–34	......	C	None
	W. B. Sweet Clover, Lot S-4967	Brook, Ind	F	99.84	0.16	87.0	10.0	5–34	9	F	Mustard 9
4705	McCarty Seed Co., J. A., Evansville	McCarty Seed Co., J. A.,	C	99.52	......	84.0	9.0	2–34	......	C	None
	W. B. Sweet Clover, Lot 482	Evansville, Ind	F	99.9	0.08	79.0	2.0	5–34	90	F	None
4364	Chance Bros., Connersville [179]	McCullough Seed Co., The J. Chas.,	C	99.0	......	88.0	5.0	12–33	......	C	Curled dock 90
	Hulled Yellow Sweet Clover, Lot 1065	Cincinnati, Ohio	F	99.34	0.46	56.0	27.5	4–34	18	F	Mustard 18
4371	Krick & Son, A., Milan [177]	McCullough Seed Co., The J. Chas.,	C	99.36	......	82.0	8.0	10–33	......	C	None
	Yellow Sweet Clover, Lot 6607	Cincinnati, Ohio	F	98.45	0.79	72.5	5.5	4–34	288	F	Curled dock 72; mustard 36
4755	Wayne County Farm Bureau Co-operative										
	Assn., Inc., Richmond[179]	McCullough Seed Co., The J. Chas.,	C	98.7	......	88.0	4.0	10–33	......	C	Mustard 63
	White Sweet Clover, Lot 6579	Cincinnati, Ohio	F	97.74	0.94	69.0	3.0	5–34	1,071	F	Mustard 81
4759	Wayne County Farm Bureau Co-operative										
	Assn., Inc., Richmond	McCullough Seed Co., The J. Chas.,	C	99.62	......	89.0	5.0	12–33	......	C	Curled dock 180
	Hulled Yellow Sweet Clover, Lot 1087	Cincinnati, Ohio	F	99.68	0.08	78.5	9.0	5–34	207	F	Curled dock 27
4361	†Werst & Co., Peter, Brookville	McCullough Seed Co., The J. Chas.,	C	99.62	......	89.0	5.0	12–33	......	C	None
	Y. B. Sweet Clover, Lot 1087	Cincinnati, Ohio	F	99.42	0.14	84.5	9.5	4–34	333	F	Curled dock 45; mustard 18
4949	†McMahan Seed Co., Valparaiso [180]	Mangelsdorf & Bro., Ed. F.,	C	99.5	......	90.0	4.0	1–34	......	C	None
	W. B. Sweet Clover, Lot Elk	St. Louis, Mo	F	99.78	0.12	74.0	8.5	5–34	450	F	None
4956	†McMahan Seed Co., Valparaiso	Mangelsdorf & Bro., Ed. F.,	C	99.6	......	90.0	4.0	2–34	......	C	None
	Y. B. Sweet Clover	St. Louis, Mo	F	99.62	0.36	80.0	0.5	5–34	9	F	Dodder 9
4961	†McMahan Seed Co., Valparaiso[180]	Mangelsdorf & Bro., Ed. F.,	C	99.35	......	85.0	9.0	1–34	......	C	None
	Grundy Co. Sweet Clover	St. Louis, Mo	F	99.6	0.38	57.0	0.50	5–34	90	F	None
4438	Tuxedo Feed & Supply Co., Aurora [180]	Market Gardeners' Seed Co., The,	C	99.2	......	85.0	10.0	10–33	......	C	None
	Yellow Sweet Clover, Lot VEB	Cincinnati, Ohio	F	99.46	0.36	70.5	3.5	3–34	459	F	Quack grass 9
4450	Tuxedo Feed & Supply Co., Aurora [180]	Market Gardeners' Seed Co., The,	C	99.4	......	88.0	6.0	10–33	......	C	None
	White Sweet Clover, Lot VEB	Cincinnati, Ohio	F	99.76	0.22	70.5	7.0	3–34	144	F	Mustard 54
5220	Mayer Grain Co., Denver	Mayer Grain Co.,	C	99.25	......	76.0	16.0	1–34	......	C	None
	W. B. Sweet Clover	South Whitley, Ind	F	99.58	0.40	71.0	0.5	5–34	99	F	Mustard 9
4073	†Carman Supply Co., Lynn	New Paris Elevator Co.,	C	98.6	......	87.0	4.0	11–33	......	C	Curled dock 420
	Y. B. Sweet Clover, Lot Cot-7	New Paris, Ohio	F	99.08	0.72	74.5	11.0	1–34	900	F	Buckhorn 9; curled dock 441
4078	†Carman Supply Co., Lynn	New Paris Elevator Co.,	C	99.25	......	85.0	7.0	11–33	......	C	None
	W. B. Sweet Clover, Lot GR-6	New Paris, Ohio	F	99.84	0.12	73.5	5.5	1–34	108	F	Mustard 18
4055	Young & Cox, Richmond	New Paris Elevator Co.,	C	99.25	......	83.0	7.0	11–33	......	C	None
	White Sweet Clover, Lot H-113	New Paris, Ohio	F	99.84	0.08	78.0	8.0	1–34	180	F	None
4058	Young & Cox, Richmond	New Paris Elevator Co.,	C	99.0	......	80.0	12.0	11–33	......	C	None
	Yellow Sweet Clover, Lot GR-7	New Paris, Ohio	F	99.11	0.79	82.0	7.5	1–34	531	F	Curled dock 171
4393	Wheatland Grain Co., Wheatland[181]	Ohio Valley Seed Co.,	C	99.5	......	89.0	4.0	1–34	......	C	None
	W. B. Sweet Clover, Lot B-100	Evansville, Ind	F	99.72	0.12	75.0	13.0	4–34	360	F	None

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*Not labeled.
†Certified by Retailer.
C and F stands, respectively, for Claimed and Found.
[175] Removed from sale. Misbranded. Returned to distributor.
[176] Distributed by Northern Field Seed Co., Winona, Minn.
[177] Removed from sale. Misbranded. Retagged.
[178] Removed from sale. Misbranded.
[179] Removed from sale. Misbranded. All sold.
[180] Removed from sale. Misbranded. Retagged.
[181] Removed from sale. Misbranded. Returned to distributor.

SWEET CLOVER—Continued

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, per cent	Inert Matter, per cent	Germination, per cent	Hard Seeds, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds		Number per Pound of each of the Noxious Weed Seeds Specified in the Law
4714	Moll, J. J., Mount Vernon	Purcell Seed Co.,	C	99.09		75.0	4.5	1-34		C	Mustard 9
	Tru Val W. B. Sweet Clover, Lot 1680	Evansville, Ind	F	98.8	1.12	44.5	5.0	4-34	630	F	None
4384	Walker & Co., W. A., Loogootee[180]	Purcell Seed Co.,	C	99.09		75.0	4.5	12-33		C	Mustard 9
	Tru Val W. B. Sweet Clover, Lot 1680	Evansville, Ind	F	98.93	0.99	41.0	1.5	4-34	180	F	None
3955	Rochester Co-op. Elevator Co., Rochester	Rochester Co-op. Elevator Co.,	C	99.74		80.0	10.0	3-33		C	None
	AA Sweet Clover, Lot 62	Rochester, Ind	F	99.88	0.12	80.5	5.0	11-33		F	None
4881	Brownstown Feed Exchange, Brownstown	Ross Seed Co.,	C	99.5		82.0	8.0	1-34		C	None
	W. B. Sweet Clover	Louisville, Ky	F	99.38	0.60	90.5	3.0	5-34	180	F	None
4709	Poseyville Grain & Feed Co., Inc., Poseyville[182]	Schultz Seed Co., J. M.,	C	99.54		92.0		1-34		C	None
	Reliable Sweet Clover	Dieterich, Ill	F	99.52	0.44	75.0	4.5	3-34	153	F	Buckhorn 9; mustard 18; red sorrel 36
4289	Becker & Son, J. H., Corydon	Scott Seed Co.,	C	99.5		70.0	20.0	1-34		C	None
	W. B. Sweet Clover, Lot 124	New Albany, Ind	F	99.88	0.08	83.5	13.0	3-34	72	F	Canada thistle 9; mustard 63
4294	Becker & Son, J. H., Corydon	Scott Seed Co.,	C	99.0		75.0	15.0	12-33		C	None
	Yellow Sweet Clover, Lot 123	New Albany, Ind	F	99.37	0.27	90.0	3.0	3-34	243	F	Canada thistle 9; mustard 234
4430	Irwin Feed Store & Hatchery, Madison	Scott Seed Co.,	C	99.5		70.0	20.0	1-34		C	None
	W. B. Sweet Clover, Lot 124	New Albany, Ind	F	99.96	0.02	76.5	16.5	4-34	18	F	Mustard 18
4323	James Seed Co., Jeffersonville	Scott Seed Co.,	C	90.6		70.0	20.0	11-33		C	None
	W. B. Sweet Clover, Lot 116	New Albany, Ind	F	99.53	0.43	66.5	10.5	3-34	90	F	None
4330	James Seed Co., Jeffersonville	Scott Seed Co.,	C	99.5		70.0	20.0	1-34		C	None
	A. B. Y. B. Sweet Clover, Lot 123	New Albany, Ind	F	99.0	0.40	89.0	7.0	2-34	405	F	Mustard 225
4348	Johnson & Chenoweth, Shoals	Scott Seed Co.,	C	99.0		70.0	20.0	11-33		C	None
	W. B. Sweet Clover, Lot 127	New Albany, Ind	F	99.06	0.50	78.5	0.5	4-34	1,224	F	Canada thistle 27; mustard 90; quack grass 27
3941	Wynn, Arlie S., Rochester[183]	Standard Seed Co.,	C	99.8		94.0		4-33		C	None
	W. B. Sweet Clover, Lot 14520	Chicago, Ill	F	99.96	0.02	81.0	6.0	11-33	90	F	None
5252	Allen, Robert, South Whitley[184]	Sun-Field Seed Service,	C	98.0		75.0	5.0	2-34		C	None
	W. B. Sweet Clover, Lot 14579	Chicago, Ill	F	97.04	2.62	67.0	2.5	4-34	432	F	Buckhorn 9; common plantain 18; curled dock 45
4639	Huntington Equity Exch. Co., Huntington	Teweles Seed Co., L.,	C	99.5		89.0	6.0	2-34		C	None
	Scarified W. B. Sweet Clover, Lot Badger Brand	Milwaukee, Wis	F	99.72	0.12	81.5	11.5	3-34	675	F	Mustard 45
4658	Huntington Equity Exch. Co., Huntington	Teweles Seed Co., L.,	C	99.63		84.0	10.0	2-34		C	None
	Scarified Y. B. Sweet Clover, Lot Badger Brand	Milwaukee, Wis	F	99.66	0.08	74.5	12.5	4-34	288	F	Buckhorn 9; curled dock 9
5041	Noragon & Son, Butler	Teweles Seed Co., L.,	C	99.63		84.0	10.0	2-34		C	None
	Scarified Y. B. Sweet Clover, Lot Badger Brand	Milwaukee, Wis	F	99.52	0.26	82.5	0.5	5-34	468	F	Quack grass 9; yellow trefoil 9
5045	Noragon & Son, Butler	Teweles Seed Co., L.,	C	99.5		89.0	6.0	2-34		C	None
	Scarified W. B. Sweet Clover, Lot Badger Brand	Milwaukee, Wis	F	99.54	0.30	81.5	4.0	5-34	360	F	None

4693	Tri-County Farm Bureau Co-operative Assn., Inc., Evansville[185]	Tri-County Farm Bureau Co-op., Assn., Inc.,	C	97.0	......	70.0	14.0	1-34	....	C	Buckhorn 364; curled dock 160
	W. B. Sweet Clover	Evansville, Ind	F	99.18	0.48	51.0	0.0	4-34	612	F	Bracted plantain 9; buckhorn 396; curled dock 27
4660	Dotterer & Son, H. G., Bluffton	Wolf Seed Co.,	C	99.65	......	88.5	4.0	1-34	....	C	None
	Hy-Test W. B. Sweet Clover, Lot 7038	Fort Wayne, Ind	F	99.86	0.06	84 5	3 5	4-34	270	F	None
4656	Farmers Elevator Co., South Whitley	Wolf Seed Co.,	C	99 65	......	88.5	4 0	1-34	....	C	None
	Hy-Test W. B. Sweet Clover, Lot 7038	Fort Wayne, Ind	F	99.66	0 14	85 5	2.5	4-34	288	F	Mustard 18
4144	Preble Equity Exchange, Preble[186]	Wolf Seed Co.,	C	99.76	......	83.5	11.5	11-32	....	C	None
	Y. B. Sweet Clover, Lot 7032	Fort Wayne, Ind	F	99.92	0.08	66.0	4.0	2-34	....	F	None

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*Not labeled.

†Certified by Retailer.

C and F stands, respectively, for Claimed and Found.

[182] Removed from sale. Misbranded. All sold.

[183] Removed from sale. Misbranded. Retagged.

[184] Sample secured from R. T. Eisamon, South Whitley, Ind.

[185] Removed from sale. Misbranded.

[186] Removed from sale. Misbranded. Retagged.

WHITE CLOVER

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, per cent	Inert Matter, per cent	Germination, per cent	Hard Seeds, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds		Number per Pound of each of the Noxious Weed Seeds Specified in the Law
5288	Goldblatt Bros., Inc., Hammond[187]	Davis, Inc., Geo. A.,	C	98.24	......	91.0	7.0	10-33	...	C	Red sorrel 2,700; yellow trefoil 90
	White Clover	Chicago, Ill	F	98.14	0.50	78.25	12.5	5-34	2,403	F	Buckhorn 54; mustard 18; red sorrel 648; yellow trefoil 108
4030	Gary Seed Store, Gary	Dickinson Co., The Albert,	C	98.65	......	88.0	8.0	5-33	....	C	Buckhorn 16; red sorrel 928
	White Dutch Clover, Lot 2633	Chicago, Ill	F	99.15	0.55	84.5	9.0	12-33	5,661	F	Buckhorn 36; red sorrel 810; yellow trefoil 90
4648	Monticello Feed & Seed Store, Monticello	Hirsch & Sons, Henry,	C	98.5	......	80.0	12.0	1-34	....	C	None
	White Clover, Lot 8097	Toledo, Ohio	F	99.26	0.10	91.25	4.0	4-34	7,893	F	Yellow trefoil 18
5144	Markleville Elevator Co., Markleville[188]	Indiana Seed Co.,	C	99.0	......	84.0	7.0	11-33	....	C	None
	White Dutch Clover, Lot 18-2	Indianapolis, Ind	F	98.36	0.49	84.75	8.0	3-34	4,185	F	Buckhorn 540; red sorrel 2,250; yellow trefoil 70
5285	Goldblatt Bros., Inc., Hammond	Ostberg Seed Co.,	C	98.85	......	91.0	......	3-34	....	C	Buckhorn 80; red sorrel 1,261
	White Clover, Lot 27	Chicago, Ill	F	98.22	0.49	87.0	6.0	5-34	3,708	F	Buckhorn 270; common plantain 72; mustard 1,278; red sorrel 1,620; yellow trefoil 18
4779	Farmers Feed & Coal Co., Bloomington[189]	Schultz Seed Co., J. M.,	C	93.5	......	90.0	......	1-34	....	C	None
	G. S. White Clover	Dieterich, Ill	F	91.66	0.25	84.5	4.25	3-34	9,576	F	Buckhorn 306; curled dock 18; red sorrel 7,875; yellow trefoil 252
5262	Glen Park Hardware, Gary[190]	Teweles Seed Co., L.,	C	99.0	......	82.0	11.0	4-34	....	C	None
	White Clover, Lot "Choice"	Milwaukee, Wis	F	98.91	0.15	85.0	5.0	5-34	12,600	F	None
5025	Martin Seed Store, Elkhart	Teweles Seed Co., L.,	C	99.03	......	82.0	13.0	2-34	....	C	None
	White Clover	Milwaukee, Wis	F	98.46	0.10	81.0	8.5	5-34	20,511	F	Curled dock 18; red sorrel 18
4207	Vonnegut Hardware Co., Indianapolis	Whitney-Eckstein Seed Co.,	C	98.0	......	81.0	9.0	1-34	....	C	None
	White Dutch Clover	Buffalo, N. Y	F	97.80	1.47	89.5	5.0	2-34	9,558	F	Dodder 18; yellow trefoil 90

*Not labeled.
†Certified by Retailer.
C and F stands, respectively, for Claimed and Found.

[187] Removed from sale. Misbranded. Retagged.
[188] Not tagged. Labels furnished. Removed from sale. Misbranded. Retagged.
[189] Sample secured from Indiana State Highway Commission, Bloomington, Ind.
[190] Not tagged. Labels furnished.

CORN

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, per cent	Inert Matter, per cent	Germination, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds		Number per Pound of each of the Noxious Weed Seeds Specified in the Law
5193	*Berry Seed Co., Clarinda, Iowa[191]	Berry Seed Co.,	C	......	......	......	......	......	C	
	Yellow Dent Corn	Clarinda, Iowa	F	100.0	0.00	98.0	4–34	......	F	None
5196	*Berry Seed Co., Clarinda, Iowa[192]	Berry Seed Co.,	C	......	......	......	......	......	C	
	Corn	Clarinda, Iowa	F	99.9	0.10	97.0	4–34	......	F	None
5280	Golden, Harry, Lafayette, R. 9[193]	Golden, Harry,	C	......	......	94.0	3–34	......	C	None
	Yellow Dent Corn	Lafayette, Ind., R. 9	F	99.72	0.28	97.0	5–34	......	F	None
5317	McMahon Seed Co., Valparaiso	McMahan Seed Co.,	C	99.0	......	95.0	4–34	......	C	None
	Reid's Yellow Dent,Corn	Valparaiso, Ind.	F	99.84	0.16	91.0	7–34	....	F	None
5329	McMahon Seed Co., Valparaiso	Mangelsdorf & Bro., Ed. F.,	C	99.0	......	90.0	4–34	......	C	None
	Red Cob White St. Charles Corn	St. Louis, Mo.	F	99.51	0.49	93.0	7–34	......	F	None
5244	Monticello Feed & Seed Store, Monticello[193]	Monticello Feed & Seed Store,	C	......	......	95.0	......	......	C	None
	Yellow Dent Corn	Monticello, Ind.	F	99.99	0.01	98.0	4–34	......	F	None
5289	Farm Bureau Elevator & Supply Co., Crawfordsville	Stout, Harry T., R. 5	C	98.0	......	95.0	4–34	......	C	None
	Yellow Seed Corn	Crawfordsville, Ind.	F	99.8	0.20	96.0	5–34	......	F	None
5315	McMahan Seed Co., Valparaiso	Teweles Seed Co., L.,	C	99.0	......	97.0	5–34	......	C	None
	Red Cob Fodder Corn, Lot Badger	Milwaukee, Wis.	F	99.86	0.14	92.0	7–34	......	F	None

*Not labeled.
†Certified by Retailer.
C and F stands, respectively, for Claimed and Found.

[191] Sample secured from Robert Elston, Bedford, Ind.
[192] Sample secured from Henry Fortner, R. 3, Bedford, Ind.
[193] Tag incomplete.

MILLET

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, per cent	Inert Matter, per cent	Germination, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds	Number per Pound of each of the Noxious Weed Seeds Specified in the Law
5024	Hagerman & Co., H. J., South Bend	Dickinson Co., The Albert,	C	99.26	......	82.0	3-34	....	C None
	Hungarian Millet, Lot 47169	Chicago, Ill.	F	98.74	0.30	90.5	5-34	4,590	F None
5095	Tipton Co. Farm Bureau Co-op. Assn., Inc., Tipton	Indiana Farm Bureau Co-op. Assn., Inc.	C	99.0	......	90 0	6-33	....	C None
	Culti German Millet, Lot CM	Indianapolis, Ind.	F	99.34	0.58	87.0	5-34	810	F None
5311	Woodbury-Elliott Grain Co., Muncie	Indiana Seed Co.,	C	98.0	......	90.0	3-34	....	C None
	Hungarian Millet, Lot B-12	Indianapolis, Ind.	F	99.48	0.20	87.0	6-34	1,530	F None
5302	Worthington Grain Co., Worthington	Indiana Seed Co.,	C	98.0	......	92.0	4-34	....	C None
	German Millet, Lot L-320	Indianapolis, Ind.	F	98.63	0.14	89.0	5-34	3,960	F None
5290	Combs, Gilbert, Bloomfield	Schultz Seed Co., J. M.,	C	98.0	......	85.0	4-34	....	C None
	German Millet, Lot 6304	Dieterich, Ill.	F	99.08	0.64	81 5	5-34	1,080	F None

*Not labeled.

†Certified by Retailer.

C and F stands, respectively, for Claimed and Found.

OATS

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, per cent	Inert Matter, per cent	Germination, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds		Number per Pound of each of the Noxious Weed Seeds Specified in the Law
5195	*Berry Seed Co., Clarinda, Iowa[194]	Berry Seed Co.,	C			97.0			C	
	G. N. Oats	Clarinda, Iowa	F	98.43	0.54	97.0	4-34	27	F	None
4774	Bohnert & Son, A. M., Jasper[195]	Bohnert & Son, A. M.,	C	96.48		94.0	2-34		C	None
	Early Burt Oats, Lot 25	Jasper, Ind.	F	96.32	3.09	94.0	3-34	9	F	None
4625	Antell, Fred, Princeton[196]	Chapman-Doake Co., The,	C						C	
	White Oats No. 2	Decatur, Ill.	F	94 39	3.61	97.5	3-34	45	F	Mustard 18
5248	Co-operative Elevator Co., Winamac	Co-operative Elevator Co.,	C	99.25		95.0	3-34		C	
	White Oats, Lot CC	Winamac, Ind.	F	97.96	1.97	91.5	4-34		F	None
5165	Elnora Elevator Co., Elnora[196]	Elnora Elevator Co.,	C	97.0		90.0	3 34		C	None
	Oats	Elnora, Ind.	F	97.37	2.39	98.0	4-34	27	F	Curled dock 18
4539	Beck Grain & Feed Co., Shelbyville	Sun-Field Seed Service,	C	99.5		96.0	1-34		C	None
	Royal Banner Oats, Lot 543	Chicago, Ill.	F	97 72	0.20	97.0	3-34		F	None
4886	Brownstown Feed Exchange, Brownstown	Sun-Field Seed Service,	C	99.5		96.0	1-34		C	None
	Mammoth Cluster Oats, Lot 532	Chicago, Ill.	F	98.63	0.61	95.0	3-34	45	F	None
4578	Johnson Feed & Supply Co., Linton	Sun-Field Seed Service,	C	99.5		96.0	1-34		C	None
	Mammoth Cluster Oats, Lot 532	Chicago, Ill.	F	98.24	0.92	98.5	3-34	63	F	None
4911	Kiest Milling Co., Knox	Sun-Field Seed Service,	C	99.5		96.0	1-34		C	None
	Mammoth Cluster Oats, Lot 538	Chicago, Ill.	F	98.32	0.54	99.5	3-34		F	None
4732	New Castle Elevator Co., New Castle[197]	Sun-Field Seed Service,	C	99.5		96.0	1-34		C	None
	Royal Banner Oats, Lot 543	Chicago, Ill.	F	96 8	0.69	97.5	3-34		F	None
4927	Sommerfield & Swanson, LaPorte	Sun-Field Seed Service,	C	99.5		96.0	1 34		C	None
	Mammoth Cluster Oats, Lot 536	Chicago, Ill.	F	98 41	1.36	92.5	3-34	18	F	None
4562	Tipton Milling Co., Tipton	Sun-Field Seed Service,	C	99 5		96.0	1-34		C	None
	Royal Banner Oats, Lot 543	Chicago, Ill.	F	97.96	0.03	95.5	3-34		F	None
5019	Troyer Seed Co., Goshen	Sun-Field Seed Service,	C	99 5		96.0	1-34		C	None
	Mammoth Cluster Oats, Lot 538	Chicago, Ill.	F	98.6	0.60	97.0	3-34		F	None
4745	Woodbury-Elliott Grain Co., Muncie[198]	Sun-Field Seed Service,	C	99.5		96 0	1-34		C	None
	Mammoth Cluster Oats, Lot 543	Chicago, Ill.	F	97.75	0.26	96.5	3-34	18	F	None
4776	Wedeking & Co., C. W., Dale	Wedeking & Co., C. W.,	C	85.0		85.0	2-34		C	None
	Early Burt Seed Oats	Dale, Ind.	F	93.55	5.19	80 5	3 34	441	F	Curled dock 63; mustard 99

*Not labeled.

†Certified by Retailer.

C and F stands, respectively, for Claimed and Found.

[194] Sample secured from Robert Elston, Bedford, Ind.

[195] Not tagged. Labels furnished.

[196] Not tagged. Labels furnished. Sample secured from Indiana State Highway Commission, Linton, Ind.

[197] Removed from sale. Misbranded.

[198] Removed from sale. Misbranded. Retagged.

ORCHARD GRASS

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, per cent	Inert Matter, per cent	Germination, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds		Number per Pound of each of the Noxious Weed Seeds Specified in the Law
4315	Eberts Grain Co., Scottsburg[195] Orchard Grass, Lot 746	Chambers Seed Co., Louisville, Ky.	C	83.0	......	80.0	12–33	....	C	Buckhorn 11; curled dock 11; red sorrel 90
			F	83.42	14.98	92.5	3–34	9,414	F	Buckhorn 54; curled dock 360; red sorrel 7,200
4782	Heise Bros. & Co., Mitchell[200] Orchard Grass, Lot 4-GL	Crabbs Reynolds Taylor Co., Crawfordsville, Ind.	C	87.1	......	80.0	1–34	....	C	None
			F	83.1	15.00	64.5	5–34	8,946	F	Bracted plantain 18; buckhorn 90; curled dock 450; ox-eye daisy 288; red sorrel 5,175
3957	Wynn, Arlie S., Rochester Orchard Grass, Lot 03753	Dickinson Co., The Albert, Chicago, Ill.	C	86.95	......	85.0	4–33	....	C	Curled dock 832; red sorrel 2,592
			F	88.89	9.46	77.0	12–33	4,140	F	Buckhorn 18; curled dock 72; red sorrel 2,700
4318	Farmers Feed Store, Scottsburg[201] Orchard Grass, Lot O.G.	Indiana Farm Bureau Co-op. Assn., Inc., Indianapolis, Ind.	C	78.0	......	80.0	1–33	....	C	None
			F	77.18	22.37	85.5	3–34	1,494	F	Buckhorn 738; curled dock 126; red sorrel 180
4794	Norman & Roberts, G. M., Bedford Orchard Grass, Lot I-1830	Indiana Seed Co., Indianapolis, Ind.	C	84.05	......	90.0	11–33	....	C	Buckhorn 448; red sorrel 5,000
			F	83.07	14.65	90.5	5–34	7,452	F	Buckhorn 1,224; curled dock 378; red sorrel 4,725
4293	Wiseman & Son, Wm. H. P., Corydon Orchard Grass, Lot Red Bird	Lewis Implement & Seed Co., Louisville, Ky.	C	80.0	......	85.0	8–33	....	C	Curled dock 200; red sorrel 800
			F	82.8	16.17	95.5	3–34	3,798	F	Buckhorn 144; curled dock 288; red sorrel 666
5320	McMahan Seed Co., Valparaiso[200] Orchard Grass	Louisville Seed Co., Louisville, Ky.	C	87.55	......	92.0	1–34	....	C	Red sorrel 420
			F	87.09	11.63	81.0	7–34	12,501	F	Buckhorn 36; curled dock 72; ox-eye daisy 18; red sorrel 11,925
4287	Bulleit & Son, V. H., Corydon Orchard Grass, Lot 526	Scott Seed Co., New Albany, Ind.	C	80.0	......	80.0	1–34	....	C	Buckhorn 900; curled dock 1,260; red sorrel 1,800
			F	86.3	12.31	87.5	3–34	8,973	F	Buckhorn 2,700; curled dock 2,250; red sorrel 3,348
4326	James Seed Co., Jeffersonville Orchard Grass, Lot 523	Scott Seed Co., New Albany, Ind.	C	85.0	......	80.0	1–34	....	C	Curled dock 450; red sorrel 720
			F	87.45	11.65	81.5	3–34	3,789	F	Buckhorn 72; curled dock 612; red sorrel 1,980
4797	Scarlett, Elmer, West Baden[199] Orchard Grass, Lot 529	Scott Seed Co., New Albany, Ind.	C	85.0	......	80.0	1–34	....	C	Buckhorn 672; red sorrel 450
			F	86.75	10.52	81.5	5–34	20,223	F	Buckhorn 882; curled dock 2,925; ox-eye daisy 522; red sorrel 7,425; yellow trefoil 144

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*Not labeled.
†Certified by Retailer.
C and F stands, respectively, for Claimed and Found.

[199] Removed from sale. Misbranded. Retagged.
[200] Removed from sale. Misbranded. Returned to distributor.
[201] Removed from sale. Misbranded.

RED TOP

Laboratory No. §	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, per cent	Inert Matter, per cent	Germination, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds		Number per Pound of each of the Noxious Weed Seeds Specified in the Law
5253	Allied Seed Co., Inc., Fort Wayne[202]	Allied Seed Co., Inc.,	C	92.0	......	90.0	2-34	....	C	None
	Red Top, Lot 24	Fort Wayne, Ind.	F	92.29	6.71	86.25	4-34	47,835	F	Ox-eye daisy 135; red sorrel 450
5269	Allied Seed Co., Inc., Fort Wayne[203]	Allied Seed Co., Inc.,	C	94.0	......	90.0	1-34	....	C	None
	Red Top, Lot 25	Fort Wayne, Ind.	F	92.21	6.99	85.0	5-34	48,285	F	Buckhorn 45; ox-eye daisy 45; red sorrel 45
5202	Kunberger Seed Co., Columbia City	Allied Seed Co., Inc.,	C	95.7	......	99.0	3-34	....	C	None
	Red Top, Lot B-4	Fort Wayne, Ind.	F	98.03	1.77	87.5	4-34	4,050	F	None
3855	Heitschmidt, A. C., Michigan City[204]	Barnard Co., W. W.,	C	95.0	......	89.0	12-32	....	C	None
	Red Top, Lot 9075	Chicago, Ill.	F	96.59	3.21	90.75	7-33	5,895	F	Red sorrel 45
4108	Bolles Hardware Co., Ewing	Chambers Seed Co.,	C	95.4	......	93.0	9-33	....	C	None
	Red Top, Lot 848	Louisville, Ky.	F	95.13	3.58	92.5	2-34	117,450	F	None
4432	Hunger, C. G., Madison	Chambers Seed Co.,	C	92.0	......	90.0	1-34	....	C	None
	Red Top, Lot 801	Louisville, Ky.	F	92.22	5.25	86 75	4-34	188,820	F	Buckhorn 135; common plantain 90; ox-eye daisy 45
5231	Penman Bros., Brazil[205]	Chambers Seed Co.,	C	92.0	......	90.0	12-33	....	C	Red sorrel 225
	Red Top, Lot 849	Louisville, Ky.	F	92 91	5.22	77.5	4-34	119,700	F	Buckhorn 90; common plantain 45; red sorrel 315
5158	Union Hardware Co., Seymour[206]	Chambers Seed Co.,	C	94 0	......	90.0	11-33	....	C	None
	Red Top, Lot 849	Louisville, Ky.	F	93.6	4.90	87 0	4-34	103,635	F	Red sorrel 135
4604	Emison Hardware Co., Vincennes	Corneli Seed Co.,	C	91.75	......	91.0	1-34	....	C	None
	Red Top, Lot Viola	St. Louis, Mo.	F	94.98	4.62	89.75	4-34	18,945	F	Bracted plantain 135; ox-eye daisy 45; red sorrel 315
5181	Crabbs Reynolds Taylor Co., Crawfordsville[207]	Crabbs Reynolds Taylor Co.,	C	92.0	......	92.0	2-34	....	C	None
	Red Top, Lot 4DB	Crawfordsville, Ind.	F	91 71	7.29	91.0	4-34	60,300	F	None
4976	Hayes & Dodds, Campbellsburg	Crabbs Reynolds Taylor Co.,	C	91.25	......	90 0	12-33	....	C	None
	Fancy Red Top, Lot 3DB	Crawfordsville, Ind.	F	91 88	2.23	85 5	5-34	47,340	F	Buckhorn 45; common plantain 45
5225	Miller Grain Co., Greencastle[208]	Crabbs Reynolds Taylor Co.,	C	91 98	......	92 0	1-34	....	C	None
	Red Top, Lot 4DB	Crawfordsville, Ind.	F	92.58	6 13	95.5	4-34	58,365	F	Buckhorn 45; ox-eye daisy 135; red sorrel 135
5178	Crawfordsville Seed Co., Crawfordsville[209]	Crawfordsville Seed Co.,	C	98.0	......	92 0	2-34	....	C	None
	Red Top, Lot 823	Crawfordsville, Ind.	F	98 63	0.88	94 75	4-34	31,590	F	Ox-eye daisy 90
4029	Gary Seed Store, Gary	Dickinson Co., The Albert,	C	95.0	......	93.0	2-33	....	C	Common plantain 144; red sorrel 2,250
	Red Top, Lot 30131	Chicago, Ill.	F	96.34	1.98	94.0	1-34	22,230	F	Buckhorn 45; common plantain 45; ox-eye daisy 90

*Not labeled.
†Certified by Retailer.
C and F stands, respectively, for Claimed and Found.

[202] Sample secured from Indiana State Highway Commission, Fort Wayne, Ind.

[203] Sample secured from Indiana State Highway Commission, Waterloo, Ind.

[204] Not tagged. Labels furnished.

[205] Sample secured from Indiana State Highway Commission, Terre Haute, Ind.

[206] Sample secured from Indiana State Highway Commission, Seymour, Ind.

[207] Sample secured from Indiana State Highway Commission, Crawfordsville, Ind.

[208] Sample secured from Indiana State Highway Commission, Greencastle, Ind.

[209] Sample secured from Indiana State Highway Commission, Covington, Ind.

RED TOP—Continued

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, per cent	Inert Matter, per cent	Germination, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds		Number per Pound of each of the Noxious Weed Seeds Specified in the Law
4015	Linkhart & Son, North Vernon	Dickinson Co., The Albert,	C	92.1	....	92.0	9-33	....	C	Buckhorn 48
	Red Top, Lot 030490	Chicago, Ill.	F	92.18	7.62	95.75	12-33	28,215	F	Buckhorn 180; common plantain 90; ox-eye daisy 450; red sorrel 45
3860	Menaugh, Will H., Osceola[210]	Dickinson Co., The Albert,	C	96.7	.....	92.0	4-33	......	C	Common plantain 48; ox-eye daisy 48
	Fancy Red Top, Lot 30188	Chicago, Ill.	F	97.94	1.76	86.75	7-33	12,690	F	Buckhorn 45; common plantain 45
3857	Seberger Seed Co., Crown Point	Dickinson Co., The Albert,	C	95.0	......	93.0	6-33	......	C	None
	Red Top, Lot 30223	Chicago, Ill.	F	93.44	5.96	88.75	9-33	30,825	F	Common plantain 225
5101	Foster-Kendall Co., Carmel[211]	Foster-Kendall Co.,	C	91.43	....	85.0	10-33	......	C	None
	Red Top	Carmel, Ind.	F	90.51	7.49	75.75	4-34	132,750	F	None
4694	†Heldt & Voelker Co., The Evansville[212]	Heldt Co., The,	C	90.37	......	87.0	8-33	......	C	Common plantain 900; ox-eye daisy 900; red sorrel 450
	Comet Red Top, Lot 2394	Evansville, Ind.	F	89.01	7.53	41.25	5-34	35,640	F	Common plantain 810; ox-eye daisy 630
4750	Kindermann & Sons, Wm., Boonville	Heldt Co., The,	C	94.37	......	92.0	11-33	......	C	None
	Thelco Red Top, Lot 2610	Evansville, Ind.	F	94.82	4.28	86.0	5-34	19,980	F	Buckhorn 45; common plantain 90; ox-eye daisy 45
3979	Wyatt Feed & Seed Store, Petersburg	Heldt Co., The,	C	94.26	......	90.0	8-33	......	C	None
	Red Top, Lot 2825	Evansville, Ind.	F	93.71	5.89	93.75	12-33	26,325	F	Bracted plantain 45; buckhorn 45; red sorrel 135
3984	Wyatt Feed & Seed Store, Petersburg[213]	Heldt Co., The,	C	94.37	......	92.0	8-33	......	C	None
	Thelco Red Top, Lot 2814	Evansville, Ind.	F	98.74	0.97	92.5	12-33	12,915	F	Buckhorn 45; red sorrel 720
4651	Monticello Feed & Seed Store, Monticello	Hirsch & Sons, Henry,	C	93.5	......	90.0	1-34	......	C	None
	Red Top, Lot 8046	Toledo, Ohio	F	93.02	6.58	93.25	5-34	17,820	F	Buckhorn 90; common plantain 90; ox-eye daisy 90
4597	Farmers Co-op. Elevator Co., Clay City	Hooton-Davis Seed Corp.,	C	90.0	......	70.0	1-34	......	C	None
	Fancy Red Top, Lot 337	Lebanon, Ind.	F	88.69	8.93	80.5	4-34	181,575	F	Ox-eye daisy 45; red sorrel 180
5159	Hooton-Davis Seed Corp., Lebanon[214]	Hooton-Davis Seed Corp.,	C	90.0	......	75.0	1-34	......	C	Red sorrel 1,350; white top 750
	Red Top, Lot 4996	Lebanon, Ind.	F	90.89	6.93	81.5	4-34	170,775	F	Buckhorn 45; red sorrel 180; white top 450
4487	Decatur County Co-op. Co., Greensburg	Indiana Farm Bureau Co-op. Assn., Inc.,‡	C	97.0	......	90.0	1-34	......	C	None
	Red Top, Lot 1970	Indianapolis, Ind.	F	97.35	1.70	88.25	4-34	67,500	F	None
4517	Owen Co. Farm Bureau Co-op. Assn., Spencer	Indiana Farm Bureau Co-op. Assn., Inc.,‡	C	97.0	......	92.0	1-34	......	C	None
	Red Top, Lot 1970	Indianapolis, Ind.	F	97.32	1.58	88.75	5-34	66,150	F	None
4778	Farmers Feed & Coal Co., Bloomington[215]	Indiana Seed Co.,	C	92.0	......	90.0	12-33	......	C	None
	Red Top, Lot I-659	Indianapolis, Ind.	F	91.86	7.44	87.75	3-34	33,930	F	Buckhorn 45; common plantain 90; red sorrel 45
5105	Moore & Kemple, Lafayette	Kellogg-Kelly Seed Co.,	C	93.9	......	91.0	8-33	......	C	None
	Fancy Red Top, Lot X	St. Joseph, Mo.	F	92.6	6.30	90.75	4-34	35,910	F	Buckhorn 45; ox-eye daisy 180; red sorrel 135
4285	Batman, A. J., Marengo	Lewis Implement & Seed Co.,	C	92.0	......	90.0	10-33	......	C	None
	Red Top, Lot Red Bird	Louisville, Ky.	F	89.61	9.89	85.25	3-34	24,570	F	Common plantain 45; ox-eye daisy 45; red sorrel 180

4304	Briner, C. J., Crothersville Red Top, Lot Lisco	Lewis Implement & Seed Co., Louisville, Ky.	C	90.0	......	90.0	10-33	....	C	None
			F	90.03	9.37	88.0	3-34	25,325	F	Buckhorn 135; common plantain 45; ox-eye daisy 45; red sorrel 360
4298	Farmers Co-op. Elevator Co., Seymour Red Top	Lewis Implement & Seed Co., Louisville, Ky.	C	93.3	......	92.0	7-33	....	C	None
			F	92.82	6.78	91.75	3-34	10,485	F	Buckhorn 45; common plantain 90
4382	Huebner Hardware Co., John, Loogootee Fancy Red Top	Lewis Implement & Seed Co., Louisville, Ky.	C	93.3	......	92.0	6-32	....	C	None
			F	93.49	6.11	91.25	4-34	10,845	F	Common plantain 45
4068	Lutz-Boyd Hardware Co., Charlestown Red Top	Lewis Implement & Seed Co., Louisville, Ky.	C	93.3	......	92.0	8-33	....	C	Red sorrel 48
			F	94.02	5.78	90.0	1-34	11,115	F	Buckhorn 180; common plantain 90; red sorrel 45
4334	Lutz-Boyd Hardware Co., Charlestown[216] Red Top, Lot Red Bird	Lewis Implement & Seed Co., Louisville, Ky.	C	99.3	......	90.0	1-34	....	C	Buckhorn 180; common plantain 90; red sorrel 45
			F	92.98	6.52	91.25	3-34	18,585	F	Buckhorn 90; red sorrel 45
4796	Norman & Roberts, G. M., Bedford Red Top	Lewis Implement & Seed Co., Louisville, Ky.	C	93.0	......	92.0	8-33	....	C	None
			F	90.39	9.31	91.25	5-34	14,850	F	None
3981	†Wyatt Feed & Seed Store, Petersburg Red Top, Lot W-8529	Lewis Implement & Seed Co., Louisville, Ky.	C	93.3	......	90.0	12-32	....	C	None
			F	92.91	6.70	93.0	12-33	20,070	F	Buckhorn 90; common plantain 90; ox-eye daisy 45; red sorrel 45
4704	McCarty Seed Co., J. A., Evansville Lucky Jim Red Top, Lot 492	McCarty Seed Co., J. A., Evansville, Ind.	C	92.0	......	93.0	1-34	....	C	None
			F	95.9	2.90	93.75	5-34	92,790	F	Common plantain 90
4477	Eckert-Palmer, Osgood[217] Red Top, Lot 1002	McCullough & Sons Co., J. M., Cincinnati, Ohio	C	90.0	......	90.0	1-34	....	C	None
			F	88.32	9.42	84.25	3-34	111,150	F	Bracted plantain 90; buckhorn 135; common plantain 90; red sorrel 135
4115	Greger, A. C., Brownstown Red Top, Lot 5071	Mangelsdorf & Bro., Ed. F., St. Louis, Mo.	C	95.3	......	91.0	2-33	....	C	None
			F	95.59	4.21	94.75	2-34	8,100	F	None
4769	Spain, W. W., Rockport Red Top, Lot Banner	Ohio Valley Seed Co., Evansville, Ind.	C	85.0	......	80.0	1-34	....	C	None
			F	85.79	11.83	92.5	5-34	35,910	F	Buckhorn 180; ox-eye daisy 90; red sorrel 90
4603	Butler Feed Store, Oakland City Tru Val Fancy Red Top, Lot 2603	Purcell Seed Co., Evansville, Ind.	C	94.0	......	85.0	1-34	....	C	Buckhorn 90; common plantain 45; ox-eye daisy 45; white top 2,700
			F	94.21	4.94	94.0	4-34	28,170	F	Common plantain 90; red sorrel 180; white top 8,550
4387	Daviess County Farm Bureau Co-op. Assn., Inc., Washington Tru Val Red Top, Lot 2221-D	Purcell Seed Co., Evansville, Ind.	C	93.0	......	84.0	12-33	....	C	None
			F	93.75	5.96	91.5	4-34	18,945	F	Bracted plantain 45
3937	Graves Implement Store, Tell City Tru Val Fancy Red Top, Lot 1406-U	Purcell Seed Co., Evansville, Ind.	C	94.50	......	90.0	8-32	....	C	White top 900
			F	96.84	2.97	93.5	11-33	15,525	F	Common plantain 1,080; red sorrel 45
4767	Lambeck Bros., Tell City Tru Val Fancy Red Top, Lot 2221-C	Purcell Seed Co., Evansville, Ind.	C	93.0	......	80.0	12-33	....	C	None
			F	95.55	4.06	95.0	5-34	22,950	F	None
4063	Bollinger, Geo., Henryville Red Top	Ross Seed Co., Louisville, Ky.	C	93.0	......	90.0	9-33	....	C	None
			F	94.07	5.73	93.0	1-34	12,150	F	None
4072	Bollinger, Geo., Henryville Red Top	Ross Seed Co., Louisville, Ky.	C	90.0	......	90.0	9-33	....	C	Bracted plantain 450
			F	92.74	6.96	87.0	1 34	19,035	F	Bockhorn 90; common plantain 45
4752	Boonville Implement Co., Boonville May-Bell Red Top, Lot 670	Ross Seed Co., Louisville, Ky.	C	95.0	......	90.0	10-33	....	C	None
			F	93.20	6.50	92.25	5-34	23,850	F	None

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*Not labeled.

†Certified by Retailer.

‡Agent of Farmers National Grain Corp., Chicago, Ill.

C and F stands, respectively, for Claimed and Found.

[210] Not tagged. Labels furnished.

[211] Sample secured from Indiana State Highway Commission, Tipton, Ind.

[212] Removed from sale. Misbranded. Returned to distributor.

[213] Removed from sale. Misbranded. Retagged.

[214] Sample secured from Indiana State Highway Commission, Frankfort, Ind.

[215] Sample secured from Indiana State Highway Commission, Bloomington, Ind.

[216] Removed from sale. Misbranded. Retagged.

[217] Not tagged. Labels furnished.

RED TOP—Continued

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, per cent	Inert Matter, per cent	Germination, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds		Number per Pound of each of the Noxious Weed Seeds Specified in the Law
4110	Brownstown Feed Exchange, Brownstown	Ross Seed Co.,	C	93.0		90.0	11-33		C	None
	Red Top, Lot 646	Louisville, Ky	F	93.2	6.60	92.5	2-34	15,300	F	None
4116	Greger, A. C., Brownstown	Ross Seed Co.,	C	95.0		90.0	8-33		C	None
	Red Top	Louisville, Ky	F	94.83	4.79	95.0	2-34	33,750	F	None
4576	Linton Hardware Co., Linton	Schultz Seed Co., J. M.,	C	92.22		92.0	10-33		C	None
	Reliable Red Top, Lot R-101	Dieterich, Ill.	F	91.98	5.28	90.75	4-34	27,450	F	None
4308	Crescent Mills, Crothersville	Scott Seed Co.,	C	92.0		90.0	9-33		C	Common plantain 450
	Red Top, Lot 520	New Albany, Ind	F	93.22	5.03	86.5	3-34	122,715	F	Ox-eye daisy 450; red sorrel 315
5167	Elnora Elevator Co., Elnora[218]	Scott Seed Co.,	C	92.0		88.0	8-33		C	Common plantain 450
	Red Top, Lot 519	New Albany, Ind	F	92.81	6.61	87.0	4-34	40,320	F	Buckhorn 90; common plantain 135; red sorrel 45
4320	Farmers Feed Store, Scottsburg[219]	Scott Seed Co.,	C	92.0		90.0	11-33		C	Common plantain 270
	Red Top, Lot 520-A	New Albany, Ind	F	92.4	6.10	77.5	3-34	78,975	F	Common plantain 135; ox-eye daisy 450; red sorrel 90
4328	James Seed Co., Jeffersonville	Scott Seed Co.,	C	85.0		80.0	12-33		C	Common plantain 900; white top 450
	Red Top, Lot 505	New Albany, Ind	F	87.33	9.56	92.0	3-34	46,440	F	Common plantain 540; white top 1,800
4790	Ragsdale & Co., Chas., Bedford	Scott Seed Co.,	C	92.71		90.0	8-33		C	Common plantain 450
	Red Top, Lot 519	New Albany, Ind	F	92.78	5.27	88.75	5-34	92,295	F	Red sorrel 45
4879	Reid, Volney T., Salem	Scott Seed Co.,	C	92.0		90.0	9-33		C	Common plantain 450
	Red Top, Lot 521	New Albany, Ind	F	93.86	4.19	91.0	5-34	127,035	F	Buckhorn 45; common plantain 45; red sorrel 45
3865	Burk Elevator Co., Decatur	Spears & Son, Woodford,	C	92.9		92.0	1-31		C	None
	Red Top	Paris, Ky	F	91.93	7.27	83.75	8-33	36,990	F	Common plantain 90
5207	Sun-Field Seed Service, Chicago, Ill.[220]	Sun-Field Seed Service,	C	94.0		85.0	2-34		C	None
	Red Top, Lot 9086	Chicago, Ill.	F	96.06	3.74	91.5	4-34	9,000	F	None
4205	Vonnegut Hardware Co., Indianapolis[221]	Whitney-Eckstein Seed Co.,	C	99.55		90.0	1-34		C	None
	Red Top	Buffalo, N. Y.	F	95.68	3.34	92.0	2-34	45,765	F	Buckhorn 90; common plantain 540; red sorrel 135
4889	Cauble, O. L., Pekin	Wyatt Feed & Seed Store,	C	98.74		92.0	8-33		C	Buckhorn 45; red sorrel 720
	Thelco Red Top	Petersburg, Ind.	F	98.41	1.39	93.25	5-34	8,910	F	Red sorrel 1,260

*Not labeled.
†Certified by Retailer.
C and F stands, respectively, for Claimed and Found.

[218] Sample secured from Indiana State Highway Commission, Linton, Ind.

[219] Removed from sale. Misbranded.

[220] Sample secured from Indiana State Highway Commission, Warsaw, Ind.

[221] Removed from sale. Misbranded. Retagged.

SOY BEANS

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor	Purity, per cent	Inert Matter, per cent	Germination, per cent	Hard Seeds, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds	Number per Pound of each of the Noxious Weed Seeds Specified in the Law
4900	Hillis Feed Co., Greencastle[222]	American Field Seed Co., C	99.0	......	96.0	......	1-34	....	C None
	Manchu Soy Beans, Lot 249	Chicago, Ill. F	97.88	2.08	89.0	0.0	3-34	4	F None
5194	*Berry Seed Co., Clarinda, Iowa[223]	Berry Seed Co., C	......	......	96.0	......	......	....	C
	Dunfield Soy Beans	Clarinda, Iowa F	98.57	1.43	95.0	0.0	4-34	....	F None
5215	*Bowers, L. G., Selma [224]	Bowers, L. G., C	......	......	......	......	......	....	C
	Dunfield Soy Beans	Selma, Ind. F	96.43	3.52	97.0	0.0	4-34	8	F None
5213	*Calhoun, Claude, Muncie	Calhoun, Claude, C	......	......	......	......	......	....	C
	Soy Beans	Muncie, Ind. F	91.34	7.48	93.0	0.0	4-34	8	F None
4481	Schmocker, John, Batesville	Clark, Walter, C	98.73	......	91.0	......	12-33	....	C None
	Manchu Soy Beans, Lot 64231	Greensburg, Ind. F	98.52	1.47	93.0	0.0	4-34	20	F None
5211	†Whitley County Farm Bureau Co-operative								
	Assn., Inc., Columbia City	Cole, Ora C	98.0	......	85.0	......	2-34	....	C None
	Dunfield Soy Beans, Lot 2	Lagrange, Ind. F	99.21	0.72	89.0	1.0	5-34	....	F None
5249	Co-operative Elevator Co., Winamac	Co-operative Elevator Co., C	96.49	......	91.0	......	3-34	....	C None
	Dunfield Soy Beans, Lot S-4833	Winamac, Ind. F	98.94	0.69	98.0	0.0	4-34	....	F None
5330	Brown Supply Co., Valparaiso	Crabbs Reynolds Taylor Co., C	99.1	......	90.0	......	4-34	....	C None
	Manchu Soy Beans, Lot 3-BH	Crawfordsville, Ind. F	98.92	1.01	86.0	0.0	7-34	4	F None
4026	Seberger Seed Co., Crown Point	Dickinson Co., The Albert, C	99.5	......	94.0	......	12-33	....	C None
	Manchu Soy Beans, Lot 84310	Chicago, Ill. F	99.82	0.18	97.0	0.0	12-33	....	F None
5191	Norman-Roberts, G. M., Bedford [222]	Edgar Co. Seed Co., C	98.0	......	95.0	......	2-34	....	C None
	Manchu Soy Beans	Paris, Ill. F	98.85	1.15	95.0	0.0	4-34	....	F None
5291	Sullivan County Farm Bureau Co-operative								
	Assn., Inc., Sullivan	Edgar Co. Seed Co., C	98.0	......	95.0	......	4-34	....	C None
	Dunfield Soy Beans	Paris, Ill. F	99.34	0.66	94.0	0.0	6-34	....	F None
4425	Trow Co., W., Madison	Foster-Kendall Co., C	99.0	......	90.0	......	1-34	....	C None
	Manchu Soy Beans	Carmel, Ind. F	98.24	1.75	93.0	0.0	4-34	4	F None
4426	Trow Co., W., Madison	Foster-Kendall Co., C	99.0	......	90.0	......	1-34	....	C None
	Dunfield Soy Beans	Carmel, Ind. F	99.1	0.75	96.0	2.0	4-34	16	F Corn cockle 4
5091	Westport Elevator, Westport	Foster-Kendall Co., C	99.0	......	92.0	......	12-33	....	C None
	Dunfield Soy Beans	Carmel, Ind. F	98.86	1.11	92.0	0.0	5-34	....	F None
5150	Graft, C. V., Winchester[225]	Graft, C. V., C	99.0	......	90.0	......	3-34	....	C None
	Dunfield Soy Beans, Lot H	Winchester, Ind. F	98.66	1.15	92.0	0.0	4-34	....	F None
5151	Graft, C. V., Winchester	Graft, C. V., C	99.0	......	90.0	......	2-34	....	C None
	Manchu Soy Beans	Winchester, Ind. F	97.63	2.26	94.0	0.0	5-34	....	F None
5328	McMahan Seed Co., Valparaiso	McMahan Seed Co., C	98.0	......	90.0	......	5-34	....	C None
	Dunfield Soy Beans, Lot Rich	Valparaiso, Ind. F	98.7	1.27	71.0	0.0	8-34	5	F None

*Not labeled.
†Certified by Retailer.
C and F stands, respectively, for Claimed and Found.

[222] Not tagged. Labels furnished.
[223] Sample secured from Robert Elston, Bedford, Ind.
[224] Sample secured from Will Skiff, R. 1, Selma, Ind.
[225] Not tagged. Labels furnished.

SOY BEANS—Continued

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, per cent	Inert Matter, per cent	Germination, per cent	Hard Seeds, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds		Number per Pound of each of the Noxious Weed Seeds Specified in the Law
5212	†Farmers Co-op. Elevator Co., Selma[225]	Meyers, Fred,	C							C	
	Dunfield Soy Beans, Lot Meyers	Selma, Ind	F	99.17	0.83	99.0	0.0	4 34		F	None
5214	Meyers, Fred, Selma[226]	Meyers, Fred,	C			95.0		3-34		C	
	Dunfield Soy Beans	Selma, Ind	F	98.94	1.04	96.0	0.0	4-34	25	F	None
5014	*Miller, Jonas, Wakarusa	Miller, Jonas,	C							C	
	Manchu Soy Beans	Wakarusa, Ind	F	97.6	2.15	94.0	0.0	3-34	292	F	None
5015	*Miller, Jonas, Wakarusa[227]	Miller, Jonas	C							C	
	Dunfield Soy Beans	Wakarusa, Ind	F	83.59	16.19	94.0	0.0	3-34	4	F	None
5016	*Miller, Jonas, Wakarusa	Miller, Jonas	C							C	
	Dunfield Soy Beans	Wakarusa, Ind	F	97.69	1.73	96.0	0.0	3-34	744	F	None
5017	*Miller, Jonas, Wakarusa[228]	Miller, Jonas,	C							C	
	Manchu Soy Beans	Wakarusa, Ind	F	97.78	2.22	99.0	0.0	3-34		F	None
5018	*Miller, Jonas, Wakarusa[229]	Miller, Jonas,	C							C	
	Manchu Soy Beans	Wakarusa, Ind	F	98.66	1.27	98.0	0.0	3-34	100	F	None
5305	*Owen Coal & Feed Co., Bloomington[230]	Owen Coal & Feed Co.,	C							C	
	Manchu Soy Beans	Bloomington, Ind	F	99.11	0.88	92.0	0.0	6-34	4	F	Buckhorn 4
5298	Owen County Farm Bureau Co-operative Assn., Inc., Spencer	Owen Co. Farm Bur. Co-op. Assn., Inc.,	C	85.0		85.0		3-34		C	None
	Manchu Soy Beans, Lot 2	Spencer, Ind	F	99.81	0.17	94.0	0.0	6-34	4	F	None
5299	Owen County Farm Bureau Co-operative Assn., Inc., Spencer	Owen Co. Farm Bur. Co-op. Assn., Inc.,	C	85.0		85.0		3-34		C	None
	Dunfield Soy Beans, Lot 1	Spencer, Ind	F	99.44	0.55	91.0	0.0	6-34	8	F	None
4829	Phillips, J. C., Star City	Phillips, J. C.,	C	97.0		96.0		3-		C	None
	Manchu Soy Beans	Star City, Ind	F	99.38	0.62	97.0	0.0	5-34		F	None
5332	Porter County Farm Bureau Co-operative Assn., Inc., Valparaiso[231]	Porter Co. Farm Bur. Co-op. Assn., Inc.,	C	90.0		90.0		6-34		C	None
	Soy Beans, Lot Os	Valparaiso, Ind	F	92.34	7.03	71.0	0.0	7-34	20	F	None
5307	*Probst, Art, Indianapolis[232]	Probst, Art,	C							C	
	Dunfield Soy Beans	Indianapolis, Ind	F	98.0	1.39	94.0	0.0	6-34	80	F	None
5304	*Henderson, E. J., Salem	Probst & Sheets,	C							C	
	Dunfield Soy Beans	Indianapolis, Ind	F	99.37	0.46	95.0	0.0	6-34	412	F	None
5293	Allan, J. P., Farmersburg[233]	Quinlan Seed Store,	C	99.0		90.0		2-34		C	None
	Illini Soy Beans	Terre Haute, Ind	F	96.1	3.34	93.0	0.0	6-34	288	F	None
4569	Johnson Feed & Supply Co., Linton[234]	Quinlan Seed Store,	C							C	
	Dunfield Soy Beans	Terre Haute, Ind	F	100.0	0.00	90.0	0.0	3-34		F	None
4574	Johnson Feed & Supply Co., Linton[234]	Quinlan Seed Store,	C							C	
	Manchu Soy Beans	Terre Haute, Ind	F	100.0	0.00	57.0	0.0	3-34		F	None
5275	Rariden, Lex, Bedford[234]	Rariden, Lex,	C							C	
	Dunfield Soy Beans, Lot 1	Bedford, Ind	F	99.65	0.32	92.0	0.0	5-34	160	F	None
5306	*Rogers, Reed V., Zionsville[235]	Rogers, Reed V.,	C							C	
	Seed Soy Beans	Zionsville, Ind	F	99.2	0.75	98.0	0.0	6-34	24	F	None

5294	Combs, Gilbert, Bloomfield	Schultz Seed Co., J. M.,	C	99.0	......	94.0	......	4-34	......	C	None
	Black Ebony Soy Beans	Dieterich, Ill	F	98.64	1.17	93.0	1.0	6-34	20	F	None
5300	Coombs, Gilbert, Bloomfield[236]	Schultz Seed Co., J. M.,	C	......	......	94.0	......	4-34	......	C	None
	Mixed Soy Beans	Dieterich, Ill.	F	97.12	2.88	80.0	0.0	6-34	......	F	None
4987	Hayes & Dodds, Campbellsburg	Scott Seed Co.,	C	98.0	......	90.0	......	11-33	......	C	None
	Manchu Soy Beans, Lot 725	New Albany, Ind	F	99.31	0.62	95.0	0.0	5-34	4	F	None
4444	†Sample, John L., Madison	Sommers, Homer,	C	98.0	......	90.0	......	1-34	......	C	None
	Dunfield Soy Beans, Lot HS	Greentown, Ind., R. 2	F	96.91	3.08	96.0	0.0	4-34	......	F	None
4449	†Sample, John L., Madison	Sommers, Homer,	C	98.0	......	90.0	......	2-34	......	C	None
	Manchu Soy Beans, Lot HJ	Greentown, Ind., R. 2	F	99.13	0.87	98.0	0.0	4-34	......	F	None
4254	Brazil Flour & Feed Co., Brazil[237]	Sunshine Feed Store,	C	......	......	......	......	......	......	C	
	Illini Soy Beans	Terre Haute, Ind	F	99.7	0.30	96.0	0.0	2-34	......	F	None
4602	Criss Bros., Lewis[237]	Sunshine Feed Store,	C	99.0	......	95.0	......	2-34	......	C	None
	Dunfield Soy Beans, Lot 2	Terre Haute, Ind	F	100.0	0.00	96.0	0.0	3-34	......	F	None
5292	Owen County Farm Bureau Co-operative Assn., Inc., Spencer	Tri-County Farm Bureau Co-op Assn., Inc.,	C	98.0	......	94.0	......	4-34	......	C	None
	Wilson Soy Beans	Evansville, Ind	F	99.23	0.74	98.0	0.0	6-34	5	F	None
5309	Uhl-Snider Milling Co., Connersville	Uhl-Snider Milling Co.,	C	95.0	......	95.0	......	6-34	......	C	None
	Soy Beans, Lot Lam	Connersville, Ind	F	99.59	0.40	97.0	0.0	6-34	4	F	None
4571	*Wesnidge, Dennis, Jasonville	Wesnidge, Dennis,	C	......	......	......	......	......	......	C	
	Manchu Soy Beans	Jasonville, Ind	F	100.0	0.00	83.0	0.0	3-34	......	F	None
5296	Bloomfield Mill & Elevator Co., Bloomfield	Wyatt Feed & Seed Store,	C	97.0	......	95.0	......	3-34	......	C	None
	Mixed Wilson & Virginia Brown Soy Beans	Petersburg, Ind	F	98.85	0.60	97.0	0.0	6-34	8	F	None
5297	Bloomfield Mill & Elevator Co., Bloomfield	Wyatt Feed & Seed Store,	C	96.0	......	90.0	......	3-34	......	C	None
	Black Ebony Soy Beans	Petersburg, Ind	F	99.68	0.22	88.0	4.0	6-34	12	F	None
4988	Cauble, O. L., Pekin	Wyatt Feed & Seed Store,	C	97.0	......	93.0	......	2-34	......	C	None
	Virginia Soy Beans	Petersburg, Ind	F	98.29	1.41	89.0	0.0	5-34	50	F	None
4989	Cauble, O. L., Pekin	Wyatt Feed & Seed Store,	C	96.0	......	87.0	......	3-34	......	C	None
	Virginia Brown Soy Beans	Petersburg, Ind	F	97.9	1.44	89.0	0.0	5-34	12	F	None

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*Not labeled.

†Certified by Retailer.

C and F stands, respectively, for Claimed and Found.

[226] Not tagged. Labels furnished. Tag incomplete. Sample secured from Earl Langsdon, R. 6, Muncie, Ind.

[227] Sample secured from Wm. H. Wagner, Wakarusa, Ind.

[228] Sample secured from Russell Blosser, Wakarusa, Ind.

[229] Sample secured from Harvey McCown, Wakarusa, Ind.

[230] Part for own use. Part tagged.

[231] Removed from sale. Misbranded. Retagged.

[232] Sample secured from E. J. Henderson, Salem, Ind.

[233] Removed from sale. Misbranded. Recleaned. All sold.

[234] Not tagged. Labels furnished.

[235] Sample secured from Ernest Etzler, Salem, Ind.

[236] Removed from sale. Misbranded. All sold. Tag incomplete.

[237] Not tagged. Labels furnished.

SUDAN GRASS

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, per cent	Inert Matter, per cent	Germination, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds		Number per Pound of each of the Noxious Weed Seeds Specified in the Law
4837	Farmers Grain & Supply Co., Thornhope, P. O. Oak	Allied Seed Co., Inc.,	C	98.5		80.0	12-33		C	None
	Sudan Grass, Lot 8	Fort Wayne, Ind.	F	96.84	2.95	79.0	5-34	198	F	None
5312	Moll, J. J., Mt. Vernon[238]	Heldt Co., The,	C	97.56		80.0	5-34		C	None
	Sudan Grass, Lot 3011	Evansville, Ind.	F	97.71	2.04	82.5	6-34	216	F	None
5310	Woodbury-Elliott Grain Co., Muncie	Hooton-Davis Seed Corp.,	C	97.0		70.0	3-34		C	None
	Sudan Grass, Lot S-480	Lebanon, Ind.	F	96.96	3.02	82.0	6-34	54	F	None
5301	Worthington Grain Co., Worthington	Indiana Seed Co.,	C	98.0		86.0	2-34		C	None
	Sudan Grass, Lot I-1829	Indianapolis, Ind.	F	99.19	0.78	75.5	6-34	54	F	None
5313	McCarty Seed Co., J. A., Evansville	McCarty Seed Co., J. A.,	C	93.65		80.0	4-34		C	None
	Sudan Grass, Lot 1074	Evansville, Ind.	F	96.62	2.40	84.5	6-34	234	F	None

*Not labeled.
†Certified by Retailer.

C and F stands, respectively, for Claimed and Found.
[238] Not tagged. Labels furnished.

TIMOTHY

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, per cent	Inert Matter, per cent	Germination, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds		Number per Pound of each of the Noxious Weed Seeds Specified in the Law
5256	Allied Seed Co., Inc., Fort Wayne[239]	Allied Seed Co., Inc.,	C	99.6		90.0	12-33		C	None
	Timothy, Lot 195	Fort Wayne, Ind.	F	99.8	0.05	82.75	4-34		F	None
5272	Allied Seed Co., Inc., Fort Wayne[240]	Allied Seed Co., Inc.,	C	99.6		90.0	12-33		C	None
	Timothy, Lot B-485	Fort Wayne, Ind.	F	99.75	0.15	87.75	5-34	18	F	Common plantain 18
4672	†Gelzleichter & Son, J., Huntington	Allied Seed Co., Inc.,	C	99.7		92.0	1-34		C	None
	Timothy, Lot 170	Fort Wayne, Ind.	F	99.85	0.05	95.5	4-34	504	F	Common plantain 36; red sorrel 18
4859	Hartford Milling Co., Hartford City	Allied Seed Co., Inc.,	C	99.7		92.0	1-34		C	None
	Timothy, Lot 170	Fort Wayne, Ind.	F	99.8	0.15	93.5	5-34	54	F	Common plantain 54
3952	Lapaz Grain Co., Lapaz	Allied Seed Co., Inc.,	C	99.6		90.0	5-33		C	None
	AA Timothy, Lot 163	Fort Wayne, Ind.	F	99.75	0.20	90.75	11-33	90	F	Common plantain 54; red sorrel 36
5044	Stiefel Grain Co., Avilla	Allied Seed Co., Inc.,	C	99.7		92.0	1-34		C	None
	Timothy, Lot 170	Fort Wayne, Ind.	F	99.7	0.25	90.5	5-34	225	F	None
5216	Depoy Feed Mill, Ben, Muncie[241]	Berry Seed Co.,	C	97.5		88.0	1-34		C	None
	Star Timothy, Lot 15324	Clarinda, Iowa	F	95.71	2.69	90.75	4-34	14,481	F	Bracted plantain 18; buckhorn 126; common plantain 576; red sorrel 486

4876	Bolles Hardware Co., Brownstown	Chambers Seed Co.,	C	99.0	......	90.0	12-33	....	C	None
	Timothy, Lot 1284	Louisville, Ky	F	99.25	0.15	92.5	5-34	1,629	F	Bracted plantain 18; common plantain 18; red sorrel 18
4977	Eberts Grain Co., Deputy	Chambers Seed Co.,	C	99.5	......	95.0	12-33	....	C	Red sorrel 90
	Timothy, Lot 1285	Louisville, Ky	F	99.84	0.10	93.0	5-34	684	F	Buckhorn 18; common plantain 54; curled dock 36; red sorrel 126
4061	Eberts Grain Co., Memphis	Chambers Seed Co.,	C	99.5	......	90.0	9-33	....	C	None
	Timothy, Lot 1282	Louisville, Ky	F	98.85	1.05	89.0	1-34	1,188	F	Common plantain 234; red sorrel 54
5157	Union Hardware Co., Seymour[242]	Chambers Seed Co.,	C	99.6	......	90.0	11-	....	C	None
	Timothy, Lot 1285	Louisville, Ky	F	99.65	0.10	90.0	4-34	360	F	Buckhorn 72; red sorrel 288
3935	Victoria Mill & Elevator Co., Jasper	Chambers Seed Co.,	C	99.7	......	95.0	9-33	....	C	None
	Timothy, Lot 1282	Louisville, Ky	F	99.56	0.34	89.75	11-33	1,188	F	Common plantain 216; red sorrel 72
4770	Victoria Mill & Elevator Co., Jasper	Chambers Seed Co.,	C	99.5	......	90.0	12-33	....	C	None
	Timothy, Lot 1285	Louisville, Ky	F	99.7	0.20	91.5	5-34	396	F	Bracted plantain 18; red sorrel 378
4381	Boonshot Hardware Co., Petersburg[243]	Corneli Seed Co.,	C	93.09	......	90.0	2-34	....	C	Buckhorn 938; red sorrel 5,148
	Timothy, Lot Cat	St. Louis, Mo	F	93.40	3.43	89.25	3-34	20,664	F	Bracted plantain 288; buckhorn 918; common plantain 936; curled dock 36; ox-eye daisy 36; red sorrel 6,525
4773	Wedeking & Co., C. W., Dale	Corneli Seed Co.,	C	99.51	......	92.0	1-34	....	C	None
	Timothy, Lot Tim	St. Louis, Mo	F	99.5	0.40	87.0	5-34	837	F	Buckhorn 54; common plantain 72; red sorrel 36
4503	Brewer Milling Co., Gosport	Crabbs Reynolds Taylor Co.,	C	99.6	......	90.0	1-34	....	C	None
	Timothy, Lot 6-TV	Crawfordsville, Ind	F	99.75	0.10	94.25	4-34	144	F	Common plantain 54; red sorrel 90
4836	Co-operative Elevator Co., Winamac	Crabbs Reynolds Taylor Co.,	C	99.65	......	92.0	2-34	....	C	None
	Timothy, Lot 8-TV	Crawfordsville, Ind	F	99.8	0.10	92.5	5-34	504	F	Buckhorn 36; red sorrel 18
5184	Crabbs Reynolds Taylor Co., Crawfordsville[244]	Crabbs Reynolds Taylor Co.,	C	99.55	......	90.0	3-34	....	C	None
	Timothy, Lot 1-TW	Crawfordsville, Ind	F	99.45	0.20	87.25	4-34	....	F	None
4650	Farmers Elevator Co., Monticello[245]	Crabbs Reynolds Taylor Co.,	C	99.6	......	90.0	1-33	....	C	None
	Timothy, Lot 6-TV	Crawfordsville, Ind	F	99.6	0.30	93.75	4-34	423	F	Common plantain 36; red sorrel 18
4786	Farmers Feed & Coal Co., Bloomington[246]	Crabbs Reynolds Taylor Co.,	C	99.6	......	90.0	1-33	....	C	None
	Timothy, Lot 6-TV	Crawfordsville, Ind	F	99.8	0.15	87.75	3-34	126	F	Common plantain 72; red sorrel 54
4838	Farmers Grain & Supply Co., Thornhope, P. O. Oak	Crabbs Reynolds Taylor Co.,	C	99.6	......	90.0	1-33	....	C	None
	Timothy, Lot 6-TV	Crawfordsville, Ind	F	99.8	0.10	90.75	5-34	234	F	Common plantain 180; red sorrel 54
3947	Lapaz Grain Co., Lapaz	Crabbs Reynolds Taylor Co.,	C	99.68	......	92.0	8-33	....	C	None
	Timothy, Lot 7-TU	Crawfordsville, Ind	F	99.75	0.05	91.0	11-33	54	F	Red sorrel 54
3914	Loughry Bros. Milling & Grain Co., Monticello	Crabbs Reynolds Taylor Co.,	C	99.65	......	90.0	9-33	....	C	None
	Timothy, Lot 9-TV	Crawfordsville, Ind	F	99.7	0.15	91.75	11-33	594	F	Bracted plantain 18; buckhorn 54; common plantain 54; red sorrel 18
5139	Markleville Elevator Co., Markleville	Crabbs Reynolds Taylor Co.,	C	99.66	......	99.0	1-34	....	C	None
	Timothy, Lot 6-TV	Crawfordsville, Ind	F	99.85	0.05	93.75	5-34	126	F	Common plantain 90; red sorrel 36
4910	Miller Grain Co., Bainbridge	Crabbs Reynolds Taylor Co.,	C	99.6	......	90.0	1-34	....	C	None
	Timothy, Lot 6-TV	Crawfordsville, Ind	F	99.61	0.29	93.0	5-34	90	F	Common plantain 18; red sorrel 72

*Not labeled.

†Certified by Retailer.

C and F stands, respectively, for Claimed and Found.

[239] Sample secured from Indiana State Highway Commission, Fort Wayne, Ind.

[240] Sample secured from Indiana State Highway Commission, Waterloo, Ind.

[241] Removed from sale. Misbranded. Returned to distributor.

[242] Sample secured from Indiana State Highway Commission, Seymour Ind.

[243] Not tagged. Labels furnished.

[244] Sample secured from Indiana State Highway Commission, Crawfordsville, Ind.

[245] Distributed by Crabbs-Reynolds-Taylor Co., Lafayette, Ind.

[246] Sample secured from Indiana State Highway Commission, Bloomington, Ind.

TIMOTHY—Continued

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, per cent	Inert Matter, per cent	Germination, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds	Number per Pound of each of the Noxious Weed Seeds Specified in the Law
5226	Miller Grain Co., Greencastle[247] Timothy, Lot 6-TV	Crabbs Reynolds Taylor Co., Crawfordsville, Ind.	C	99.6		90.0	1-34		None
			F	99.75	0.15	90.25	4-34	486	Red sorrel 36
3953	Protsman, G. L., Plymouth Timothy, Lot 5-TV	Crabbs Reynolds Taylor Co., Crawfordsville, Ind.	C	99.55		90.0	7-33		None
			F	99.55	0.30	93.0	11-33	369	Buckhorn 18; common plantain 126
5078	Reimann-McCammon Co., Letts Timothy, Lot 6-TV	Crabbs Reynolds Taylor Co., Crawfordsville, Ind.	C	99.6		90.0	1-33		None
			F	99.7	0.20	88.75	5-34	216	Buckhorn 18; common plantain 126; red sorrel 72
3899	Swayzee Grain Co., Swayzee Timothy, Lot 6-TV	Crabbs Reynolds Taylor Co., Crawfordsville, Ind.	C	99.8		90.0	8-33		None
			F	99.85	0.05	91.5	9-33	216	Buckhorn 72; red sorrel 144
4047	Waynetown Grain Co., Waynetown Timothy, Lot 7-TV	Crabbs Reynolds Taylor Co., Crawfordsville, Ind.	C	99.68		92.0	8-33		None
			F	99.9	0.05	88.5	1-34	18	Red sorrel 18
5106	Busenbark Grain Co., Crawfordsville Timothy, Lot T-53	Crawfordsville Seed Co., Crawfordsville, Ind.	C	99.7		92.0	2-34		None
			F	99.65	0.20	91.25	5-34	225	None
4583	Crawfordsville Seed Co., Crawfordsville[248] Timothy, Lot 419	Crawfordsville Seed Co., Crawfordsville, Ind.	C	99.85		92.0	2-34		None
			F	99.85	0.00	94.25	3-34	261	Buckhorn 18; common plantain 18
5185	Crawfordsville Seed Co., Crawfordsville[249] Timothy, Lot 419	Crawfordsville Seed Co., Crawfordsville, Ind.	C	99.5		92.0	2-34		None
			F	99.95	0.05	95.0	4-34	18	Buckhorn 18
4236	Evans & Hedworth, Remington Timothy, Lot T-425	Crawfordsville Seed Co., Crawfordsville, Ind.	C	99.6		92.0	1-34		None
			F	99.8	0.15	90.75	2-34	54	Curled dock 18; red sorrel 36
5110	Farm Bureau Elevator & Supply Co., Crawfordsville Timothy, Lot T-53	Crawfordsville Seed Co., Crawfordsville, Ind.	C	99.7		92.0	2-34		None
			F	99.75	0.20	85.25	7-34		None
4522	New Ross Grain & Lumber Co., New Ross Timothy, Lot 418	Crawfordsville Seed Co., Crawfordsville, Ind.	C	99.75		90.0	11-33		None
			F	99.45	0.30	97.25	4-34	333	Bracted plantain 18; common plantain 90
4217	Overpeck, H. M., Rockville Timothy, Lot 418	Crawfordsville Seed Co., Crawfordsville, Ind.	C	99.7		94.0	9-33		None
			F	99.71	0.10	90.75	2-34	927	Buckhorn 36; common plantain 180; ox-eye daisy 18; red sorrel 18
4056	Straughn Grain Co., Straughn Plain Pasture Timothy, Lot 63356	Davis, C. O., Cambridge City, Ind.	C	99.0		90.0	9-33		None
			F	99.95	0.05	94.25	1-34	72	Prickly lettuce 18; wild carrot 54
4275	†Johnson Co. Farm Bureau Co-op. Assn., Inc., Franklin Timothy, Lot A	Devore, Chester T., Franklin, Ind.	C	98.0		82.0	8-33		None
			F	98.93	0.34	89.75	2-34	486	Curled dock 36
4532	†Armstrong-Landon Co., Kokomo Timothy, Lot 69029	Dickinson Co., The Albert, Chicago, Ill.	C	99.7		93.0	1-34		None
			F	99.75	0.10	89.0	4-34	315	Common plantain 18; red sorrel 72
4953	Brown Supply Co., Valparaiso[250] Timothy, Lot 066627	Dickinson Co., The Albert, Chicago, Ill.	C	99.6		92.0	1-34		None
			F	99.6	0.25	91.5	3-34	531	Common plantain 72; red sorrel 234
3950	Hanna Lumber & Grain Co., Hanna Timothy, Lot 68942	Dickinson Co., The Albert, Chicago, Ill.	C	99.65		94.0	9-33		None
			F	99.85	0.05	95.5	11-33	504	Bracted plantain 18; common plantain 18; curled dock 18
4938	Heitschmidt. A. C., Michigan City Timothy, Lot 066560	Dickinson Co., The Albert, Chicago, Ill.	C	99.6		94.0	2-34		None
			F	99.6	0.20	91.25	5-34	1,116	Common plantain 216

4920	Kiest Milling Co., Knox	Dickinson Co., The Albert,	C	99.6		94.0	2–34		C	Common plantain 160
	Timothy, Lot 066560	Chicago, Ill.	F	99.65	0.20	90.25	5–34	756	F	Common plantain 288; curled dock 18
5266	Seberger Seed Co., Crown Point	Dickinson Co., The Albert,	C	99.65		91.0	3–34		C	None
	Timothy, Lot 69094	Chicago, Ill.	F	99.8	0.15	89.25	5- 34	72	F	Common plantain 54; red sorrel 18
5002	Stauffer Grain Co., Nappanee	Dickinson Co., The Albert,	C	99.7		93.0	1–34		C	Red sorrel 128
	Timothy, Lot 69029	Chicago, Ill.	F	99.55	0.25	92.0	5–34	324	F	Buckhorn 36; common plantain 54; ox-eye daisy 72; red sorrel 162
4785	*Farmers Feed & Coal Co., Bloomington[251]	Farmers Feed & Coal Co.,	C						C	
	Timothy	Bloomington, Ind.	F	99.51	0.20	97.25	3–34	1,566	F	Buckhorn 180; common plantain 72; curled dock 36; red sorrel 360; wild carrot 18
5239	†Byers Seed Co., Franklin	Foster-Kendall Co.,	C	99.4		92.0	1–34		C	None
	Timothy, Lot C-12-CD	Carmel, Ind.	F	99.66	0.19	80.25	6–34	819	F	Buckhorn 36; common plantain 18; red sorrel 36; wild carrot 54
4188	Farm Bureau Service, Columbus	Foster-Kendall Co.,	C	99.7		91.0	12–33		C	None
	Timothy	Carmel, Ind.	F	99.65	0.25	93 25	2–34	225	F	None
4824	Farmers Co-op. Co., Shideler	Foster-Kendall Co.,	C	99.7		91.0	1–34		C	None
	Timothy	Carmel, Ind.	F	99.85	0.10	88.25	5–34	72	F	Buckhorn 18; common plantain 36; red sorrel 18
4826	Farmers Co-op. Co., Shideler	Foster-Kendall Co.,	C	99.5		92.0	1–34		C	None
	Timothy	Carmel, Ind.	F	99.65	0.25	87.5	5–34	36	F	Common plantain 36
5092	Foster-Kendall Co., Carmel[252]	Foster-Kendall Co.,	C	99.5		94.0	1–34		C	None
	Timothy	Carmel, Ind.	F	99.7	0.25	89.25	3–34	18	F	Common plantain 18
4814	Galveston Farmers Elevator, Galveston	Foster-Kendall Co.,	C	99.55		92.0	1–34		C	None
	Timothy	Carmel, Ind.	F	99.5	0.40	92.0	5–34	252	F	Common plantain 252
4035	Jay Grain Co., Elwood	Foster-Kendall Co.,	C	99.7		91.0	6–33		C	None
	Timothy	Carmel, Ind.	F	99 8	0.10	90.25	1–34	36	F	Common plantain 18; red sorrel 18
4513	Lizton Grain & Lumber Co., Lizton	Foster-Kendall Co.,	C	99.55		94.0	1–34		C	None
	Timothy	Carmel, Ind.	F	99.66	0.29	88 75	4 34	54	F	Common plantain 36; curled dock 18
3872	Sellars Grain Co., Forest[253]	Foster-Kendall Co.,	C	99.6		91 0	3–33		C	None
	Timothy, Lot M	Carmel, Ind.	F	99 9	0.05	89 5	9–33		F	None
4139	Smock & Co., W. C., Burrows	Foster-Kendall Co.,	C	99.7		95 0	2 33		C	None
	Timothy	Carmel, Ind.	F	99.85	0.05	86 25	2 34	243	F	Common plantain 18
4473	Trow Co., W., Madison	Foster-Kendall Co.,	C	99.55		94 0	1–34		C	Bracted plantain 45; red sorrel 90
	Timothy	Carmel, Ind.	F	99.6	0.20	89 0	4–34	846	F	Red sorrel 396
3867	Pioneer Elevator Co., Worthington	Garten Feed Co., The,	C	99.7		94 0	2 33		C	None
	Timothy, Lot 68656	Indianapolis, Ind.	F	99.72	0.14	90 25	8–33		F	None
4356	Bell Elevator Co., Cottage Grove	Goodrich Bros. Co.,	C	99 5		90.0	12–33		C	None
	Timothy, Lot Thrush	Winchester, Ind.	F	99.65	0.25	91.5	4 34	144	F	Red sorrel 144
3893	Chance Bros., Connersville	Goodrich Bros. Co.,	C	99.6		95 0	4–33		C	None
	Timothy, Lot Lark	Winchester, Ind.	F	99.85	0.15	89.5	9–33		F	None
4825	Economy Co-op. Co., Economy	Goodrich Bros. Co.,	C	99.5		92.0	1–34		C	Curled dock 90
	Timothy, Lot Chance	Winchester, Ind.	F	99.7	0.25	91.5	5–34	216	F	Buckhorn 36; common plantain 90; curled dock 90
4085	Goodrich Bros. Co., Winchester	Goodrich Bros. Co.,	C	99 5		87 0	11–33		C	None
	Timothy, Lot Lark-1	Winchester, Ind.	F	99 85	0.10	87 0	1–34	450	F	None

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*Not labeled.

†Certified by Retailer.

C and F stands, respectively, for Claimed and Found.

[247] Sample secured from Indiana State Highway Commission, Greencastle, Ind.

[248] Sample secured from Purdue Soils and Crops Department, Lafayette, Ind.

[249] Sample secured from Indiana State Highway Commission, Covington, Ind.

[250] Not tagged. Labels furnished.

[251] Sample secured from Indiana State Highway Commission, Bloomington, Ind.

[252] Sample secured from Indiana State Highway Commission, Tipton, Ind.

[253] Not tagged. Labels furnished.

TIMOTHY—Continued

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, per cent	Inert Matter, per cent	Germination, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds		Number per Pound of each of the Noxious Weed Seeds Specified in the Law
4042	Hinshaw Grain Co., Summitville	Goodrich Bros. Co.,	C	99.5	.....	92.0	8-33	.....	C	None
	Timothy, Lot Lark	Winchester, Ind.	F	99.8	0.15	89.0	1-34	.....	F	None
4456	Hunger, C. G., Madison	Goodrich Bros. Co.,	C	99.55	.....	90.0	12-33	.....	C	None
	Timothy, Lot Lark	Winchester, Ind.	F	99.7	0.10	90.0	4-34	90	F	Buckhorn 54; red sorrel 18; yellow trefoil 18
4823	Powell Grain Co., Losantville	Goodrich Bros. Co.,	C	99.50	.....	90.0	1-34	.....	C	None
	Timothy, Lot Lark	Winchester, Ind.	F	99.80	0.10	94.25	5-34	297	F	Common plantain 54; red sorrel 18
3917	†Rosston Grain & Lumber Co., Rosston[254]	Goodrich Bros. Co.,	C	99.50	.....	90.0	9-33	.....	C	None
	Timothy, Lot Lark	Winchester, Ind.	F	99.65	0.25	86.25	11-33	1,836	F	Buckhorn 18; common plantain 432; red sorrel 90; wild carrot 1,296
5143	Graft, C. V., Winchester	Graft, C. V.,	C	99.5	.....	92.0	8-33	.....	C	None
	Timothy, Lot G	Winchester, Ind.	F	99.85	0.10	89.25	5-34	.....	F	None
4633	Haynes Milling Co., The, Portland	Haynes Milling Co., The,	C	99.2	.....	90.0	2-34	.....	C	Curled dock 90
	Timothy, Lot T	Portland, Ind.	F	99.75	0.15	89.25	4-34	1,215	F	Curled dock 54; red sorrel 36
3940	Butler Feed Store, Oakland City	Heldt Co., The,	C	99.5	.....	92.0	10-33	.....	C	None
	Thelco Timothy, Lot 2854	Evansville, Ind.	F	99.6	0.15	93.25	11-33	684	F	Bracted plantain 18; buckhorn 18; common plantain 18; red sorrel 180
4695	Heldt & Voelker Co., The, Evansville	Heldt Co., The,	C	99.74	.....	92.0	1-34	.....	C	None
	Thelco Timothy, Lot 2884	Evansville, Ind.	F	99.85	0.15	87.75	4-34	18	F	Common plantain 18
4749	Kindermann & Sons, Wm., Boonville	Heldt Co., The,	C	99.74	.....	92.0	1-34	.....	C	None
	Thelco Timothy, Lot 2884	Evansville, Ind.	F	99.36	0.49	92.25	5-34	297	F	Bracted plantain 18; common plantain 54
4622	Murphy & Co., Princeton	Heldt Co., The,	C	99.04	.....	90.0	1-34	.....	C	Buckhorn 225; red sorrel 900
	Comet Timothy, Lot 2901	Evansville, Ind.	F	99.21	0.10	96.25	4-34	1,332	F	Bracted plantain 36; buckhorn 144; red sorrel 1,152
4389	Wyatt Feed & Seed Store, Petersburg	Heldt Co., The,	C	99.74	.....	92.0	1-34	.....	C	None
	Thelco Timothy, Lot 2884	Evansville, Ind.	F	99.81	0.14	97.0	4-34	198	F	Buckhorn 36; common plantain 144; red sorrel 18
4867	†Hoosier Grain & Supply Co., Montpelier	Hoosier Grain & Supply Co.,	C	99.65	.....	91.25	9-33	.....	C	None
	Timothy, Lot 90	Bluffton, Ind.	F	99.85	0.05	87.0	5-34	468	F	Buckhorn 90; common plantain 306; curled dock 72
3934	Beck Grain Co., Shelbyville	Hooton-Davis Seed Corp.,	C	99.6	.....	84.0	8-33	.....	C	None
	Timothy, Lot T-423	Lebanon, Ind.	F	99.8	0.10	81.75	11-33	1,269	F	Curled dock 36; red sorrel 108
4596	Farmers Co-op. Elevator Co., Clay City	Hooton-Davis Seed Corp.,	C	99.5	.....	88.0	1-34	.....	C	None
	Pioneer Timothy, Lot T-446	Lebanon, Ind.	F	99.7	0.20	95.5	4-34	72	F	Common plantain 72
5161	Hooton-Davis Seed Corp., Lebanon[255]	Hooton-Davis Seed Corp.,	C	99.5	.....	88.0	1-34	.....	C	None
	Timothy, Lot Pioneer	Lebanon, Ind.	F	99.3	0.35	90.25	4-34	486	F	Red sorrel 36
5064	Shirley, O. C., Knightstown	Hooton-Davis Seed Corp.,	C	99.5	.....	88.0	1-34	.....	C	None
	Timothy Seed, Lot Pioneer	Lebanon, Ind.	F	99.7	0.25	96.25	5-34	90	F	Common plantain 90

4690	Gibson Co. Shipping Assn., Princeton Timothy	Indiana Farm Bureau Co-op. Assn., Inc., Indianapolis, Ind.	C	99.5	......	93.0	9-33	......	None
			F	99.45	0.25	86.75	5-34	243	Red sorrel 18
5068	Hancock Co. Farm Bureau Co-op. Assn., Inc., Greenfield Timothy, Lot T-581	Indiana Farm Bureau Co-op. Assn., Inc.,‡ Indianapolis, Ind.	C	99.5	......	93.0	1-34	......	None
			F	99.3	0.40	93.75	5-34	279	Common plantain 54
4537	Howard Co. Farm Bureau Co-op. Assn., Inc., Kokomo Timothy, Lot T-581	Indiana Farm Bureau Co-op. Assn., Inc.,‡ Indianapolis, Ind.	C	99.5	......	93.0	1-34	......	None
			F	99.5	0.20	89.5	4-34	54	Common plantain 36; red sorrel 18
5077	Jennings Co. Farm Bureau Co-op. Assn., Inc., North Vernon Timothy, Lot T-581	Indiana Farm Bureau Co-op. Assn., Inc.,‡ Indianapolis, Ind.	C	99.5	......	93.0	1-34	......	None
			F	99.65	0.20	90.5	5-34	54	Common plantain 54
5037	Lagrange Co. Farm Bureau Co-op. Assn., Inc., Lagrange Timothy, Lot T-581	Indiana Farm Bureau Co-op. Assn., Inc.,‡ Indianapolis, Ind.	C	90.5	......	93.0	1-34	......	None
			F	99.45	0.25	93.0	5-34	279	Common plantain 54
4931	LaPorte Co. Farm Bureau Co-op. Assn., Inc., LaPorte Timothy, Lot T-581	Indiana Farm Bureau Co-op. Assn., Inc.,‡ Indianapolis, Ind.	C	99.5	......	93.0	1-34	......	None
			F	99.65	0.30	93.5	5-34	36	Common plantain 36
4469	Ripley Co. Farm Bureau Co-op. Assn., Inc., Osgood Timothy, Lot 580	Indiana Farm Bureau Co-op. Assn., Inc., Indianapolis, Ind.	C	99.5	......	93.0	1-34	......	None
			F	99.85	0.10	98.5	4-34	126	Buckhorn 126
5098	Tipton Co. Farm Bureau Co-op. Assn., Inc., Tipton Timothy, Lot T-582	Indiana Farm Bureau Co-op. Assn., Inc.,‡ Indianapolis, Ind.	C	99.5	......	94.0	1-34	......	None
			F	99.41	0.49	94.25	5-34	450	None
4691	Tri-Co. Farm Bureau Co-op. Assn., Inc., Elberfeld[256] Timothy	Indiana Farm Bureau Co-op. Assn., Inc., Indianapolis, Ind.	C	99.5	......	93.0	1-34	......	None
			F	99.55	0.30	87.0	3-34	36	Common plantain 18; red sorrel 18
4054	Wayne Co. Farm Bureau Co-op. Assn., Inc., Richmond Timothy, Lot T-578	Indiana Farm Bureau Co-op. Assn., Inc., Indianapolis, Ind.	C	99.5	......	92.0	9-33	......	None
			F	99.75	0.15	96.75	1-34	540	Common plantain 18; red sorrel 72
4739	Anderson & Morgan, Dunkirk Timothy, Lot P-564	Indiana Seed Co., Indianapolis, Ind.	C	99.7	......	97.0	12-33	......	None
			F	99.61	0.19	93.0	4-34	873	Buckhorn 108; common plantain 72; curled dock 18
4120	Cloverdale Hdwe. & Lum. Co., Cloverdale Timothy, Lot 1-8	Indiana Seed Co., Indianapolis, Ind.	C	99.25	......	91.0	9-33	......	None
			F	99.37	0.39	93.75	1-34	351	Common plantain 126
4898	Crawford, J. L., Morgantown Timothy, Lot 1-8	Indiana Seed Co., Indianapolis, Ind.	C	99.25	......	91.0	9-33	......	None
			F	99.07	0.59	96.25	5-34	297	Common plantain 72
5166	Elnora Elevator Co., Elnora[257] Timothy, Lot P-564	Indiana Seed Co., Indianapolis, Ind.	C	99.7	......	91.0	12-33	......	None
			F	99.65	0.20	93.0	4-34	783	Buckhorn 36; common plantain 54; red sorrel 18
5140	Graft, C. V., Winchester Timothy, Lot 1-16	Indiana Seed Co., Indianapolis, Ind.	C	99.7	......	92.0	1-34	......	None
			F	99.75	0.10	91.25	5-34	540	Buckhorn 36; common plantain 36; red sorrel 18
4118	Karsell Co., Inc., The, Bloomington Timothy, Lot 1-16	Indiana Seed Co., Indianapolis, Ind.	C	99.6	......	92.0	1-34	......	None
			F	99.75	0.10	88.75	2-34	783	Buckhorn 18; red sorrel 90
4213	Martin Hardware Co., Clayton Timothy, Lot 1-8	Indiana Seed Co., Indianapolis, Ind.	C	99.25	......	91.0	9-33	......	None
			F	99.15	0.50	93.25	2-34	819	Common plantain 126; curled dock 18

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*Not labeled.
†Certified by Retailer.
C and F stands, respectively, for Claimed and Found.
‡Agent of Farmers National Grain Corp., Chicago, Ill.

[254] Not tagged. Labels furnished. Removed from sale. Misbranded.

[255] Sample secured from Indiana State Highway Commission, Frankfort, Ind.

[256] Not tagged. Labels furnished. Distributed by Tri-County Farm Bureau Coop. Ass'n, Evansville, Ind.

[257] Sample secured from Indiana State Highway Commission, Linton, Ind.

TIMOTHY—Continued

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, per cent	Inert Matter, per cent	Germination, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds	Number per Pound of each of the Noxious Weed Seeds Specified in the Law
4494	Nading Grain Co., Wm., Greensburg	Indiana Seed Co.,	C	99.25	......	91.0	9-33	......	C None
	Timothy, Lot 1-8	Indianapolis, Ind.	F	99.31	0.50	94.5	4-34	441	F Common plantain 162; curled dock 18; red sorrel 36
3936	Pritchard & Rafert, Pendleton	Indiana Seed Co.,	C	99.25	......	91.0	9-33	......	C None
	Timothy, 1-8	Indianapolis, Ind.	F	99.51	0.34	87.75	11-33	504	F Red sorrel 54
5007	Rochester Co-op. Elevator, Rochester	Indiana Seed Co.,	C	99.7	......	92.0	12-33	......	C None
	Timothy, Lot P-564	Indianapolis, Ind.	F	99.7	0.20	95.25	5-34	315	F Buckhorn 36; common plantain 36; red sorrel 18
5073	Sunshine Feed Store, Greenfield	Indiana Seed Co.,	C	99.7	......	92.0	12-33	......	C None
	Timothy, Lot P-564	Indianapolis, Ind.	F	99.65	0.05	89.75	5-34	72	F Common plantain 72
4908	Wilson, John, Roachdale	Indiana Seed Co.,	C	99.6	......	92.0	10-33	......	C None
	Timothy, Lot 1-16	Indianapolis, Ind.	F	99.65	0.10	89.5	5-34	297	F Curled dock 54; red sorrel 18
3871	Powell Grain Co., Losantville[258]	K. & A. Seed Co., Inc.,	C	99.6	......	92.0	4-33	......	C None
	AA Timothy, Lot B-235	Fort Wayne, Ind.	F	99.7	0.20	90.0	9-33	495	F Buckhorn 18; common plantain 90; red sorrel 162
3896	Williamsburg Co-op. Assn., Williamsburg[258]	K. & A. Seed Co., Inc.,	C	99.6	......	90.0	4-33	......	C None
	AA Timothy, Lot B-249	Fort Wayne, Ind.	F	99.66	0.24	92.25	9-33	162	F Common plantain 90; red sorrel 72
4303	Briner, C. J., Crothersville	Lewis Implement & Seed Co.,	C	98.0	......	90.0	7-33	......	C Red sorrel 448
	Timothy, Lot Lisco	Louisville, Ky.	F	96.83	1.78	86.75	3-34	26,469	F Buckhorn 54; common plantain 936; curled dock 18; red sorrel 36
3912	Ragsdale & Co., Chas., Bedford[259]	Lewis Implement & Seed Co.,	C	99.5	......	94.0	8-33	......	C None
	Timothy, Lot Red Bird	Louisville, Ky.	F	99.41	0.15	82.5	11-33	4,806	F Bracted plantain 36; buckhorn 216; ox-eye daisy 54; red sorrel 3,600
8980	†Wyatt Feed & Seed Store, Petersburg	Lewis Implement & Seed Co.,	C	99.0	......	92.0	9-32	......	C None
	Timothy	Louisville, Ky.	F	98.42	0.79	80.5	12-33	1,503	F Buckhorn 18; Canada thistle 18; common plantain 288; red sorrel 54
5265	Lowell Grain & Hay Co., Lowell	Lowell Grain & Hay Co.,	C	95.0	......	85.0	4-34	......	C Buckhorn 100; common plantain 500; red sorrel 200
	Timothy, Lot B	Lowell, Ind.	F	99.35	0.35	97.0	4-34	4,329	F Buckhorn 54; common plantain 4,050
4374	Krick & Son, A., Milan	McCullough Seed Co., The J. Chas.,	C	99.6	......	94.0	8-33	......	C None
	Timothy, Lot 66880	Cincinnati, Ohio	F	99.47	0.34	91.5	4-34	954	F Common plantain 36; curled dock 18
4228	†Milford Grain & Milling Co., Milford	McCullough Seed Co., The J. Chas.,	C	99.6	......	93.0	8-33	......	C None
	Timothy, Lot 6898	Cincinnati, Ohio	F	99.75	0.15	93.75	2-34	693	F Red sorrel 18
4491	Schmocker, John, Batesville	McCullough Seed Co., The J. Chas.,	C	99.6	......	94.0	12-33	......	C None
	Timothy, Lot 6859	Cincinnati, Ohio	F	99.6	0.20	92.5	4-34	747	F Buckhorn 18; common plantain 18; curled dock 18; red sorrel 18
4357	†Werst & Co., Peter, Brookville	McCullough Seed Co., The J. Chas.,	C	99.6	......	94.0	12-33	......	C None
	Timothy, Lot 6859	Cincinnati, Ohio	F	99.65	0.25	94.0	4-34	540	F Buckhorn 18; common plantain 18; red sorrel 54

4963	†McMahan Seed Co., Valparaiso	Mangelsdorf & Bro., Ed. F.,	C	99.5	.....	92.0	1-34	.....	C	None
	Extra Fancy Timothy, Lot 2898	St. Louis, Mo.	F	99.85	0.10	91.5	5-34	18	F	Red sorrel 18
4397	Reynolds-Brooks Hdwe. Co., Loogootee	Mangelsdorf & Bro., Ed. F.,	C	99.6	.....	91.0	12-33	.....	C	None
	Timothy, Lot 43	St. Louis, Mo.	F	99.5	0.35	91.25	4-34	918	F	Bracted plantain 18
4453	Aurora Flour & Feed Co., Aurora	Market Gardener Seed Co.,	C	99.5	.....	92.0	10-33	.....	C	None
	Timothy, Lot VEB-7614	Cincinnati, Ohio	F	99.5	0.25	93.5	3-34	900	F	None
4472	Hunter & Son, W. M., Versailles	Market Gardener Seed Co.,	C	99.35	.....	92.0	10-33	.....	C	Red sorrel 180
	Timothy, Lot VEB	Cincinnati, Ohio	F	99.21	0.69	91.5	3-34	1,953	F	Buckhorn 162; common plantain 72; curled dock 18; red sorrel 126
4452	Tuxedo Feed & Supply Co., Aurora	Market Gardener Seed Co.,	C	99.5	.....	92.0	10-33	.....	C	None
	Timothy, Lot VEB-7614	Cincinnati, Ohio	F	99.6	0.30	94.0	3-34	900	F	None
5224	Mayer Grain Co., Denver	Mayer Grain Co.,	C	99.5	.....	92.0	1-34	.....	C	None
	Timothy, Lot A	South Whitley, Ind.	F	99.45	0.25	92.25	5-34	468	F	Common plantain 18
5001	†Mayer Grain Co., Fulton	Mayer Grain Co.,	C	99.5	.....	92.0	1-34	.....	C	None
	Timothy	South Whitley, Ind.	F	99.65	0.25	90.5	5-34	.....	F	None
4080	†Carman Supply Co., Lynn	New Paris Elevator Co.,	C	99.1	.....	90.0	11-33	.....	C	None
	Timothy, Lot GR-I	New Paris, Ohio	F	99.71	0.24	89.75	1-34	.....	F	None
4051	Young & Cox, Richmond	New Paris Elevator Co.,	C	99.1	.....	94.0	11-33	.....	C	None
	Timothy, Lot Alex	New Paris, Ohio	F	99.71	0.19	90.0	1-34	225	F	None
4396	Wheatland Grain Co., Wheatland	Ohio Valley Seed Co.,	C	99.74	.....	92.0	1-34	.....	C	None
	Crown Timothy, Lot B-103	Evansville, Ind.	F	99.45	0.30	85.5	4-34	297	F	Common plantain 72
4645	Pennville Milling Co., Pennville	Pennville Milling Co.,	C	99.16	.....	94.0	2-33	.....	C	Common plantain 18
	Timothy Grass, Lot 88	Pennville, Ind.	F	99.3	0.55	87.5	5-34	18	F	Curled dock 18
3885	Clinton Co. Farm Bureau Co-op. Assn., Inc., Frankfort	Pletch, Guy,	C	99.65	.....	89.5	12-32	.....	C	None
	Timothy, Lot 60268	Frankfort, Ind.	F	99.51	0.20	84.75	9-33	6,111	F	Common plantain 36
4606	Butler Feed Store, Oakland City	Purcell Seed Co.,	C	99.5	.....	90.0	1-34	.....	C	Common plantain 36
	Tru Val Timothy, Lot 2650-H	Evansville, Ind.	F	99.4	0.40	94.25	4-34	297	F	Common plantain 54; curled dock 18
4111	Brownstown Feed Exchange, Brownstown	Ross Seed Co.,	C	99.5	.....	90.0	11-33	.....	C	None
	Timothy, Lot 765	Louisville, Ky.	F	99.6	0.30	89.25	1-34	279	F	Common plantain 36; red sorrel 18
4874	Brownstown Feed Exchange, Brownstown	Ross Seed Co.,	C	99.5	.....	99.0	1-32	.....	C	None
	Timothy	Louisville, Ky.	F	99.51	0.39	88.25	5-34	243	F	Common plantain 18
4020	Jennings Co. Farm Bureau Co-op. Assn., Inc., North Vernon[260]	Ross Seed Co.,	C	99.5	.....	90.0	8-33	.....	C	None
	Timothy, Lot 745	Louisville, Ky.	F	99.9	0.05	89.0	12-33	72	F	Bracted plantain 36; common plantain 18; red sorrel 18
4409	Laughlin, R. B., Solsberry	Schultz Seed Co., J. M.,	C	99.66	.....	94.0	9-33	.....	C	Red sorrel 450
	Reliable Timothy	Dieterich, Ill.	F	99.65	0.15	96.0	4-34	873	F	Red sorrel 198
4581	Linton Hdwe. Co., Linton	Schultz Seed Co., J. M.,	C	99.78	.....	94.0	10-33	.....	C	None
	Reliable Timothy, Lot 95	Dieterich, Ill.	F	99.8	0.10	95.75	4-34	1,422	F	Buckhorn 18; common plantain 54
4692	McCarty Hdwe. Co., Fort Branch	Schultz Seed Co., J. M.,	C	99.78	.....	92.0	1-33	.....	C	None
	Timothy, Lot 113	Dieterich, Ill.	F	99.65	0.20	82.25	5-34	54	F	Buckhorn 18; common plantain 18; red sorrel 18
3891	†McCarty Seed Co., Inc., Terre Haute[261]	Schultz Seed Co., J. M.,	C	99.6	.....	92.0	6-33	.....	C	None
	Timothy, Lot 5373	Dieterich, Ill.	F	99.56	0.20	93.25	9-33	1,026	F	Bracted plantain 36; buckhorn 18; ox-eye daisy 36; red sorrel 936
4703	Poseyville Grain & Feed Co., Inc., Poseyville	Schultz Seed Co., J. M.,	C	99.78	.....	92.0	1-34	.....	C	None
	Timothy, Lot 113	Dieterich, Ill.	F	99.5	0.20	88.5	3-34	450	F	None

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*Not labeled.
†Certified by Retailer.
C and F stands, respectively, for Claimed and Found.

[258] Distributed by Geo. O'Brien & Sons, Greenville, Ohio.
[259] Removed from sale. Misbranded. Returned to distributor.
[260] Distributed by Farmers Elevator, Seymour, Ind.
[261] Not tagged. Labels furnished. Removed from sale. Misbranded. All sold.

TIMOTHY—Continued

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor	Purity, per cent	Inert Matter, per cent	Germination, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds	Number per Pound of each of the Noxious Weed Seeds Specified in the Law
4882	Cauble, O. L., Pekin Timothy, Lot 860	Scott Seed Co., New Albany, Ind.	C 99.5	0.19	90.0	11-33	621	C Common plantain 180
			F 99.61		88.25	5-34		F Curled dock 18; red sorrel 378
4321	Farmers Feed Store, Scottsburg Timothy, Lot 858	Scott Seed Co., New Albany, Ind.	C 99.5	0.49	90.0	11-33	1,503	C Buckhorn 180; red sorrel 180
			F 99.41		84.5	3-34		F Buckhorn 72; common plantain 288; curled dock 18
4325	James Seed Co., Jeffersonville Timothy, Lot 858	Scott Seed Co., New Albany, Ind.	C 99.5	0.39	90.0	9-33	891	C Buckhorn 180; red sorrel 180
			F 99.46		90.5	2-34		F Buckhorn 18; common plantain 162; curled dock 18; prickly lettuce 18
4309	Union Hdwe. Co., Seymour Timothy, Lot 860	Scott Seed Co., New Albany, Ind.	C 99.6	0.24	90.0	11-33		C None
			F 99.32		95.0	3-34		F None
4947	Farmer Co-op. Elevator, Westville Timothy, Lot 15289	Standard Seed Co., Chicago, Ill.	C 99.5	0.40	92.0	2-34	1,593	C None
			F 99.45		90.25	5-34		F Common plantain 18
3910	Holmes Supply Co., Kingsbury Timothy, Lot 15289	Standard Seed Co., Chicago, Ill.	C 99.5	0.25	94.0	8-33	468	C None
			F 99.65		86.5	10-33		F Red sorrel 18
5177	Menaugh, Will H., Osceola Timothy, Lot 15315	Standard Seed Co., Chicago, Ill.	C 99.5	0.25	92.0	2-34	162	C None
			F 99.65		94.5	4-34		F Common plantain 144; curled dock 18
5174	Mishawaka Grain & Coal Co., Mishawaka Timothy, Lot 15315	Standard Seed Co., Chicago, Ill.	C 99.7	0.20	92.0	2-34	558	C None
			F 99.7		94.75	4-34		F Common plantain 108
4929	Union Center Equity Exchange, Union Center, P. O. Kingsbury Timothy, Lot 15289	Standard Seed Co., Chicago, Ill.	C 99.5	0.52	92.0	1-34	1,179	C None
			F 99.33		94.75	5-34		F Common plantain 18; curled dock 18; prickly lettuce 18
3883	Wynn, Arlie S., Rochester Timothy, Lot 15284	Standard Seed Co., Chicago, Ill.	C 99.2	0.43	93.0	7-33	729	C None
			F 99.42		95.25	9-33		F Common plantain 54
4841	Phillips, J. C., Star City[262] Timothy, Lot 15311	Sun Field Seed Service, Chicago, Ill.	C 99.3	0.48	93.0	12-33	3,483	C None
			F 98.64		89.75	3-34		F Buckhorn 18; common plantain 504; red sorrel 36
5200	Sun Field Seed Service, Chicago, Ill.[263] Timothy, Lot 15318	Sun Field Seed Service, Chicago, Ill.	C 99.5	0.20	92.0	2-34	576	C None
			F 99.7		91.5	4-34		F Buckhorn 54; curled dock 18; red sorrel 54
3946	Syler & Syler, Nappanee[264] Timothy	Syler & Syler, Nappanee, Ind.	C 99.6	0.20	94.0	7-33	486	C Red sorrel 225
			F 99.65		77.75	12-33		F Curled dock 36
4842	Phillips, J. C., Star City[265] Timothy, Lot 68921	Syler & Syler, Plymouth, Ind.	C 99.55	0.30	93.0	9-33	315	C Common plantain 32; red sorrel 160
			F 99.6		78.25	5-34		F Buckhorn 18; common plantain 36; red sorrel 36
4669	Syler, Clay, North Manchester[266] Timothy, Lot 68921	Syler & Syler, Plymouth, Ind.	C 99.25	0.25	93.0	9-33	684	C Common plantain 32; red sorrel 160
			F 99.4		74.5	4-34		F Buckhorn 54; common plantain 36; curled dock 18; red sorrel 126

5020	Wyatt Grain Co., Wyatt[265]	Syler & Syler,	C	99.55	......	93.0	9-33	....	C	Common plantain 32; red sorrel 160
	Timothy, Lot 68921	Plymouth, Ind.	F	99.41	0.39	77.0	5-34	270	F	Buckhorn 18; common plantain 36; curled dock 36; red sorrel 180
4933	Bellman & Bortz, LaPorte	Teweles Seed Co., L.,	C	99.65	......	95.0	2-34	....	C	None
	Timothy, Lot Badger	Milwaukee, Wis.	F	99.85	0.15	89.5	5-34	36	F	Common plantain 18; red sorrel 18
4158	Dembufsky Seed Co., Goshen	Teweles Seed Co., L.,	C	99.65	......	96.0	12-33	....	C	None
	Timothy, Lot Badger Brand	Milwaukee, Wis.	F	99.75	0.15	95.75	2-34	18	F	Common plantain 18
3966	Huntington Equity Exchange, Huntington[267]	Teweles Seed Co., L.,	C	99.75	......	96.0	7-33	....	C	None
	Timothy, Lot Badger Brand	Milwaukee, Wis.	F	99.8	0.20	72.75	12-33	....	F	None
4157	Troyer Seed Co., Goshen	Teweles Seed Co., L.,	C	99.75	......	96.0	8-33	....	C	None
	Timothy, Lot Badger Brand	Milwaukee, Wis.	F	99.52	0.38	93.75	2-34	351	F	Common plantain 126
4995	Yoder Bros., Inc., Wakarusa	Teweles Seed Co., L.,	C	99.65	......	95.0	2-34	....	C	None
	Timothy, Lot Badger Brand	Milwaukee, Wis.	F	99.7	0.25	91.5	5-34	18	F	Common plantain 18
5028	Wolcottville Elevator Co., Wolcottville	Wertheimer & Sons, N.,	C	99.78	......	90.0	1-34	....	C	None
	Timothy, Lot 33529	Ligonier, Ind.	F	99.66	0.24	89.75	5-34	270	F	Buckhorn 234; common plantain 18; red sorrel 18
4670	Farmers Elevator Co., South Whitley	Wolf Seed Co.,	C	99.6	......	93.0	1-34	....	C	None
	Hy-test Timothy, Lot B-450	Fort Wayne, Ind.	F	99.66	0.19	93.25	4-34	594	F	Buckhorn 18; common plantain 90; curled dock 18; red sorrel 18
4984	Washington Co. Farm Bureau Co-op. Assn., Inc., Salem	Wyatt Feed & Seed Store,	C	99.28	......	94.0	12-33	....	C	Red sorrel 16
	Timothy	Petersburg, Ind.	F	99.55	0.20	88.75	5-34	261	F	Curled dock 18; red sorrel 18

*Not labeled.

†Certified by Retailer.

C and F stands, respectively, for Claimed and Found.

[262] Removed from sale. Misbranded. Retagged.

[263] Sample secured from Indiana State Highway Commission, Warsaw, Ind.

[264] Removed from sale. Misbranded.

[265] Removed from sale. Misbranded. All sold.

[266] Removed from sale. Misbranded. Retagged.

[267] Removed from sale. Misbranded. Returned to distributor.

MIXTURES

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity per cent	Inert Matter, per cent	Germination, per cent	Hard Seeds, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds	Number per Pound of each of the Noxious Weed Seeds Specified in the Law
4893*	†Hillis Feed Co., Greencastle Lawn Grass, Lot 9960	American Field Seed Co. Chicago, Ill.	C							C
			Ky. Blue Grass F	30.58		81.5		4-34		
			Red Top F	20.46	18.52	84.0		4-34		
			Ryegrass F	8.78		92.5		4-34		
			Meadow Fescue F	6.72		84.5		4-34		
			White Clover F	6.53		80.25	12.75	4-34		
			Chewing's Fescue F	5.85		15.5		4-34	18,765	F Bracted plantain 90; buckhorn 270; common plantain 225; curled dock 90; red sorrel 540
4894	Hillis Feed Co., Greencastle [268] Clover, Alsike & Timothy 30-35% Mix. Lot 3098	American Field Seed Co., Chicago, Ill.	Red Clover C	15.0		92.0		12-33		
			Alsike Clover C	17.0		92.0		12-33		C None
			Timothy C	66.0		92.0		12-33		
			Red Clover F	12.39		46.0	3.0	3-34		
			Alsike Clover F	13.61	0.68	78.25	1.5	3.34		
			Timothy F	71.91		90.0		3-34	7,155	F Buckhorn 90; common plantain 54; curled dock 378; mustard 18; red sorrel 72; yellow trefoil 18
5124	Berry Seed Co., Clarinda, Iowa[269] Just-Rite Mixture, Lot 12071	Berry Seed Co., Clarinda, Iowa	Red Clover C	74.56		90.0		1-34		
			Alfalfa C	20.47		81.0		1-34		C None
			Red Clover F	74.88		78.0	16.0	3-34		
			Alfalfa F	19.29	1.06	54.0	10.5	3-34	9,009	F Curled dock 18; dodder 72; red sorrel 9
4936	Snyder Feed & Seed Store, A. H., Michigan City Condons Velvet Green Lawn Grass Mixture, Lot A	Condon Bros., Seedsmen, Rockford, Ill.	Ky. Blue Grass C	40.5		82.5		1-34		
			Red Top Solid Seed C	28.5		94.5		1-34		
			Ryegrass C	9.9		95.0		1-34		
			White Clover C	9.85		94.0		1-34		
			Chewing's Fescue C	4.94		93.5		1-34		C None
			Ky. Blue Grass F	45.7		89.0		5-34		
			Red Top Solid Seed F	27.5	10.88	92.5		5-34		
			White Clover F	7.41		48.25	31.0	5-34	5,490	F Curled dock 45; red sorrel 45
5257	Indiana Harbor Feed Store, Indiana Harbor[270] American Shore Lawn Grass Seed	Consolidated Seed Co., Chicago, Ill.	Ky. Blue Grass C	27.71		80.0		1-34		
			Red Top C	33.19		90.0		1-34		
			Timothy C	22.04		90.0		1-34		
			Ryegrass C	4.88		90.0		1-34		
			White Clover C	1.00		86.0		1-34		C Bracted plantain 50; buckhorn 29; curled dock 45; quack grass 21; red sorrel 40
			Ky. Blue Grass F	18.34		61.5		6-34		
			Red Top F	14.16	18.95	94.5		6-34		
			Timothy F	20.14		59.75		6-34		
			Meadow Fescue F	27.42		83.5		6-34	7,470	F Buckhorn 405; common plantain 270; red sorrel 45

3856	Gotto-Mathias Co., Michigan City Evergreen Lawn Mixture, Lot 36211	Dickinson Co., The Albert Chicago, Ill.	Red Top C	25.3	......	90 0	......	5-33	....	
			Ky. Blue Grass C	25.3	......	80 0	......	5-33	....	
			Chewing's Fescue C	11.2	......	60.0	......	5-33	....	
			Domestic Ryegrass C	15.4	......	92.0	......	5-33	....	
			White Clover C	4.1	......	85.0	......	5-33	....	C Buckhorn 384; common plantain 544; ox-eye daisy 64; red sorrel 736; yellow trefoil 480
			Red Top F	27.67	......	72.75	......	9-33	....	
			Ky. Blue Brass F	15.281	7.38	72.5	......	9-33	....	
			Fescue F	10.0	......	48.5	......	9-33	....	
			Ryegrass F	16.4	......	91.0	......	9-33	38,835	F Bracted plantain 45; buckhorn 630; common plantain 900; ox-eye daisy 135; red sorrel 1,080; yellow trefoil 45
3987	Gotto-Mathias Co., Michigan City Evergreen Lawn Grass, Lot 36251	Dickinson Co., The Albert, Chicago, Ill.	Red Top C	26.2	......	92 0	......	9-33	....	
			Ky. Blue Grass C	19.7	......	70 0	......	9-33	....	
			Chewing's Fescue C	16.3	......	60.0	......	9-33	....	
			Domestic Ryegrass C	18.9	......	90 0	......	9-33	....	
			White Clover C	4.0	......	80 0	......	9-33	....	C Buckhorn 480; common plantain 320; red sorrel 768; yellow trefoil 480
			Red Top F	24.34	......	70 75	......	1-34	....	
			Ky. Blue Grass F	17 45	18 23	70 5	......	1-34	....	
			Chewing's Fescue F	17.74	......	36.0	......	1-34	....	
			Domestic Ryegrass F	15.46	......	91.5	......	1-34	31,905	F Bracted plantain 135; buckhorn 540; common plantain 315; ox-eye daisy 45; red sorrel 630; yellow trefoil 90
4913	Heitschmidt, A. C., Michigan City Shady Spot Lawn Grass, Lot 36292	Dickinson Co., The Albert, Chicago, Ill.	Ky. Blue Grass C	22 5	......	70 0	......	2-34	....	
			Red Top C	19 4	......	90 0	......	2-34	....	
			Domestic Ryegrass C	9.2	......	92.0	......	2-34	....	
			Chewing's Fescue C	9.5	......	70 0	......	2-34	....	
			R.S. Meadow Grass C	2 8	......	80 0	......	2-34	....	C None
			Ky. Blue Grass F	34 9	......	78 0	......	5-34	....	
			Red Top F	38.03	4.67	94 5	......	5-34	....	
			Ryegrass F	12.51	......	85.0	......	5-34	....	
			Chewing's Fescue F	8.44	......	93.5	......	5-34	15,660	F Buckhorn 225; red sorrel 135
4935	Heitschmidt, A. C., Michigan City Club Green Lawn Grass Seed, Lot 35790	Dickinson Co., The Albert, Chicago, Ill.	Ky. Blue Grass C	23.4	......	70.0	......	2-34	....	
			Chewing's Fescue C	16.3	......	60 0	......	2-34	....	
			Domestic Ryegrass C	16.0	......	90.0	......	2-34	....	
			Red Top C	29.8	......	85.0	......	2-34	....	C Buckhorn 320; curled dock 128; red sorrel 900
			Ky. Blue Grass F	22.57	......	71.0	......	6-34	....	
			Chewing's Fescue F	12.33	19.22	35.0	......	6-34	....	
			Domestic Ryegrass F	16.89	......	93.0	......	6-34	....	
			Red Top F	27.77	......	86.0	......	6-34	42,750	F Buckhorn 225; common plantain 180; curled dock 45; red sorrel 450

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*Not labeled.
†Certified by Retailer.
C and F stands, respectively, for Claimed and Found.

[268] Removed from sale. Misbranded. All sold.
[269] Sample secured from Richard D. Decker, R. 6, Marion, Ind.
[270] Removed from sale. Misbranded. Retagged.

MIXTURES—Continued

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, per cent	Inert Matter, per cent	Germination, per cent	Hard Seeds, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds	Number per Pound of each of the Noxious Weed Seeds Specified in the Law
4939	Heitschmidt, A. C., Michigan City	Dickinson Co., The Albert,	Ky. Blue Grass C	6 0		70 0		2-34		
	Ace Lawn Grass, Lot 36300	Chicago, Ill.	Red Top C	42.9		90.0		2-34		
			Domestic Ryegrass C	19 6		96 0		2-34		
			Chewing's Fescue C	9.4		70 0		2-34		C Bracted plantain 96; buckhorn 160; red sorrel 96
			White Clover C	5.0		85.0		2-34		
			Ky. Blue Grass F	8 87		76.5		6-34		
			Red Top F	53 57		88.75		6-34		
			Domestic Ryegrass F	10 92	12 7	91.0		6-34		
			Chewing's Fescue F	6.05		81.5		6-34		
			White Clover F	6 05		75 0	20 25	6-34	27,900	F Bracted plantain 45; buckhorn 90; common plantain 90; red sorrel 180; yellow trefoil 45
5282	*Goldblatt Bros., Inc., Hammond	Goldblatt Bros., Inc.,	C							C
	Lawn Grass Seed	Hammond, Ind.,	Red Top F	35 87		84.75		6-34		
			Ryegrass F	25 49	7.31	85 5		6-34		
			Timothy F	22 43		83 0		6-34		
			Ky. Blue Grass F	8.36		76.5		6-34	31,275	F Buckhorn 45; common plantain 45; red sorrel 135
5258	Kaufman Hdw., Whiting[271]	Johnson, Inc., J. Oliver	Ky. Blue Grass C	16 0		80 0		1-34		
	Lincoln Park Mixed Lawn Seed	Chicago, Ill.	Fancy Red Top C	35.9		90.0		1-34		
			Ryegrass C	27.38		95.0		1-34		C Bracted-plantain 1,350; common plantain 450; curled dock 450; red sorrel 6,300; white top 1,800
			Red Top F	41 89		94 75		5-34		
			Ryegrass F	21.15	14 80	87.0		5-34		
			Ky. Blue Grass F	17.85		73.0		5-34	23,085	F Bracted plantain 180; buckhorn 540; ox-eye daisy 180; red sorrel 135
5319*	†McMahan Seed Co., Valparaiso[272]	Mangelsdorf & Bro., Ed. F.,	C							C
	"Ark" Pasture Mixture	St. Louis, Mo.	Meadow Fescue F	10.86		41.0		7-34		
			Orchard Grass F	10.19		5.5		7-34		
			Alfalfa F	8.95	34 86	23.0	5.5	7-34		
			Timothy F	8.67		4.5		7-34		
			Red Top F	5 71		33.75		7-34	77,670	F Bracted plantain 900; buckhorn 540; common plantain 3,600; curled dock 900; ox-eye daisy 180; red sorrel 8,100

5327*	†McMahan Seed Co., Valparaiso[272] "Gem" Pasture Mixture	Mangelsdorf & Bro., Ed. F., St. Louis, Mo		C							C
			Timothy	F	15 22		56 75		7-34		
			Red Top	F	9.88		72 25		7-34		
			Sweet Clover	F	9.48	23.91	11 0	4 5	7-34		
			Korean Clover	F	7.31		32.0	34.0	7-34		
			Alfalfa	F	7.02		4.5	1.5	7-34		
			Red Clover	F	5.14		47.0	0.5	7-34	43,695	F Bracted plantain 315; buckhorn 360; common plantain 1,170; curled dock 540; dodder 90; ox-eye daisy 180; red sorrel 2,700; yellow trefoil 90
5283	Goldblatt Bros., Inc., Hammond Grass Mat Lawn Seed	Ostberg Seed Co., Chicago, Ill	Ky. Blue Grass	C	8.16		80 0		1-34		
			Red Top	C	34.12		95 0		1-34		
			Ryegrass	C	21.65		90.0		1-34		
			Timothy	C	23.01		95.0		1-34		C None
			Ky. Blue Grass	F	11.65		81 0		6-34		
			Red Top	F	37.46	8 09	89 0		6-34		
			Ryegrass	F	22.18		90 0		6 34		
			Timothy	F	19.98		82 25		6-34	31,230	F Buckhorn 45; common plantain 45; curled dock 45; red sorrel 45
5284	Goldblatt Bros., Inc., Hammond Shady Lawn Grass Seed	Ostberg Seed Co., Chicago, Ill	Ky. Blue Grass	C	9 07		80.0		1-34		
			Red Top	C	12 4		95 0		1-34		
			Ryegrass	C	16 9		90.0		1-34		
			Red Fescue	C	2.48		70.0		1-34		
			Timothy	C	11.29		95.0		1.34		
			White Clover	C	2 66		86 0		1-34		C Buckhorn 480; mustard 150; quack grass 464; red sorrel 26,304
			Ky. Blue Grass	F	10 85		75 5		6-34		
			Red Top	F	31.62	27.55	87.75		6-34		
			Ryegrass	F	12.78		84.0		6-34		
			Fescue	F	14.67		30.5		6-34	29,070	F Buckhorn 180; curled dock 45; ox-eye daisy 180; red sorrel 720; yellow trefoil 45
5286	Goldblatt Bros., Inc., Hammond Grass Mat Lawn Seed	Ostberg Seed Co., Chicago, Ill	Ky. Blue Grass	C	8 16		80 0		1-34		
			Red Top	C	34.12		95.0		1-34		
			Ryegrass	C	21.65		90.0		1-34		
			Timothy	C	23.01		95.0		1-34		C None
			Ky. Blue Grass	F	8.85		76 0		6-34		
			Red Top	F	33.3	7 03	89 25		6-34		
			Ryegrass	F	28.61		87 5		6-34		
			Timothy	F	21.39		79 5		6-34	27,900	F None

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*Not labeled.
†Certified by Retailer.
C and F stands, respectively, for Claimed and Found.

[271] Not tagged. Labels furnished.
[272] Returned to distributor.

MIXTURES—Continued

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, per cent	Inert Matter, per cent	Germination, per cent	Hard Seeds, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds	Number per Pound of each of the Noxious Weed Seeds Specified in the Law
5287	Goldblatt Bros., Inc., Hammond Windsor Park Lawn Grass	Ostberg Seed Co Chicago, Ill	Ky. Blue Grass C	8 25		80 0		1-34		
			Red Top C	39 64		95 0		1-34		
			Ryegrass C	15 16		90 0		1-34		
			Timothy C	22 07		95 0		1-34		C Buckhorn 150
			White Clover C	1 98		86 0		1-34		
			Ky. Blue Grass F	7 38		72 5		6-34		
			Red Top F	35 25	6 34	87 25		6 34		
			Ryegrass F	27 72		93 5		6 34		
			Timothy F	22 78		84 0		6-34	23,265	F Common plantain 90; ox-eye daisy 45; red sorrel 180
4031	Seberger Seed Co., Crown Point Special Mixture, Lot SM-3	Sholes & Co., H. A., Chicago, Ill	Red Top C	28 86		96 0		10-32		
			Ky. Blue Grass C	50 44		87 0		9-32		C Common plantain 108
			White Dutch Clover C	9 98		95 0		8 32		
			Red Top F	33 6		79 0		1-34		
			Ky. Blue Grass F	37 95	14 04	83 0		1-34		
			White Dutch Clover F	8 63		89 0	3 25	1 34	36,990	F Buckhorn 45; common plantain 405; ox-eye daisy 450; red sorrel 90
5259	Glen Park Hdwe. Co., Gary Lawn Grass Mixture, Lot Green Terrace	Teweles Seed Co., L., Milwaukee, Wis	Ky. Blue Grass C	21 25		80 0		4 34		
			Red Top C	15 0		88 0		4-34		
			White Clover C	9.5		80 0	16 0	4-34		
			Ryegrass C	24 85		90 0		4 34		C None
			Timothy C	19 86		92 0		4-34		
			Ky. Blue Grass F	21 5		77 0		6 34		
			Red Top F	19 89	10 51	77 0		6-34		
			White Clover F	6 91		67 0	11 25	6-34		
			Ryegrass F	19 41		92 5		6-34		
			Timothy F	20.64		68 5		6 34	19,260	F Buckhorn 45; common plantain 720; curled dock 45; ox-eye daisy 45; red sorrel 315; yellow trefoil 90
5263	Glen Park Hdwe., Gary Lawn Grass Mix., Lot Park Brand	Teweles Seed Co., L., Milwaukee, Wis	Ky. Blue Grass C	12 0		80 0		4-34		
			Red Top C	12.75		85 0		4-34		
			White Clover C	4 85		80 0	13 0	4-34		
			American Ryegrass C	24 87		90 0		4-34		C None
			Timothy C	34.75		91 0		4-34		
			Ky. Blue Grass F	5 94		62 0		6-34		
			Red Top F	19 47	19 27	88 25		6-34		
			American Ryegrass F	21 25		93 5		6 34		
			Timothy F	28 1		76.75		6.34	47,520	F Common plantain 585; red sorrel 135

4410	Weed Hdwe., Vincennes Alsike and White Clover	Teweles Seed Co., L., Milwaukee, Wis.	Alsike Clover C	92.54	......	88.0	6.0	1-34	....	
			White Clover C	5.43	......	81.0	14.0	1-34	....	C Curled dock 30; red sorrel 80; yellow trefoil 60
			Alsike Clover F	94.57	0.15	82.25	7.5	4-34	4,131	F Red sorrel 324; yellow trefoil 432
4019	Tripp Hdwe. Co., North Vernon[273] Pasture Mixture	Tripp Hdwe. Co., North Vernon, Ind.	C	......	......	......	......	......	....	C
			Alsike Clover F	86.46	......	49.75	7.0	12-33	....	
			Sweet Clover F	5.42	3.99	27.0	10.0	12-33	10,098	F Buckhorn 342; common plantain 306; curled dock 198; red sorrel 414; yellow trefoil 1,188
4208	Vonnegut Hdwe. Co., Indianapolis Vonnegut's Best Lawn Seed, Lot 64067	Whitney-Eckstein Seed Co., Buffalo, N. Y.	Ky. Blue Grass C	46.49	......	79.5	......	1-34	....	
			Red Top C	28.39	......	86.75	......	1-34	....	
			Chewing's Fescue C	9.4	......	80.5	......	1-34	....	
			White Clover C	6.82	......	89.5	......	1-34	....	C Buckhorn 900
			Ky. Blue Grass F	46.38	......	82.5	......	3-34	....	
			Red Top F	28.36	9.29	91.5	......	3-34	....	
			Chewing's Fescue F	9.58	......	79.5	......	3-34	....	
			White Clover F	5.81	......	87.75	7.25	3-34	17,235	F Buckhorn 45; common plantain 45; red sorrel 45
4210	Vonnegut Hdwe. Co., Indianapolis Vonnegut's Shady Lawn, Lot 64066	Whitney-Eckstein Seed Co., Buffalo, N. Y.	Red Top C	26.11	......	90.5	......	1-34	....	
			Poa Trivialis C	25.12	......	80.0	......	1-34	....	
			Chewing's Fescue C	21.96	......	86.5	......	1-34	....	
			Ky. Blue Grass C	19.49	......	75.5	......	1-34	....	C None
			Red Top F	22.57	......	90.0	......	3-34	....	
			R.S. Meadow Grass F	24 64	8.05	80.5	......	3-34	....	
			Chewing's Fescue F	23 06	......	87.5	......	3-34	....	
			Ky. Blue Grass F	20.99	......	76.0	......	3-34	8,100	F None

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*Not labeled.
†Certified by Retailer.
C and F stands, respectively, for Claimed and Found.

[273] Not tagged. Labels furnished.

GARDEN SEED

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, per cent	Inert Matter, per cent	Germination, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds		Number per Pound of each of the Noxious Weed Seeds Specified in the Law
5036	Campbell & Co., Kendallville Southport White Onion, Lot HGW	Campbell & Co., Kendallville, Ind.	C	99.0	......	90.0	1–34	....	C	None
			F	99.87	0.13	87.5	3–34	....	F	None
5203	Trembly Co., S. F., Columbia City Southport Yellow Globe Onion, Lot 10299	Ferry-Morse Seed Co., Detroit, Mich.	C	99.0	......	97.0	1–34	....	C	None
			F	99.93	0.07	96.0	4–34	....	F	None
5198	Ort & Co., Churubusco Southport White Globe Onion, Lot 33W2	Fribley Onion Seed Co., Bourbon, Ind.	C	99.0	......	92.0	1–34	....	C	None
			F	99.98	0.02	90.0	4–34	....	F	None
5201	Ort & Co., Churubusco Southport Yellow Globe Onion, Lot 34Y2	Fribley Onion Seed Co., Bourbon, Ind.	C	99.0	......	90.0	1–34	....	C	None
			F	99.72	0.27	86.5	4–34	....	F	None
5049	*Ruderman, Louis, LaOtto Southport White Globe Onion, Lot 2143	Lagomarsino & Sons, F., Sacramento, Calif.	C	......	......	......	......	....	C	
			F	99.98	0.02	94.5	4 34	....	F	None
5206	Trembly Co., S. F., Columbia City[274] Southport White Onion, Lot 1	Morgan, S. J., Alger, Ohio	C	......	......	97.0	1–34	....	C	None
			F	99.45	0.55	73.0	4–34	....	F	None
5038	†Campbell & Co., Kendallville Southport Yellow Onion, Lot CCY	Southwick & Co., C. S., Kendallville, Ind.	C	99.0	......	90.0	1–34	....	C	None
			F	100.0	0.00	96.0	3–34	....	F	None
5210	Trembly Co., S. F., Columbia City[275] Southport White Onion, Lot 1	Trembly Co., S. F., Columbia City, Ind.	C	......	......	97.0	3–34	....	C	None
			F	99.86	0.14	96.0	4–34	....	F	None
5218	†Isay Seed & Wool Co., Churubusco[276] Southport White Onion	Woodruff & Son, F. H., Milford, Conn.	C	......	......	......	......	....	C	
			F	99.9	0.10	91.0	4–34	....	F	None
5219	†Isay Seed & Wool Co., Churubusco[276] Southport Yellow Globe Onion	Woodruff & Son, F. H., Milford, Conn.	C	......	......	......	......	....	C	
			F	99.98	0.01	96.5	4–34	90	F	None

*Not labeled.
†Certified by Retailer.
C and F stands, respectively, for Claimed and Found.

[274] Tag incomplete. Removed from sale. Misbranded. All sold.
[275] Tag incomplete.
[276] Not tagged. Labels furnished.

MISCELLANEOUS

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor	Purity, per cent	Inert Matter, per cent	Germination, per cent	Hard Seeds, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds	Number per Pound of each of the Noxious Weed Seeds Specified in the Law
5318	McMahan Seed Co., Valparaiso[277]	Fargo Seed House (Magill & Co., Operated), C	86.7	......	86.0	......	10-32	....	C None
	Bromus Inermis, Lot 1634	Fargo, N. Dakota F	87.3	12.29	85.5	......	7-34	450	F None
3853	McMahan Seed Co., Valparaiso[278]	Larrowe Buckwheat Flour Corp., C	99.72	......	94.0	......	......	....	C None
	Japanese Seed Buckwheat	Cohocton, N. Y. F	99.89	0.10	98.5	......	7-33	9	F None
4022	†Linkhart & Son, North Vernon	Scott Seed Co., C	98.0	......	90.0	......	2-33	....	C None
	Orange Cane	New Albany, Ind. F	99.9	0.08	78.5	......	12-33	9	F None
5295	Combs, Gilbert, Bloomfield[279]	Schultz Seed Co., J. M., C	....	......	90 0	4.0	4-34	....	C None
	Mixed Cowpeas	Dieterich, Ill. F	97.29	2.66	89.0	1.0	6-34	4	F None
4706	McCarty Seed Co., J. A., Evansville	McCarty Seed Co., J. A., C	97.0	......	93.0	......	7-33	....	C None
	Lucky Jim Bermuda Grass, Lot 491	Evansville, Ind. F	96.35	3.06	89.5	......	6-34	1,350	F None
3989	Gotto-Mathias Co., Michigan City	Dickinson Co., The Albert, C	99.84	......	85.0	......	9-33	....	C Buckhorn 80
	English Rye Grass, Lot O-3879	Chicago, Ill. F	99.48	0.08	77.0	......	12-33	1,197	F Buckhorn 27

*Not labeled.
†Certified by Retailer.
C and F stands, respectively, for Claimed and Found.

[277] Not tagged. Labels furnished.

[278] Tag incomplete. Labels furnished.

[279] Tag incomplete.

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Circular No. 206 October, 1934

PLANT FORCING WITH ELECTRIC LIGHTS

The lowest wattage lamps produce sufficient light for the practical forcing of many greenhouse flowering crops.

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Purdue University
Agricultural Experiment Station
Lafayette, Indiana

The following pages contain specific information regarding equipment and cultural suggestions for the grower who wishes to use artificial light as a method of greenhouse forcing. The suggestions are based on the results of investigations at various institutions over a period of several years.

The results of the investigations on the practical application of artificial light during the night to the forcing of various greenhouse crops show that many plants respond to relatively low light intensities as produced by 15- to 40-watt Mazda lamps. One lamp may be used to light as much as 30 square feet of bench space. The lights need to be applied for from four to six hours each night. They may be used at any time during the night convenient to the grower.

Greenhouse crops fall into three general groups: (1) those which fail to produce marked results of commercial value, as rose or carnation; (2) those which give earlier or increased flowering or both, as stock, aster, Shasta daisy, or pansy; and (3) those which are delayed in flowering by lights, as the perennial chrysanthemum.

PLANT FORCING WITH ELECTRIC LIGHTS

ROBERT B. WITHROW
Department of Horticulture

During recent years a great many experiments have been carried on dealing with the practical commercial application of artificial lights for forcing greenhouse crops. The reported experiments which have been most successful economically are those in which electric lights have been used at night to supplement daylight.

The two points of interest which are forwarded in a discussion of a commercial installation of lights for forcing have to do with, first, the equipment necessary and, second, the results which may be expected with various crops. This paper is designed to give a brief discussion of equipment installation, and a resume of the results of recent experiments using artificial lights over a number of plants. This circular is based upon four years of experimental work at the Purdue University Agricultural Experiment Station and upon the experiences of other investigators, as noted at the end of the paper.

The entire subject is still in the experimental stage and it is impossible to set down the final word as to cultural recommendations. Therefore, it is to be realized that, as new knowledge of the subject is acquired, many of the recommendations given here may need to be changed.

The most outstanding fact which has come out of the research work of the last few years is that many crops will respond to very low light intensities with earlier or increased flowering, or both. A 40-watt lamp placed in a suitable reflector three to five feet above the bench will produce sufficient light for most responsive crops and for many a 25-watt, or even a 15-watt, lamp is above the value needed. With the beneficial responses which have been observed with these low intensities, the cost of electric power becomes a small item.

When lights are being applied over any seasonal crop for the first time, the use of adequate check plots cannot be too strongly recommended. They serve a very definite purpose for the grower who is just beginning to use lights. They show him what the plants would have been without the lights, giving him the exact value of artificial lighting. Such plots prevent him from crediting the lights with either undesirable or exceptionally good growth, if such is not due to lighting.

By an adequate check plot is meant a small plot, not less than five or six feet of bench space, which receives no additional light. It should have, as nearly as possible, the same growing advantages as the lighted group and be similar to it in all respects except for lighting. The check plot should be carefully curtained to exclude any direct or stray radiation from the lamps in adjoining plots. Black oilcloth, tin, or wood may be used to screen out the direct light and black cloth may be used to keep out light reflected from the glass roof, the floor, and such.

It is not suggested that space be used for check plots in the case of out-of-season crops which normally fail to flower satisfactorily during the wintertime.

In general, desirable results may be obtained by applying the lights at any time during the night which is most convenient. They should be on from four to ten hours beyond the normal daylight period, and six hours represents a good average. It is not practical to use artificial lights during the day.

Equipment Suggestions

The selection of proper reflectors for plant irradiation is very important if the minimum power consumption is to be obtained. Many of the cheap, conical, tin reflectors on the market are wasteful of light and, to secure a given light intensity at the bench, a higher wattage lamp is necessary than with an efficient type reflector. The distribution of light over the bench is also poor with the conical type. Probably one of the best reflectors which is available at present for this type of work is the RLM, obtainable from most manufacturers. This gives a uniform distribution of light and reflects most of the light downward. The next best is the bowl type, which is somewhat cheaper than the RLM, but not quite so efficient in light distribution. A good working rule for the selection of a reflector when the characteristics are not available is to secure that reflector in which no portion of the lamp bulb extends beyond the outer rim. A suggestion for a very cheap, homemade reflector is a 10 or 15 cent alumnium cake pan 6 to 8 inches in diameter and 2½ to 3 inches deep. A hole is cut in the middle to take the lamp bulb neck. The pan should be sufficiently deep so that, when it is allowed to rest on the spherical portion of the bulb, the outer rim extends below the bottom of the lamp.

For the most efficient operation, the reflectors should be kept clean. Routine cleaning every month or two is advisable.

Ordinary incandescent Mazda lamps of either clear or inside frosted glass may be used. The blue glass daylight Mazda lamps are not recommended for this type of work as yet. They are expensive and the results to date do not justify the added cost. The so-called sun-lamp, which has a very useful field of application in medicine, is not suggested for use under the conditions discussed in this paper. Most of these lamps produce the shorter wavelengths of ultra-violet light, which, if left unscreened, are certain to severely injure any plants subjected to them for the periods of time recommended in this paper. Ultra-violet radiation some day may have a place in the forcing of crops, but the results up to the present time are too conflicting to warrant commercial use.

The lamp wattages recommended later are given for use with a good type bowl or RLM reflector, the reflectors spaced six feet apart and placed three to four feet above the bench, kept at least two feet above the tops of the plants. These values are satisfactory with the above-mentioned conditions only. The grower who wishes to use one row of lamps to irradiate two benches or who desires to use the more efficient 500- or 1000-watt lamps to light an entire house, should use an illuminometer, such as a portable sight-meter, to determine lamp spacings and heights. Five-hundred-watt and 1000-watt lamps are approximately two times as efficient per unit of electrical power consumed as the lower-wattage lamps. This, together with the cheaper cost of installation due to the fewer units involved, makes the higher powered lamps more economical for irradiating large areas.

The value of minimum intensity given later, under cultural suggestions, should be maintained under all conditions, regardless of the method of lighting. Higher values will produce somewhat better results in most cases, but these are not generally commensurate with the additional power consumed. If lighting conditions other than those outlined here are applied, an illuminometer should be used to check the minimum intensity and the proper lamps selected to maintain the recommended value. Most local utilities companies have available sight-meters to measure light intensity in terms of foot candles,* and they probably will be glad to assist the grower.

CORRELATION OF LAMP WATTAGE AND FOOT CANDLE INTENSITY

Lamp Wattage	Light Intensity Foot Candles
15	1
25	2
40	5
60	7
100	15
200	30
500	75

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* A foot candle is a unit of measurement of visible light intensity.

The values presented in the above table are the minimum ones on a five-foot bench when the above wattage lamps are used in an efficient, bowl-type reflector placed 40 inches above the bench and six feet apart. These values are approximate, since they take into consideration deterioration of the lamps and such factors, which decrease the efficiency of the unit with use.

While it is readily possible to turn lights on and off manually, it is more desirable to install time switches which may be had in a number of types and prices. The cheaper clocks require setting each evening while the more expensive electric, motor-driven kinds are automatic. Since these switches are so low in price, it is considered hardly worth while to manually operate the lights.

Cultural Suggestions

In the following remarks, an endeavor has been made to present the optimum lighting conditions for each crop discussed and to give the general results that may be expected from the use of artificial radiation. A number of crops are listed which have not responded profitably to light. These crops often give increased production or earliness with the use of added illumination but the response has not been great enough to warrant the cost of lighting. Their listing in the unfavorable group does not indicate that further experimentation may not prove them good for winter forcing with light. To the contrary, in the future, many of these may be found to be very good, by the use of other cultural variations.

Artificial radiation, in many cases, tends to inhibit the development of laterals so that the plants may be placed from one-half to two-thirds the ordinary spacing. The usual disbudding practice should be applied to the lighted plants.

Lighting generally tends to inhibit root development and it is advisable to delay its application until the young plant has produced a strong root system and made a vigorous vegetative growth. For most annuals this is usually between one and two months from germination. For the best flowering results lighting should not be deferred too long, as most plants become less sensitive as they grow older.

With some plants, such as the China aster and dahlia, the flower color in the wintertime, when forced with lights, generally comes lighter than during the normal flowering season. This should be taken into consideration in the selection of varieties where color is an important factor.

Standard cultural practices are followed in all cases unless otherwise noted.

Blue Laceflower (Didiscus coeruleus)

Earlier and more profuse flowering occurs in the case of blue laceflower, under lights. The stems are apt to be short in the lighted condition, however, especially when the plants are forced very early. Five foot candles or 40 watts may be used.

Butterfly Flower (Schizanthus pinnatus)

Schizanthus produces a tall, weak plant and poor flowering under lights, although the flowering date is hastened. The flowers, however, are satisfactory for cutting purposes.

Calceolaria (Calceolaria hybrida)*

Calceolaria flowers much earlier if lights are used. Some lighted plants flowered February 12, as compared with the checks which blossomed on March 26. It has been indicated that lights may be applied with very favorable results as the plant approaches maturity. Five to seven foot candles or 40 to 60 watts should produce the desired result.

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* The plants which are starred have been found to produce the best responses to supplemental artificial radiation.

Calendula (Calendula officinalis)

Calendula does not appear to respond to light except with an increase in stem length. Most varieties produce longer stems with only a few weeks of irradiation immediately preceding flowering. Lights may be of value as an emergency measure over Calendula to increase stem length on a crop in which the stems tend to be short. This same practice holds with a number of plants which do not otherwise respond. An intensity of five foot candles at the bench, or a 40-watt lamp may be used.

Calla Lily (Zantedeschia aethiopica)

Calla lily did not respond to artificial light as a supplement to daylight, under the experimental conditions used.

Carnation (Dianthus caryophyllus)

Carnation gives increased flowering with added light in the case of some varieties. Pink Abundance and White Matchless both give about 25 per cent more flowers when lighted. Longer stems are also produced under the lighted condition.

An undesirable feature noted when Pink Abundance was irradiated was the decrease in new shoots at the end of the season, as compared with the control. This same result has been observed with other varieties.

On the whole, experiments to date indicate that the carnation is not a profitable crop for this type of forcing.

China Aster (Callistephus chinensis)*

This is a crop which responds remarkably well to lights for both winter and summer forcing. Increased stem length and earlier flowering are evidenced by most varieties in either case. A few varieties do not respond as well as others and are not so well adapted for forcing.

Winter Forcing

Experiments using various light intensities over the Heart of France variety indicate that low intensities produce nearly as desirable results as far as flower production and earliness are concerned as do much higher intensities. The stem length is less, however, with lower intensities. The results secured indicate that stem length is somewhat proportional to intensity. This is also true of flower diameter.

Special care must be taken with aster when cultured with lights during the winter. The plants must be irradiated for a sufficient number of days if good stems are to be secured. A short period of lighting brings on the earliest flowering but the stems are usually not of sufficient length for the market. At least three months should be planned as a minimum period and a longer time may be desirable. A good rule is to keep the lights on until the stems have reached the desired length.

Wilt resistant varieties should be selected and proper seed and soil sterilization treatment followed. A moderately cool house is best for this crop, when possible, since, at temperatures below 50 to 60 degrees Fahrenheit, the organism responsible for aster wilt is unable to develop to a marked degree.

A light intensity of one foot candle, or a 15-watt lamp, is sufficient for aster. Higher intensities may be used with an increase in stem length and flower diameter produced.

Some varieties which may be used for winter forcing with good results include American Branching Phlox Pink, Comet Type Dark Blue, California Giant Light Blue, Early Royal Shell Pink, Early Royal Purple, Giant Comet Light Pink, King Type Lavender, and Heart of France. Professor Alex Laurie of Ohio State University (2) has indicated that Crego, Purity, Daybreak, and Lavender Gem also give good results. He secured December flowers from a September planting of Sunshine aster.

Queen of the Market varieties respond to light but the stems are apt to be weak and the flowers small. Sunshine Lilac also responds somewhat but the stems are usually too short.

Good normal blossoms may be expected when lights are used. Without light a large percentage of abnormal flowers are produced.

Summer Forcing

For summer flowering field crops, earlier blooms may be induced by a few weeks irradiation while the seedlings are still flatted (4). This is very economical and gives good financial returns with some varieties. Early Royals respond well but the Queen of the Markets again produce poor quality flowers when lighted. One or two foot candles or a 15-watt lamp is suggested.

Chrysanthemum (Chryanthemum sp.)*
Perennial:

With chrysanthemum, rather than hastening the crop with lights, irradiation delays flowering. Contrary to first impressions, this is profitable from a financial viewpoint since good flowers may be secured in December, January, and February.

Pink, white, and yellow mistletoe mums were irradiated for 45 nights from October 4 (6). Temperatures of 40 and 50 degrees were used, the later flowers produced by the lower temperature. The demand for the blossoms was great, both wholesale and retail markets taking the entire crop at a premium return. A minimum intensity of five foot candles or a 40-watt lamp is probably sufficient for this crop.

Annual

The annual chrysanthemum responds to irradiation with earlier and increased flowering and longer stems. The burridgeanum variety is good. An August seeding produced December flowering. Other annual varieties also respond well. Five foot candles or 40 watts is recommended.

Cornflower (Centaurea cyanus)

Cornflower blooms more quickly and has longer stems under lights, but a decrease in the number of blossoms over the check has been noted. This is probably not a very good forcing crop.

Corn Marigold (Chrysanthemum segetum)

Lights brought about an increase in flower production and earliness. In one case, the irradiated group produced twice as many blossoms as did the control and flowered almost two months earlier. Five to seven foot candles or 40- to 60-watt lamps may be used.

Cineraria (Cineraria sp.)

Cineraria Columbia mixture and C. multiflora flower several weeks earlier with lights but the time saved seems to make the cost of irradiation scarcely worth while. C. cruenta flowered over three weeks in advance of the check. Cineraria is inclined to be spindling when forced.

Clarkia (Clarkia elegans)

Clarkia responds with earlier flowering and longer stems. Care must be taken not to light the plants too early, since weak stems are apt to develop. A good vegetative growth should be established before the plants are irradiated. Use a minimum of five foot candles or 40 watts.

Coreopsis (Coreopsis sp.)*

A month or more earlier flowering and a very noticeable increase in flower production have been secured with lights in the case of C. grandiflora. C. tinctoria also blooms much earlier. Five foot candles or 40 watts should be sufficient to produce very desirable results.

Crown Daisy (Chrysanthemum coronarium)

Earlier and more flowers may be produced with crown daisy by the use of lights. Five to seven foot candles or 40- to 60-watt lamps may be used.

Cyclamen (Cyclamen persicum)

Cyclamen responds to light but the differences do not warrant the installation. Backward plants may be hastened by using lights, however.

Dahlia (Dahlia sp.)*

Most varieties of dahlia bloom earlier and more profusely with lights. This is especially true of the large-flowered type. Longer stems and larger flowers are the rule. Good flowering has not been secured with the smaller pompoms.

Of the large varieties, Jersey Beauty, Ida d. ver Warner, and Papillon respond well to lights. Four foot candles or 40 watts is sufficient intensity. Ground beds are the best culture method, since these plants often reach heights as great as eight or ten feet.

Little Belle and Tommy Keith of the smaller-flowered varieties respond to lights but they do not flower freely and hardly seem desirable for winter culture until more worth-while results have been secured.

The keeping qualities of the dahlia do not appear to be improved by winter forcing.

The recommended intensity is five to seven foot candles.

Delphinium (Delphinium sp.)

Results obtained with lights over delphinium scarcely warrant their use, although earlier and increased flowering were secured with the belladonna variety. D. hybridum responds only slightly to lights. D. ajacis gives greater production under lights due to longer laterals.

Feverfew (Matricaria capensis)*

Excellent results have been obtained with feverfew. More flowers are produced and they have been secured almost two months in advance of the check group. This crop may follow mid-season mums and clumps from the out-of-doors plants may be used. When lights were used, flowers were secured from cuttings transplanted in early January for Easter and Mothers' Day, while the controls flowered barely in time to be cut for Memorial Day. Five foot candles or 40 watts is recommended.

Freesia (Freesia hybrida)

Freesia responds adversely to light, a reduction in number of blooms occurring. The lighted crop and the controls bloomed at about the same time.

Gaillardia (Gaillardia sp.)*

Earlier and increased flowering and greatly increased stem length are produced with lights over G. grandiflora. With G. lorenziana, increased production and earliness was evident, although the stem length was somewhat less than in the control group. The suggested intensity is five foot candles or 40 watts.

Gladiolus (Gladiolus sp.)

So far, gladiolus has not responded profitably to lights. All varieties have not reacted favorably. Those which did respond increased so slightly in production, under the conditions used, that the results were not sufficient in return to equal the cost of power. However, further experimentation may produce very good results.

Iris (Iris tingitana)

Dutch iris, variety Wedgewood, produced a 50 per cent difference in flowering in favor of the lighted plants. Longer stems were secured in the irradiated group. Eight to 15 foot candles or 75- to 100-watt lamps are recommended as a minimum, in this case.

Leptosyne or Sea Coreopsis (Leptosyne maritima)

The only advantage to be gained with Leptosyne by irradiating is earliness in blooming. With an intensity of five foot candles or 40 watts, over a month may be saved in flowering time.

Lily (Lilium sp.)

The forcing of lily by means of lights has been the subject of much experimentation. With high intensities, favorable results have been obtained by using lights for a few weeks to hasten flowering. The use of lamps of as low as 100 watts, with favorable decrease in flowering time, has been reported. The results have been various with low intensities, however, at Purdue. The flowering time has not been decreased by more than one to two weeks, by the use of 10 foot candles. L. giganteum and L. erabu were irradiated. L. harrisi has been lighted also, with no better results.

No less than 30 foot candles or 200 watts is recommended, and higher intensities should give proportionately better results. Temperatures should be kept very favorable, even with irradiation.

Marigold (Tagetes signata pumila)

Dwarf marigold responds well to lights. Increased flowering is secured by irradiating for approximately 60 days just after benching or potting from the flat.

The dwarf variety, Legion of Honor, makes an excellent potted plant, being bushy and symmetrical. When it is in full flower, it compares favorably with many potted species. Five foot candles or 40 watts is advised.

Nasturtium (Tropaeolum majus)*

Golden Gleam nasturtium does exceptionally well under lights with twice as many flowers produced as the controls, in several sets of investigations. Almost a hundred flowers per plant were produced in 2½ months of blooming under lights, in one instance. The plants were still blooming freely when they were discarded. An intensity of five foot candles or 40 watts is satisfactory.

Pansy (Viola tricolor)*

Pansy is doubtless one of the most excellent crops for forcing with lights. Flower production has been increased as much as sixteen times with light, in the case of the Giant Swiss Blue variety. This is an average of 52 flowers per plant in less than a three-month blooming period. It is a maximum production, of course, but ten or more flowers per month per plant may be expected ordinarily. Longer stems and earlier flowering also occur, often as much as two months being saved in flowering time. This depends somewhat on the date of seeding.

Other varieties respond with very good results. Those grown under lights at Purdue, other than the Giant Swiss Blue, include Giant Azure Blue, Giant Eros, Giant Pure White, Giant Swiss Alpenglow, and Swiss Yellow.

It should be noted that high flower production is secured with pansy only while irradiated. Discontinuance of lighting usually causes a decrease in flowering.

The effect of light intensity on pansy has been investigated and good results have been obtained with one foot candle or a 15-watt lamp. However, higher intensities give proportionately better results. Five to seven foot candles or 40- to 60-watt lamps is advised.

Primrose (Primula obconica)

Indications are that primrose does not give a favorable enough response to warrant the use of lights.

Rose (Rosa sp.)

Rose has not been found to respond profitably to the application of artificial lights. One-hundred-watt lamps and 1000-watt lamps were used. The results were negligible with the lower intensity, and the response was not great enough to be profitable with the higher wattage.

Salpiglossis (Salpiglossis sinuata)

Longer stems and more and earlier flowers are produced when Salpiglossis is subjected to light.

Scabiosa (Scabiosa atropurpurea)*

Longer stems, much earlier flowering, and greater flower production occur with Scabiosa under lights. It is a good species for forcing, if care is taken to allow a sturdy vegetative growth to develop before lights are applied. Otherwise, a decided tendency toward weak stems is evidenced. Five foot candles or 40 watts may be used.

Shasta Daisy (Chrysanthemum maximum)*

Shasta Alaska daisy is extremely worth while under lights. January flowers should be secured by placing lights over the plants in November. Summer field stock may be used. Longer stems and more than 150 per cent increase in flowering have been secured by the use of lights. Exceptionally large flowers are also the rule in winter blooming. Five foot candles or 40 watts is the suggested intensity. Control plants usually do not bloom until later, a difference of one to two months or more in flowering time.

Shirley Poppy (Papaver rhoeas)

This poppy responds with a good number of blossoms and long stems when lights are used. Five to seven foot candles or 40- to 60-watt lamps should be sufficient to secure good results. The control plants did not blossom during the winter months.

Snapdragon (Antirrhinum majus)

Much more profuse and earlier flowering is evidenced in Snapdragon under lights but the stems are short and not so heavy as is desirable for a first-class flower. Cheviot Maid, Suntan, and Rose Queen all respond in a more or less similar fashion.

Lights could hardly be considered profitable for this crop, unless short-stemmed spikes are acceptable for some particular use.

Stock (Matthiola incana)*

Good results may be expected with stock under artificial radiation conditions. Earlier flowering and slightly longer stems are secured with most varieties. Beauty of Nice, Perpetual Branching, Bismarck Lilac Lavender, and Golden Ball all respond favorably to lights.

Stock does better with higher intensities than with the lower ones, the decrease in flowering time being somewhat proportional to the intensity. Eight to 15 foot candles or 75- to 100-watt lamps may be recommended. About a month's decrease in flowering time may be expected with this intensity. Seedlings planted in August and benched in September should give late December or early January flowers. Lights should be discontinued as soon as buds are formed. Professor Laurie states that columnar stocks respond to as low as 2 foot candles or 25 watts.

Sweet Pea (Lathyrus odoratus)

Slightly increased flowering occurs with some varieties of sweet pea when forced with lights. However, in other varieties, no differences have been noted.

An interesting variation is the summer flowering type. Results indicate that the summer blooming Pinkie responds very favorably to artificial light, with the production of a much earlier crop in late January or early February. So far, there are no indications that this variety can successfully compete with the winter types in flower production during the winter season.

To date, the data obtained at Purdue have not shown any consistent influence of low intensity lights on bud drop. Other workers have found a decrease with higher intensities, but the decrease has not been commensurate with the power cost.

Sweet Sultan (Centaurea imperialis and Centaurea suaveolens)*

Centaurea imperialis blooms earlier and a large increase in the number of flowers has been noted. However, a tall, weak plant is secured, unless it is allowed to establish a vigorous vegetative growth before lights are applied. C. suaveolens gives slightly increased flower production and much longer stems under lights. Five foot candles or 40 watts is advised.

Violet. (Viola sp.)

Earlier and increased flowering have been obtained by the use of artificial lighting over blue violet. Five foot candles was the intensity used.

Yarrow (Achillea millefolium rosea)

The use of lights brings Achillea into bloom about a month sooner than the control and the stem length is materially increased. Five foot candles or 40 watts has been used with success.

Zinnia (Zinnia elegans)

Zinnia has reacted unfavorably to lights so far. Both check and irradiated plants evidenced poor growth and flowering, with weak stems and small flowers. Although it seemed that this plant should be an excellent one for winter forcing, the low intensities used did not produce desirable growth.

Miscellaneous Crops Unfavorable for Forcing

Crops not listed previously, which have been subject to investigation and which have not been profitably forced with light, under the conditions used, include:

Achyranthes brilliantissima
Aquilegia hybrida
Anemone sp.
Arctotis grandis
Asparagus plumosus
Asparagus sprengeri
Cosmos bipinnatus
Cynoglossum amabile
Digitalis purpurea
Dimorphotheca aurantiaca
Erlangea tomentosa
Erysimum perofskianum
Felicia amelloides
Hunnemannia fumariaefolia
Hyacinthus orientalis
Iberis umbellata
Ipomopsis elegans
Iresene herbsti
Ixia maculata
Kniphofia pfitzeriana
Muscari botryoides
Narcissus poeticus ornatus
Narcissus psuedonarcissus
Narcissus tazetta
Ornithogalum lacteum
Pelargonium zonale
Pyrethrum hybridum roseum
Ranunculus sp.
Statice latifolia
Statice suworowi
Tulip gesneriana hybrids

The author wishes to express his appreciation to Doctor Laurenz Greene, Professor E. R. Honeywell, Professor Alex Laurie, and Mr. L. C. Porter, who have very kindly offered valuable criticisms in the preparation of this circular.

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Circular No. 207 December, 1934

INDIANA BALTIMORE TOMATO—ITS HISTORY AND DEVELOPMENT

This field of Indiana Baltimore tomatoes yielded over 17 tons of red ripe tomatoes per acre. With good seed large yields of high quality are possible on many Indiana farms.

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Purdue University
Agricultural Experiment Station
Lafayette, Indiana

With the location of the tomato seed project at Purdue University, there has developed a mutual interest and cooperation between the Experiment Station and the Indiana Canners in problems related to the tomato canning industry. The benefits from these efforts have assumed State and National importance. Outstanding results of this research are:

1. Production of a strain of tomatoes with the capacity to produce more tomatoes per acre than any other variety under Indiana conditions.
2. A seed treatment was developed to prevent the spreading of bacterial spot on the seed.
3. A practical knowledge of bacterial canker and the importance of disease free seed to prevent its spread.
4. A scientific method of color measurement as applied to tomatoes and tomato products.
5. The importance of quality initiated a method of buying the raw product on a graded basis.
6. Field investigations have emphasized the necessity for careful picking.
7. In the past seventeen years, nine hundred eighty other strains and varieties have been compared with the Indiana Baltimore.

INDIANA BALTIMORE TOMATO—ITS HISTORY AND DEVELOPMENT

Edw. C. Stair
Purdue University Agricultural Experiment Station

Indiana has for many years been one of the leading States in the tomato canning industry. Tomato production has made a steady and rapid increase as evidenced by the fact that over 80,000 acres of tomatoes were grown for the canning factories of the state in 1934.

Early in the development of the industry, canners and farmers were often disappointed in the quality of the canned product obtained from the seed planted. The seed was not dependable and frequent low yields resulted. Experiment Station workers in cooperation with leaders in the industry studied the situation and concluded that a better strain of tomato seed of fixed quality and yielding capacity was urgently needed.

The yielding ability of the tomato as well as any other crop is determined by two main factors, environment and heredity. Environment fluctuates with the season, fertility of the soil, rainfall, amount of manure and fertilizer used, temperature, cultural practices, and many other factors. Heredity, on the other hand, when once fixed within a pure line, is usually very stable.

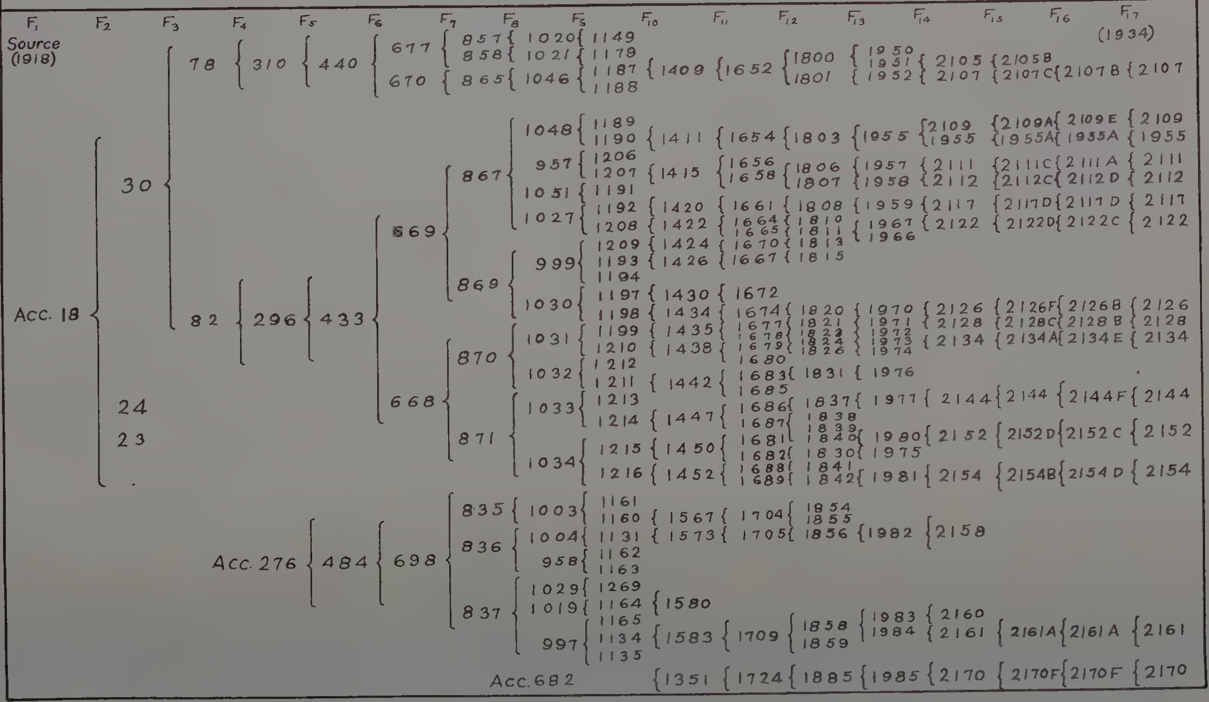
Scientific research has pointed out that considerable variation may be expected to exist within any population of plants propagated from seed, and that continuous selection together with careful seed saving methods is necessary in order to keep any variety at its best. In tomato improvement work, the experimenter must be very familiar with varieties and types because if one off type plant or one plant of another variety is allowed to develop in a seed field, it dilutes the purity of the strain very rapidly. A single tomato fruit may contain as many as one hundred fifty seeds and a single plant may produce from thirty to sixty fruits that actually ripen and get into the seed.

Continuous cooperation between the Agricultural Experiment Station and the Indiana Canners led the Canners to appoint a seed committee in 1917 authorized to study their seed situation and to make plans for its improvement. As the result of the efforts of the Experiment Station workers and of this committee, the foundation was laid for the development of a strain of tomatoes better suited to their needs.

History

The first problem to decide was what variety would be best suited for canning purposes under Indiana conditions. A large number of varieties had been tried from year to year by various canners, and at the time this work

PEDIGREE OF THE INDIANA BALTIMORE TOMATO


F1 Source (1918)
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F17 (1934)
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1031 1199 1435 1678 1822 1972 2134 2134A 2134E 2134
870 1210 1438 1679 1824 1973
1680 1826 1974
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Acc. 276 484 698 958 1162
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837 1019 1164 1580
1165 1983 2160
997 1134 1583 1709 1858 1984 2161 2161A 2161A 2161
1135 1859
Acc. 682 1351 1724 1885 1985 2170 2170F 2170F 2170

started the two varieties that predominated in the state were Stone and Greater Baltimore. In 1918 seed was secured from the originators of these two varieties in sufficient quantity to plant twenty acres of each. The two varieties were almost equal in every respect, except that the Baltimore was somewhat earlier which was a factor decidedly in its favor. An individual plant selection was made from this field in 1918 and it was from this start that the variety now known as the Indiana Baltimore was developed. In Figure 1, page 4, this selection is shown as Accession No. 18. This original plot was located near Indianapolis.

Many selections have been made in the past seventeen years, but for various reasons all except fifteen have been discarded. Thirteen of these came from the original selection made from Accession No. 18. Strain number 2161 was made in 1921 at Bowling Green, Ohio, from a strain of Greater Baltimore that was very satisfactory under conditions there. Strain 2170 originated in 1924 as the result of crossing two strains of Indiana Baltimore.

The seed plots were located at Indianapolis again in 1919, but at a meeting of the seed committee with representatives of the Agricultural Experiment Station early in 1920 it was decided to move the bulk seed plots to a small canning plant in southern Indiana and to move the record and breeding plots to Lafayette. In 1921 the bulk seed plots were moved to another southern Indiana factory where they have remained since. In 1931 a northern Indiana location for bulk seed plots was added. The breeding work, experimental and record plots have remained at Lafayette for the past fifteen years. Here it was found possible to give closer supervision to the work than if located elsewhere. In this time many research problems involving the use of greenhouses and research laboratories, in addition to the field plots, have been completed and the Indiana Baltimore tomato is now a practically pure strain capable of producing high yields of very good quality.

During this time the members of the Indiana Canners' Association have been given an opportunity each year to *emphasize* their ideals regarding the selection of types of tomatoes best suited to the industry. This has been made possible through various inspection trips at which times the members of the seed committee and the Experiment Station workers went over the record plots at Lafayette as well as many acres of the bulk seed plots at the canning factories.

Development of the Indiana Baltimore

Individual selections made each year are known as strains. The progeny from these individually selected lines are thrown together each year and the combination of these strains makes what is known as the Indiana Baltimore variety. This variety at the present time consists of fifteen strains as shown in Figure 1, page 4. Originally each strain started from an individual plant each year, but at the present each strain starts from an individual fruit each year. Hundreds of individual selections have been made during the development of the Indiana Baltimore. These selections are planted in triplicate in the record plots where plants as well as fruits may be carefully studied. Only the best of these are carried on to the multiplication plots, the remainder are discarded. In making the individual fruit selections each year, plant characters, as well as the most ideal fruits regarding type, shape, color, and internal characters, are considered. The various steps necessary from the time the individual fruit is selected until the seed has been multiplied in sufficient quantity to reach the growers' fields in the State are outlined on the inside of the back cover page.

Field Plot Arrangement

The field plots at Lafayette are arranged each year so as to overcome differences due to soil variation. The arrangement as shown in Figure 2, page 7, was employed in 1934 As shown here, the yield record plots were located at one end of the field. The fifteen strains were planted in these plots in triplicate. In Figure 2 these replications are designated by the letters A, B, and C. The seed in each case came from an individual fruit which was the most perfect that could be found the previous year. Plant and foliage characters were also considered when these selections were made. Each fourth row is a check row. The seed from which these check plants were grown came from bulk seed from the multiplication plots last year. These check rows are used as a basis for comparing the individual strains each year.

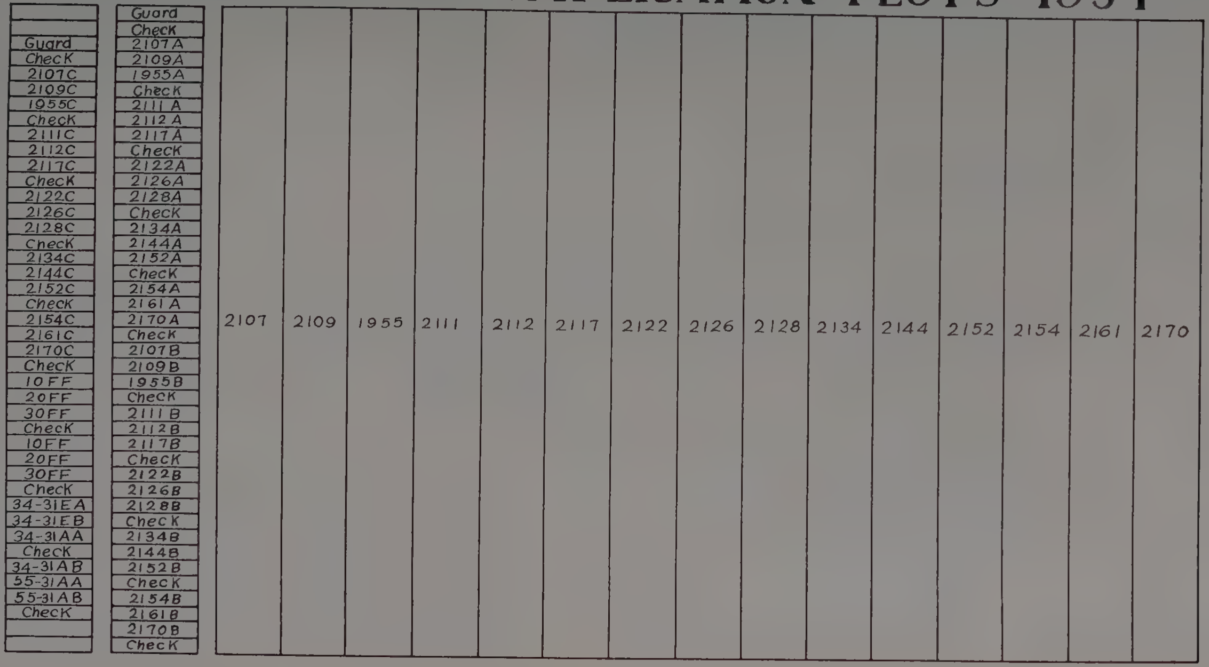
The field in which these trials were conducted in 1934 was five acres in size. The record plots required only a small part of the area. The remainder was divided into fifteen equal parts as shown in Figure 2, and it was here that the seed was multiplied in sufficient quantity to plant the larger multiplication fields at the canning factories where the seed is produced for the Indiana Canners' Association. The seed for planting these larger multiplication plots at Lafayette is obtained from the record rows which originated from an individual fruit the year before. The plants in all plots are set five feet apart in the row and the rows are planted six feet apart. These distances are almost double those recommended for field practice, but the greater distance is found necessary where individual plants are to be studied and also to make sure that pickers will keep the fruits from each plot separate. Even at these greater planting distances, yields at the rate of fifteen to twenty tons per acre have been obtained.

The strains are kept separate in the multiplication plots at Lafayette each year, as indicated in Figure 2, so that if any unexpected difficulty should occur in any strain it could be eliminated without interfering with any of the other strains.

Methods of Measuring Improvement in Yield and Quality

Anyone walking through a tomato field of one variety will find it difficult to see differences between individual plants. All plants look practically alike. The fruits on one plant are similar to those on all other plants. The only way to detect small differences is to measure accurately all essential

INDIANA BALTIMORE TOMATO
RECORD AND MULTIPLICATION PLOTS 1934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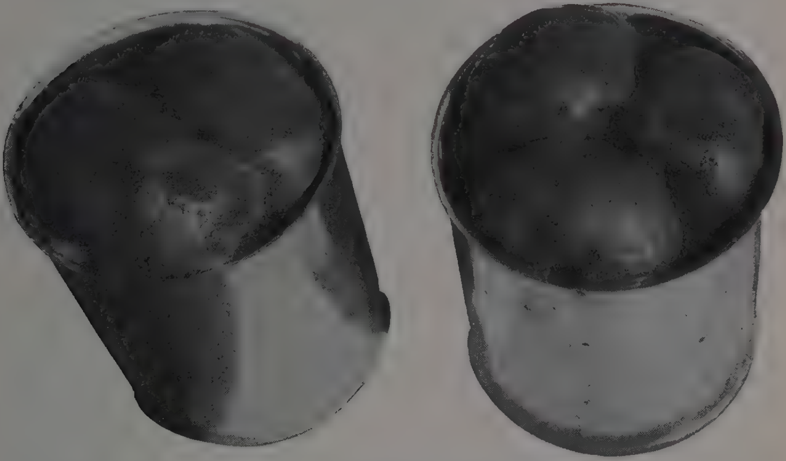
factors. A large number of individuals must be measured in order to get a fair idea of the entire population. These measurements when studied under approved statistical methods by a well-trained experimenter help him to draw reliable conclusions relative to the groups of plants with which he is working.

A sample sufficiently large to give reliable results is measured each year from all Indiana Baltimore strains, as well as samples from other varieties that are brought in to compare with it. Measurements of this kind have been taken each year since the work was started on this variety. Such measurements accumulating over a period of years give figures that can be relied upon with reference to plant and fruit characters. It is on the basis of these figures after careful study that some strains are dropped and others are added.

Indiana Baltimore with a high percentage of U. S. No. 1 tomatoes. Uniformity of size, shape and color improve the quality of the canned product. The first step was good seed.

Testing Varieties Adapted to Indiana

Each year a large number of other varieties from seedsmen and plant breeders throughout the country are tested in isolated plots to determine their yielding ability and performance under Indiana conditions. Every fifth row in these plots is a row of Indiana Baltimore which is used as a check. No seed is saved from these plots. In the seventeen years since the Indiana Baltimore was originated, nine hundred eighty other strains and varieties have been compared in this way with it. These plots and the results from them are open to inspection by the seed committee of the Indiana canners each year. When anything is found that appears to surpass the Indiana Baltimore under Indiana conditions, it is given a thorough trial.



Quality in the can, Indiana's goal. Indiana Baltimore seed has been developed to help put better quality in the can.

Development of New Varieties and Strains

A part of any good seed development program is the development of new varieties and strains. In the making of new hybrids it is often possible to combine the good characters of two or three varieties into one new variety which will be better than any of its parents. In connection with the Indiana Baltimore work, a number of new hybrids have been developed each year. An effort is always being made to secure disease resistant strains, some that are earlier and some that are later than others, together with improvement in yield, quality, and type.

The Characteristics of Good Tomato Seed

Good tomato seed is not based on cost, but on what it will do under the conditions where it is grown. The qualifications of good tomato seed are:

1. It must produce a good quality of finished product and a good yield;
2. It must be free from disease;
3. A large percentage of the seed must produce good strong plants;
4. It must produce fruits true to the type which it represents;
5. It must not be mixed with seed of any other variety; and
6. It must be clean and free from foreign matter.

The canner who buys low grade seed not only cheats himself in that he often receives a low grade finished product, but there is also a financial loss for those who produce the raw product. High yields can not be expected from low grade seed.

Seed Certification

In 1934 Indiana launched a new project of certifying tomato seed. This work is done under the authority of the State Entomologist cooperating with the Purdue University Agricultural Experiment Station. The qualifications which have to be met before seed can be sold as "certified" are very rigid. The source of the seed must be known and approved. The plant beds must then be certified before the seed can be sown. A qualified inspector must be on hand while the seed is being sown and again when the plants are pulled. The plants are all inspected for disease before going to the field.

The fields from which the seed may be saved must be given two thorough inspections; the last of which must be when sufficient fruits are ripe so that there may be no mistake regarding type. No field is eligible for certification that has more than one variety growing in it, and it must be sufficiently isolated from fields of other varieties to guarantee little chance for cross pollination. Not more than one seed stock can be saved at one extraction plant. A field can not have more than one tenth of one per cent of off type plants in it, and these must be pulled and destroyed before any seed is saved from the field. No seed is saved from any field in which bacterial canker is found, nor from fields having more than one per cent of wilt. The seed is inspected by a trained inspector while it is being extracted and dried, and again when it is cleaned and packaged for sale.

How Much Does Good Seed Cost Per Ton of Raw Stock?

The value of tomato seed depends on its ability to give a high yield of quality canned product per ton of raw stock, a high tonnage of raw product per acre, and a high percentage of germination.

A study of Table 1 will permit a canner to obtain a clearer conception of what he can afford to pay for a pound of tomato seed.

The cost of seed is directly in proportion to the percentage of germination and to the yield secured by the grower. Every canner has some growers who are better producers than others. If the canner furnishes his growers with seed that will germinate 90 per cent, his seed cost will be about five cents per ton of raw stock if he pays $1.50 per pound of seed and the grower produces one ton of raw stock per acre. The same canner can pay $8.00 per pound for seed and his seed cost per ton of raw stock will be the same for the grower who produces five tons per acre. Table 1 demonstrates also that the canner will have practically the same seed cost per ton of raw stock if he pays $2.00 per pound for seed giving 50 per cent germination as he will if he pays $4.00 per pound for seed testing 90 per cent.

Per cent Seed Producing Plants	Tonnage Yield	Cost of seed per pound in cents							
		50	100	150	200	300	400	600	800
		Cost in cents per ton of raw stock							
90	1	1.736	3.472	5.208	6.944	10.416	13.888	20.832	27.776
	3	.578	1.157	1.736	2.314	3.472	4.629	6.944	9.258
	5	.347	.694	1.041	1.041	2.083	2.777	4.165	5.555
	10	.173	.347	.520	.694	1.041	1.388	2.083	2.777
70	1	2.232	4.464	6.696	8.928	13.392	17.857	26.785	35.714
	3	.744	1.454	2.232	2.976	4.464	5.952	8.928	11.904
	5	.446	.893	1.339	1.785	2.678	3.571	5.357	7.143
	10	.223	.446	.669	.892	1.339	1.785	2.678	3.571
50	1	3.125	6.250	9.375	12.500	18.750	25.000	37.500	50.000
	3	1.042	2.083	3.125	4.166	6.250	8.333	12.500	16.666
	5	.625	1.050	1.875	2.500	3.750	5.000	7.500	10.000
	10	.312	.625	.937	1.250	1.875	2.500	3.750	5.000
30	1	5.208	10.416	15.614	20.832	31.248	41.664	62.496	83.333
	3	1.402	3.472	5.204	6.944	10.616	13.888	20.832	27.777
	5	1.041	2.085	3.123	4.166	6.249	8.333	10.499	16.666
	10	.520	1.041	1.561	2.083	3.124	4.166	6.249	8.333

Table No. 1.

The cost (in cents) of tomato seed per ton of raw stock as affected by price of seed, percentage of germination and yield per acre. (Based on 6,000 tomato seeds per ounce and 3,000 plants per acre.)

Another angle to this question which might be pointed out here is that seed which shows a low percentage of germination has undoubtedly been weakened by some cause. This cause may have been due to poor drying or storage conditions or disease of some kind. Whatever the cause, it is possible that the seeds which do germinate will not have quite the vitality of seeds from other lots which show a high germination percentage and for this reason probably will not produce as large a yield as plants grown from the more vigorous seed.

Methods of Procedure

Each strain of Indiana Baltimore is started from a single fruit every year. Improvements made by breeding and selection reach the growers' fields and Indiana packing plants the fourth season after they are made, as shown below.

1931 *Parent Selection*

An individual fruit was selected. Seed saved from this fruit was tested in 1932 at Lafayette and seed secured for the multiplication plots at Lafayette in 1933.

1932 *Test Plots*

Seed from the individual fruit selected in 1931 was tested in triplicated plots at Lafayette. Yield, plant characters, fruit type, freedom from disease, were tested and studied. Seed was saved for the 1933 multiplication plots at Lafayette. Indiana Canners' Seed Committee inspected the plots.

1933 *Multiplication Plots*

The seed from the individual fruit selected in 1931, and tested in 1932, is now multiplied at Lafayette for the Indiana Canners' Association seed fields. Records and field plots are open to inspection for yield, quality, type, and freedom from disease, by seed certification authorities, as well as the Indiana Canners' Seed Committee. Seed supplied Indiana Canners for their 1934 bulk seed plots.

1934 *Bulk Seed Plots*

Seed was multiplied for general distribution at two selected canning factories. Plant beds were approved before the seed was planted. Seed was planted under supervision. Plants pulled and inspected for disease. Record obtained of fields planted. Record kept of replants. Fields were inspected previous to ripening and again before the seed was saved. Seed saving operations and packaging of the seed was supervised.

1935 *Growers' Fields*

Seed sold to various canners and used in production of canning crop tomatoes by growers.

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Circular No. 208 November, 1934

TWENTIETH ANNUAL REPORT

of the

CREAMERY LICENSE DIVISION

For the Year Ending March 31, 1934

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Purdue University
Agricultural Experiment Station
Lafayette, Indiana

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Mr. V. D. Rhodes	Assistant Inspector
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Milk Handled by Licensed Plants and Total Estimated Milk Production, 1920-1933

YEAR	Number of Licensed Plants	Pounds of Milk or Its Equivalent Handled by Licensed Plants	*Number of Milk Cows	Total Milk Production
1920	183	1,227,971,123	659,000	3,086,007,190
1921	198	1,350,320,469	653,000	3,035,325,150
1922	234	1,471,978,897	659,000	3,093,440,591
1923	220	1,439,266,503	652,000	3,133,036,289
1924	234	1,698,110,981	659,000	3,200,137,516
1925	243	1,758,946,467	679,000	3,280,146,910
1926	272	1,830,970,397	678,000	3,447,213,947
1927	307	2,132,280,140	680,000	3,669,804,287
1928	334	2,444,867,845	686,000	3,792,498,038
1929	344	2,434,039,990	693,000	3,842,440,026
1930	369	2,552,288,533	702,000	3,924,405,203
1931	372	2,912,519,251	722,000	3,965,671,198
1932	389	2,639,138,629	751,000	4,202,419,131
1933	401	2,598,374,017	774,000	4,137,201,507
1934	......	......	810,000	......

* Indiana Crops and Livestock, 1934. Department of Agricultural Statistics.

TWENTIETH ANNUAL REPORT OF THE CREAMERY LICENSE DIVISION

T. H. Binney

March 31, 1934, marks the close of the twentieth year in which the Creamery License Division has had supervision over the testing in Indiana. A study of one of the tables in this report (Output of Licensed Plants in Indiana) will show the growth of the dairy industry during the past twenty years. In 1914 there were 355 licensed plants and stations while in 1933 there were 1,756. The number of licensed testers increased from 408 to 2,040 over the same period of time. Out of 41,834 testers' licenses which were issued only 168 of them were revoked. Forty-nine prosecutions have been made of persons or firms violating provisions of the Creamery and Testers' License Law. Fifteen thousand nine hundred and fifteen persons have taken the testers' examination. Out of this number, 12,968 persons passed and 2,947 persons failed to pass the examination. To examine this number of candidates 1,477 examinations have been held.

A total of 979,643 pieces of glassware have been calibrated; 976,982 pieces were found to be correct and 2,661 pieces were incorrect.

Indiana Dairy Statistics

At the time of applying for the renewal of creamery licenses, all creameries, milk plants, cheese factories, condenseries, etc., report the amount of butter, milk, cheese, or other dairy products made or sold during the year. With this information, together with figures supplied through a co-operative agreement with the United States Department of Agriculture, Bureau of Agricultural Economics, it is possible to compile reliable statistics concerning the total production of licensed dairy manufacturing plants.

The following table is a summary of the reports received from licensed plants for the years indicated:

Output of Licensed Plants in Indiana for 1914, 1923, 1932 and 1933

	1914	1923	1932	1933
Pounds of Butter	26,636,520	51,662,093	75,506,568	76,508,061
Pounds of Milk	51,067,066	213,578,850	505,210,133	463,359,717
Pounds of Cream	5,421,838	14,501,004	28,833,326	24,930,340
Gallons of Ice Cream	2,035,874	4,447,157	3,653,512	3,077,146
Pounds of Cheese	211,922	373,943	15,265,027	17,616,875
Pounds of Sweetened Condensed Milk	1,019,400	7,127,541	1,258,553	3,217,549
Pounds of Evaporated Milk	10,106,800	16,098,231	37,301,632	38,153,894
Pounds of Bulk Evaporated Milk	2,450,988	10,130,565	27,518,303	21,041,576

By comparing the figures for 1933 with those for 1932 in the above table, it will be noted that butter, cheese, condensed and evaporated milk show an increase while the remaining products show a decrease. The increase in the amount of butter made is 1,001,493 pounds, or 1.3 per cent. A total of 463,359,717 pounds of milk and 24,930,340 pounds of sweet cream were sold in licensed plants during the past year. This represents a decrease of 0.8

per cent of milk and 13.5 per cent of cream in 1933 as compared with 1932. The amount of ice cream manufactured during the past year shows a decrease of 576,366 gallons, or 15.7 per cent. Cheese production increased 2,351,848 pounds, or 15.4 per cent. Sweetened condensed milk increased 1,958,996 pounds, or 155.6 per cent; evaporated milk (case goods) increased 852,262 pounds, or 0.2 per cent, and bulk evaporated milk decreased 6,476,727 pounds, or 23.5 per cent.

In addition to the above products, dairy plants of the state manufactured 13,741,362 pounds of condensed skim milk; 419,116 pounds of evaporated skim milk; 998,403 pounds of concentrated skim milk (for animal feed); 5,542,705 pounds of condensed or evaporated buttermilk; 4,280,097 pounds of dried or powdered skim milk, and 1,689,311 pounds of dried or powdered buttermilk.

An estimate of the total amount of dairy products manufactured in the state may be secured by using the above statistics and estimating the amount of dairy products manufactured and sold in the plants which are not licensed. A large number of ice cream plants and market milk plants buy milk on a gallon or weight basis rather than on a butterfat basis and do not come under the jurisdiction of the Creamery License Division.

Amount of Butter, Milk, Ice Cream, Condensed Milk and Cheese Estimated as Produced in Indiana During 1933

Pounds of Creamery Butter	76,508,061
Pounds of Dairy Butter	10,408,105
Pounds of Milk Consumed	1,518,670,924
Gallons of Ice Cream	8,842,500
Pounds of Condensed and Evaporated Milk	62,413,019
Pounds of Cheese	17,616,875
Pounds of Cottage Cheese	2,816,234

By taking the amount of milk used in the manufacture of each of the various dairy products, the total milk production of the state may be calculated. In making this calculation, it has been necessary to estimate the amount of milk and cream consumed direct, the amount of dairy butter made, the amount of milk fed to calves, and the amount of milk lost on farms and in factories.

Total (Estimated) Milk Production

Creamery Butter Used	1,606,669,281 pounds
Dairy Butter Used	218,570,205 pounds
Milk Consumed Direct	1,518,670,924 pounds
Ice Cream Used	121,584,375 pounds
Cheese Used	174,187,090 pounds
Condensed Milk Used	156,032,547 pounds
Milk Fed to Calves	114,444,000 pounds
Milk Shipped Out of State	269,246,031 pounds
Losses on Farms and in Factories	125,382,133 pounds
Total	4,304,786,586 pounds
Milk Shipped in	167,585,079 pounds
Total Milk Production in Indiana	4,137,201,507 pounds

Creamery Licenses

Every creamery, shipping station, milk factory, cheese factory, or person, agent, firm, company, association or corporation, receiving, buying and paying, for milk or cream on the basis of the amount of butterfat contained therein, shall be required to hold a creamery license. (Section 6, Chapter 340, Acts of 1913, Indiana.) The license is issued by the Purdue University Agricultural Experiment Station upon complying with the provisions of the Indiana Creamery and Testers' License Law. Such license is valid for a term of one year unless revoked by the Purdue University Agricultural Experiment Station.

During the past year 1,756 creamery licenses were issued. This is an increase of four over the previous year's total of 1,752. Plant licenses show a gain of 12 in number, while the number of station licenses show a decrease of eight.

The following table is a summary of the number of kinds of plants issued creamery licenses during the year ending March 31, 1934, and for previous years, as indicated.

CREAMERY LICENSES ISSUED FROM 1928-1933, INCLUSIVE

PLANTS AND STATIONS	NUMBER AND YEAR					
	1928	1929	1930	1931	1932	1933
Butter	56	58	56	58	57	56
Milk	129	141	162	147	162	175
Ice Cream	11	16	18	16	12	14
Cheese	18	17	18	19	18	22
Condensed Milk	8	9	8	10	10	11
Butter and Milk	39	33	36	46	54	51
Butter and Ice Cream	17	13	10	13	9	11
Butter and Cheese	3	2	1	2	3	2
Butter, Milk, and Ice Cream	13	15	20	17	23	26
Butter, Milk and Condensed Milk	5	5	7	6	2	4
Butter, Milk, Ice Cream and Condensed Milk	7	7	6	6	7	5
Butter, Ice Cream and Cheese	0	0	0	1	1	1
Butter, Milk, Cheese and Condensed Milk	0	1	0	0	1	1
Milk and Ice Cream	24	18	19	26	25	19
Milk and Condensed Milk	2	5	4	5	4	3
Total number of Plants	334	344	369	372	389	401
Stations	1,614	1,588	1,524	1,457	1,363	1,355
Total Licenses Issued	1,948	1,932	1,893	1,829	1,752	1,756

The following table shows the number of plants which reported each of the five major products handled in licensed plants for the years indicated:

PRODUCTS	NUMBER OF PLANTS REPORTING						
	1927	1928	1929	1930	1931	1932	1933
Butter	142	140	134	136	149	158	157
Milk	202	221	229	257	254	279	284
Ice Cream	73	74	73	76	79	77	76
Cheese	9	21	21	20	22	22	26
Condensed Milk	24	24	30	28	31	25	24

Testers' Licenses and Examinations

To insure accurate tests to the producer and manufacturer licensed testers are employed by all plants and stations where milk and cream are bought on a butterfat basis.

Before securing a license an operator must pass an examination which consists of both laboratory and written work. The laboratory work consists of testing samples of milk and cream in duplicate; the written work consists of answering twenty questions which pertain to the testing of milk and cream.

Four hundred and twenty-one candidates appeared for the tester's examination during the past year. This is an increase of seventy-nine candidates over the previous year. Out of this number twenty-four failed to receive a passing grade; fifteen of the failures were due to unsatisfactory written work, six were due to laboratory work and three were due to both written and laboratory work.

Twenty hundred and forty testers' licenses were issued during the past year, a decrease of sixty-nine from the previous year's total of twenty-one hundred and nine.

The following table shows the number of candidates examined and testers' licenses issued for the year indicated:

NUMBER OF CANDIDATES EXAMINED AND TESTERS' LICENSES ISSUED FOR THE YEARS ENDING MARCH 31, 1920, 1924, 1928, 1933 AND 1934

	1920	1924	1928	1933	1934
Number of Individual Examinations	1,339	850	904	342	421
Number of Failures	226	125	290	20	24
Number of Persons Passing Examination	1,113	725	614	322	397
Number of Testers' Licenses Issued	2,371	2,518	2,661	2,109	2,040

The results of the seventy examinations which were held at the ten examination points in the state are given in the following table:

RESULTS OF TESTERS' EXAMINATIONS, 1933-1934

PLACE OF EXAMINATION	Number of Examinations	Number of Candidates	AVERAGE GRADES (PER CENT)		
			All Candidates	Candidates Passed	Candidates Failed
Lafayette	12	118	84.1	84.7	66.0
Muncie	6	53	84.1	85.9	66.6
Fort Wayne	7	72	85.0	85.9	64.0
New Albany	2	12	76.0	79.2	60.0
Evansville	6	33	78.7	79.6	65.0
Terre Haute	6	31	83.3	84.8	62.0
Indianapolis	6	44	84.6	86.1	63.7
North Vernon	4	32	83.9	84.3	72.0
Seymour	2	16	83.6	85.1	62.0
Plymouth	1	10	81.0	82.2	70.0
Totals	52	421	83.5	84.6	64.9

Glassware Inspection

The Indiana Creamery and Testers' License Law requires that all milk and cream test bottles, milk pipettes, and nine-gram weights, be examined for accuracy by the Purdue University Agricultural Experiment Station before being used in Indiana cream stations and dairy plants. All glassware conforming to the specifications given in Section 13 of the Law (Acts of 1913, Chapter 340) and found to be within the allowable tolerance are stamped with the letters "S. G. P." meaning "Standard Glassware, Purdue." The use of standard inspected glassware eliminates the possibility of incorrect tests from this source.

During the past fiscal year 43,006 pieces of Babcock testing glassware were examined by the Glassware Inspector of the Agricultural Experiment

Station. In addition, 271 nine-gram weights were inspected and all found to be correct. This is 8,927 pieces of glassware and 77 nine-gram weights more than were inspected last year.

The following table gives the amount of each kind of glassware inspected, and the number of pieces found to be incorrect:

GLASSWARE INSPECTION

KINDS OF GLASSWARE	Total Number of Pieces	Number Incorrect	Per Cent Incorrect
Cream Test Bottles	29,940	103	.344
Milk Test Bottles	11,184	2	.017
Milk Pipettes	1,882	0	.000
Summary	43,006	105	.244

Licenses Revoked

Inspectors of the Creamery License Division check the weights and tests made by operators of the Babcock test to determine their accuracy. If an operator is found to be testing incorrectly the inspector cautions him to be more careful in the sampling, weighing, and testing of milk and cream. Should later inspections show that incorrect testing is being done, whether intentionally or unintentionally, evidence is secured and presented to the State Creamery Examining Board at one of their regular meetings. At this meeting the operator is given an opportunity to explain the cause for differences between his tests and the tests made by the inspector. After careful consideration of the facts presented, the Board recommends to the Purdue University Agricultural Experiment Station the action to be taken.

During the past year the following testers were requested to appear before the Examining Board and, after considering the evidence, the Board recommended that their testers' licenses be revokd:

Miss Mabel Johnson, Scottsburg, Scott County, Indiana, tester for Red 73 Creamery Company, Union City, Indiana.

Mr. V. L. Ridenour, Curby, Crawford County, Indiana, tester for Armour Creameries, Louisville, Ky.

Mr. N. S. Hoskinson, Tennyson, Warrick County, Indiana, tester for Sugar Creek Creamery Company, Evansville, Indiana.

Mr. L. E. Johnson, Terre Haute, Vigo County, Indiana, tester for Johnson Butter Company, Terre Haute, Indiana.

Mrs. Marie Cole, Huntington, Huntington County, Indiana, tester for Schlosser Bros. Creamery, Fort Wayne, Indiana.

Mrs. Helene Sowers, Windfall, Tipton County, Indiana, tester for Schlosser Bros. Creamery, Frankfort, Indiana.

Mr. Edgar Hanson, Paoli, Orange County, Indiana, tester for Kraft-Phenix Cheese Company, Paoli, Indiana.

Mr. Lewis W. Hine, Monticello, White County, Indiana, tester for Golden Rule Creamery Company, Monticello, Indiana.

Licensed Manufacturing Plants in Indiana
November 1, 1934

Abrassart Ice Cream Co.	Vincennes	Ice Cream, Milk
Adams Products, Inc.	Fairmount	Butter, Milk, Ice Cream
Oscar Adler Dairy	Fort Wayne	Milk
Adler Milk Company	Fort Wayne	Milk
Albin Dairy	Greencastle	Milk
Alexandria Pure Milk Co.	Alexandria	Milk
American Dairy Company	Elkhart	Milk
American Dairy Company	Evansville	Butter, Milk
Armour Creameries	Rochester	Butter, Cheese
Associated Dairies Co.	Ft. Wayne	Milk
Auburn Dairy	Auburn	Milk
Babybrand Dairy Co.	Ft. Wayne	Milk
Chas. C. Baker	Muncie	Butter
Ballard Ice Cream Co.	Danville	Milk
Ballard Ice Cream Co.	Indianapolis	Milk, Ice Cream
Banner Farms Dairy	Indianapolis	Milk
Banquet Ice Cream and Milk Co.	Indianapolis	Milk, Ice Cream
Barnett Bros. Sunlight Creamery	Logansport	Butter, Milk
Beatrice Creamery Co.	Muncie	Butter, Ice Cream
Beauty Brand Dairy	Fort Wayne	Milk
Beaver Ridge Dairy Co.	South Bend	Milk
Bedford Dairy Co.	Bedford	Milk, Ice Cream
John E. Belcher Dairy	Bloomington	Milk
Berkes Dairy Co.	Auburn	Milk
Bettenbrock Dairy	Terre Haute	Milk, gutter
Betty Lou Farms	Kokomo	Milk
Blue Ribbon Dairy	Evansville	Milk
Blue Ribbon Dairy	Gary	Milk
Blue Valley Creamery	Indianapolis	Butter
Borden's Farm Products Co. of Illinois	Akron	Milk
Borden's Farm Products Co. of Illinois	Lowell	Milk
Mitchell C. Bosma	Beech Grove	Milk, Butter
Bosstick Pure Milk and Ice Cream Co.	Sullivan	Ice Cream
Bowman Dairy Co.	Francesville	Milk
Bowman Dairy Co.	Kouts	Milk
O. A. Bowne Dairy	Terre Haute	Milk, Butter
Brandywine Creamery	Fountaintown	Milk, Butter
Breezy Heights Dairy	Evansville	Milk
Chris Bullerman & Sons	Fort Wayne	Milk
Bunker Hill Creamery	Bunker Hill	Butter
Calvert's Dairy	Edinburg	Milk
Capitol Dairies, Inc.	Indianapolis	Milk
Carey & Sons	Indianapolis	Milk
Carringer Dairy	LaPorte	Milk
Center Lake Dairy	Angola	Milk
Central Dairy	Ossian	Milk
Chapman Dairy	Frankfort	Milk

Cicero Butter Company	Cicero	Butter, Milk
City Dairy Company	Connersville	Milk
City Dairy	Kendallville	Milk
City Dairy Company	South Bend	Milk, Butter
Cloverdale Dairy	Columbus	Milk
Cloverleaf Creameries, Inc.	Decatur	Butter
Cloverleaf Creameries, Inc.	Huntington	Butter, Ice Cream, Cheese
Cloverleaf Dairy	Culver	Milk, Butter
Cloverleaf Dairy	Gary	Milk, Butter
Collier Bros. Creamery	Martinsville	Butter, Milk, Ice Cream
Collier Bros. Creamery	Spencer	Milk
Columbia Dairy	Columbia City	Butter, Ice Cream
Compton Dairy	Edinburg	Milk
Cook Bros. Dairy	Elkhart	Milk
County Line Cheese Factory	Auburn	Cheese
Covalt Dairy Co.	Muncie	Milk
Crescent Creamery	Fort Wayne	Milk
Crescent Dairy Company	Kokomo	Milk, Butter
Crystal Dairy	Warsaw	Milk
Daisy Dairy Products Company	Gary	Milk
Dale Creamery Association	Dale	Butter
Daum Dairies	Connersville	Milk, Ice Cream
Davis Dairy Farm	Anderson	Milk
Walter M. Denehie	Terre Haute	Milk
Dimitt Dairy	West Middleton	Milk
Dixie Dairy Company	Gary	Milk
Douglass-Skidmore Dairy, Inc.	Frankfort	Milk
East Central Co-op	Rushville	Butter
East Chicago Dairy Company	East Chicago	Milk
East End Dairies, Inc.	Indianapolis	Milk
East Side Jersey Dairy Co.	Anderson	Milk, Butter
Eby's Guernsey Dairy	Elkhart	Milk
Economy Creamery	Economy	Butter
Edgewood Dairy	Evansville	Milk
Eel River Creamery Co.	North Manchester	Butter
Elkhart Dairy	Elkhart	Milk
Ellsworth Ice Cream Co., Inc.	Huntingburg	Milk, Butter, Ice Cream
Elmore's Creamery	Elwood	Milk
Elwood Creamery Co.	Elwood	Ice Cream
English Lake Creamery	English Lake	Butter
Eskay Dairy Company	Fort Wayne	Milk, Butter
Evans Milling Company	Indianapolis	Malted Milk
Excelsior Dairy	Wabash	Milk
Fairview Sanitary Dairy Company	Anderson	Milk
Falls City Creamery	Pendleton	Butter
Farm Bureau Creamery	Portland	Butter
Farmers Dairy Company	Carlos City	Butter
Farmer's Marketing Association	Columbus	Butter

Farmer's Produce Association	Crawfordsville	Butter
Fertig Dairy Company	Franklin	Ice Cream
Fertile Acres Dairy	Lakeville	Milk
Forest Dairy	Fort Wayne	Milk
Forgey Dairy	Logansport	Milk
Fort Wayne Pure Milk Prod.	Fort Wayne	Milk
Franklin Pure Milk Company	Franklin	Milk, Butter, Ice Cream
Fraziers Dairy	Frankfort	Milk
George Freese's Sons	Nappanee	Butter, Ice Cream
Furnas Ice Cream Co.	Fort Wayne	Ice Cream
Furnas Ice Cream Co.	Indianapolis	Milk, Ice Cream
Furnas Ice Cream Co.	Morristown	Condensed
Furnas Ice Cream Co.	South Bend	Ice Cream
Gary Milk Company	Gary	Milk, Butter
F. H. George & Company	Fort Wayne	Butter
Roscoe Geyer	Wakarusa	Milk
Gingrich Dairy	Lafayette	Milk, Butter
Glass Dairy Company	Madison	Milk, Ice Cream
Glen Park Dairy Company	Gary	Milk, Butter
Glenwood Dairy	Inglefield	Milk
Gnau Bros. Dairy	Tell City	Milk
Golden Guernsey Dairy, Inc.	Frankfort	Milk
Golden Rule Creamery Company	Monticello	Milk, Butter
Gold Medal Dairy Co.	Evansville	Milk
Gordon Baking Company	LaGrange	Milk
Goshen Cheese Factory	Goshen	Cheese
Goshen Milk Condensing Company	Goshen	Milk, Condensed
Grady's Milk Company	Elkhart	Milk
Graham Farms	Elnora	Cheese
Graham Farms	Washington	Chesse, Butter
Grandview Dairy	Lafayette	Milk
Green & Son	Shelbyville	Milk
Greendale Ice Cream Company	Lawrenceburg	Ice Cream
Greenfield Ice Cream Company	Greenfield	Milk
Greenwood Dairy Farms	Greenwood	Milk
Grocer's Dairy Products Company	Kokomo	Milk, Butter, Ice Cream
Guernsey Milk & Ice Cream Company	Lebanon	Milk, Ice Cream
Hagerstown Dairy	Hagerstown	Milk
Hall Dairy	Bloomington	Milk
Hamilton Dairy	Terre Haute	Milk
Handy's Sanitary Dairy	Greencastle	Milk, Butter
Hartley's Dairy	Portland	Milk, Butter, Ice Cream
Haxson Dairy Co., Inc.	Gary	Milk
Haxton Pure Milk Company	Hobart	Milk, Butter
Haynes Dairy	Garrett	Milk
Heckaman Dairy	Nappanee	Milk, Ice Cream
Hedges Dairy Products, Inc.	Terre Haute	Milk, Butter
Hewnis Dairy	Boonville	Milk

Highland Creamery Company	Terre Haute	Butter
L. F. Hill & Son	Winchester	Milk
Hillside Cheese Company	Decatur	Cheese
Himes Bros. Dairy	Richmond	Milk
Holland Creamery Association	Holland	Butter
Holland Custard & Ice Cream Company	Holland	Ice Cream
Fred Holle & Sons Dairy	Fort Wayne	Milk
Home Creamery Company	Morocco	Butter
Homestead Farm Creamery Company	Milan	Butter
Hoosier Condensed Milk Company	Bluffton	Condensed
Hoosier Dairy Products Company	Noblesville	Ice Cream, Milk
Hoosier Dairy Products Company	Rushville	Milk, Ice Cream
Hoosier Milk Company	Indianapolis	Milk
Hoosier State Creamery	Rensselaer	Butter, Ice Cream
Hoovens Dairy	Goshen	Milk
Hornaday Milk Company	Indianapolis	Milk, Butter
Huff's Creamery	Bremen	Butter
Hunding Dairy Company	Wellsboro	Milk
Hy-Grade Dairy Products, Inc.	Crawfordsville	Milk, Butter, Ice Cream
Ideal Pure Milk Company	Evansville	Milk, Butter, Ice Cream, Condensed
Indiana Condensed Milk Company	Lebanon	Condensed
Indiana Condensed Milk Company	Sheridan	Condensed
Indiana Condensed Milk Company	Veedersburg	Butter
Indiana Dairy Company	South Bend	Milk, Butter
Indiana Dairy Marketing Association	Muncie	Milk, Butter, Condensed, Cheese
Indiana Ice & Dairy Company	Anderson	Milk, Butter, Condensed
Indiana Milk Transportation	Dyer	Milk
Indiana Produce Company	Huntingburg	Butter
International Dairy Company	Deep River	Milk
Jacobi Dairy	Greenville	Milk, Butter
Jersey Creamery Company	Newcastle	Milk, Butter, Ice Cream
Jersey-Maid Dairy Company	Hammond	Milk
Jessup Milk Company	Plainfield	Milk
Johnson Butter Company	Terre Haute	Butter, Milk, Ice Cream
Johnson Creamery Company	Bedford	Milk
Johnson Creamery Company	Bloomington	Milk, Butter, Ice Cream
W. A. Jones & Sons Dairy	Syracuse	Milk
Keener Township Dairy Company	Demotte	Cheese
Kentland Cheese Factory	Kentland	Cheese, Butter
Kentland Dairy Products Company	Mulberry	Cheese
Kimmel Farms, Inc.	Kendallville	Milk
A. W. King's Dairy	Richmond	Milk
Kline's Dairy	Logansport	Milk, Butter
Knispel Dairy	Fort Wayne	Milk

Koch Dairy Company	Evansville	Milk, Butter, Ice Cream
Kosanke Bros.	Argos	Butter
Kraft-Phenix Cheese Corp.	Bloomfield	Cheese
Kraft-Phenix Cheese Corp.	Dale	Cheese
Kraft-Phenix Cheese Corp.	Kendallville	Cheese
Kraft-Phenix Cheese Corp.	Marshall	Cheese
Kraft-Phenix Cheese Corp.	Paoli	Cheese
Kraft-Phenix Cheese Corp.	Salem	Cheese
Kraft-Phenix Cheese Corp.	Sharpsville	Cheese
Kraft-Phenix Cheese Corp.	Shirley	Cheese
Kraft-Phenix Cheese Corp.	Sullivan	Cheese
Kraft-Phenix Cheese Corp.	Summitville	Cheese
Kraft-Phenix Cheese Corp.	Sweetsers	Cheese
Kroger Grocery & Baking Company	Indianapolis	Milk, Condensed
Kyle Creamery Association	Aurora, R. R.	Butter
Lafayette Ice Cream Company	Lafayette	Milk, Ice Cream
Lakeside Dairy Company	Osceola	Milk
Lanesville Creamery Company	Lanesville	Butter
Lemont Dairy	Brook	Milk
Lenick's Dairy	LaPorte	Milk, Ice Cream
Leonard Creamery Company	Paoli	Ice Cream
Ligonier Dairy Products, Inc.	Ligonier	Milk
Will Linsmith Milk Company	Columbus	Milk
Linton Ice & Cold Storage Company	Linton	Ice Cream, Milk, Butter
Linton Milk Company	Linton	Milk
Longfield Creamery	Wakarusa	Butter, Ice Cream
Mack & Company	Monon	Ice Cream
Madison Creamery Company	Madison	Butter
Maplehurst Farms	Indianapolis	Milk, Butter
Marion Pure Milk Company	Marion	Milk
Marten's Dairy	Fort Wayne	Milk
A. R. Mathews Dairy	Logansport	Milk
Matthews Dairy	South Bend	Milk
Maywood Milk Company	Maywood	Milk
McKinstray Bros.	Indianapolis	Milk
Med-O-Bloom Dairy	Kokomo	Milk
Meadowbrook Farm	Hicksville, Ohio	Butter
Elmer Mennen	Lafayette	Milk
Middlebury Co-op. Creamery Company	Middlebury	Butter
Mid-West Co-op. Company	Angola	Butter, Ice Cream
Milford Dairy	Milford	Milk
Milk Producers Corporation	Garrett	Condensed
Fred Miller Bakery & Ice Cream Company	Evansville	Ice Cream
Miller Bros. Dairy	Goshen	Milk
J. M. Miller Dairy	Culver	Milk, Butter
Miller Ice & Dairy Company	Cambridge City	Milk, Butter, Ice Cream
Miller-Yarling Dairy	Shelbyville	Milk
Mishawaka Farmers Dairy Company	Mishawaka	Milk, Butter

Model Creamery	Indianapolis	Milk, Butter, Ice Cream
Model Milk & Ice Cream Company	Terre Haute	Butter, Milk, Ice Cream, Condensed
Modern Dairy	Mexico	Milk, Butter
Mt. Vernon Cheese Factory	Mt. Vernon	Cheese
Mt. Vernon Creamery Company	Mt. Vernon	Butter, Milk, Ice Cream
Muldoon's Pure Milk Company	Fort Wayne	Milk
Muncie Pure Milk Company	Muncie	Milk
Murfield Creamery	Mishawaka	Butter
Murphy Dairy	Scottsburg	Milk
Mutual Milk Company	Indianapolis	Milk, Butter
Nances Creamery	Brazil	Butter, Milk, Ice Cream
Napoleon Creamery	Napoleon	Butter
Nappanee Dairy	Nappanee	Milk
National Dairy Company	Whiting	Milk, Butter
New Paris Creamery	New Paris	Butter, Milk
Northwestern Milk Company	Indianapolis	Milk
Oak-Ridge Blue Bell Creamery Co.	Mishawaka	Milk, Butter
Oakland Cheese & Butter Company	Oakland City	Cheese, Butter
Old Homestead Dairy	Fort Wayne	Milk
Olympia Dairy	Columbus	Milk
Orchard Hill Creamery	Mitchell	Milk
Orchard Knoll Farm Creamery	Moores Hill	Butter
Osterhaus Dairy	Fort Wayne	Milk
Owen Dairies	Noblesville	Milk, Butter
Page Milk Company	Greensburg	Milk
Page Milk Company	Shelbyville	Milk, Butter, Condensed
Pango Milk Chocolate Company	Warsaw	Condensed
Pardieck and Franke	Columbus	Milk
Parlor City Creamery	Bluffton	Butter
Peters Dairy	Michigan City	Milk
Phend Dairy Company	Goshen	Milk
Pleasant Hill Dairy	Fort Wayne	Milk
Plymouth Dairy	Plymouth	Milk
Polk Sanitary Milk Company	Indianapolis	Milk
Prairie View Dairy Company	East Chicago	Milk
Prange-Flaugh Dairy	Fort Wayne	Milk
Prices Pinecrest Dairy	Lagrange	Milk
Producers Co-operative Dairy, Inc.	Evansville	Milk
Producers Creamery	Hartford City	Cheese
Producers Creamery	Kewanna	Butter
Producers Creamery	Marion	Butter, Milk, Condensed, Ice Cream
Producers Dairy Company	South Bend	Milk
Producers Dairy Marketing Ass'n	Orleans	Butter, Ice Cream
Producers Dairy Products Company	Crawfordsville	Milk, Ice Cream

Purdue University Creamery	West Lafayette	Milk, Butter, Ice Cream
Pure Cream Products Company	Tell City	Butter, Ice Cream, Milk
Purity Dairy Company	Evansville	Milk, Ice Cream
Purity Dairy Company	Huntington	Milk
Purity Maid Products Company	New Albany	Butter, Milk, Ice Cream
Purity Milk Company	E. Columbus	Milk
Quality Dairy Company	Boonville	Milk, Butter, Ice Cream
Ray and Arnold Creamery Company	Logansport	Butter, Milk
Reid's Creamery	Vincennes	Milk
Rea Riggin & Sons	Muncie, R. R.	Milk, Butter
Reliable Dairy Company	South Bend	Milk, Butter
Rensselaer Creamery & Prod. Co.	Rensselaer	Butter
Richmilk Dairy	Fort Wayne	Milk
Rife's Dairy	Warsaw	Milk
Rising Sun Creamery	Rising Sun	Butter
W. F. Ritzmann	Lawrenceburg	Butter, Ice Cream
Riverside Dairy	Columbia City	Milk
Riverside Dairy	Mishawaka	Milk
Roanoke Creamery Company	Roanoke	Butter
Wm. H. Roberts & Sons	Indianapolis	Milk
Rock Bottom Dairy Farm	Flat Rock	Butter
Rowe & Sons Dairy	Fort Wayne	Milk
Russell's Dairy	Hartford City	Milk, Butter
Salem Creamery	Salem	Milk
Sample's Dairy	Connersville	Milk
Sanitary Dairy Company	Michigan City	Milk, Ice Cream
Sanitary Milk & Ice Cream Company	Peru	Milk, Butter, Ice Cream, Condensed
Schaefer Dairy Company, Inc.	Indianapolis	Milk
Theodore Schmitz Milk Plant	Palmer	Milk
Schaper's Dairy	Fort Wayne	Milk
Schlosser Bros.	Bremen	Milk
Schlosser Bros.	Frankfort	Butter
Schlosser Bros.	Fort Wayne	Butter, Ice Cream
Schlosser Bros.	Indianapolis	Butter
Schlosser Bros.	Plymouth	Butter, Ice Cream
Schlosser Bros.	South Bend	Milk
Schnaitters Confectionery	Madison	Ice Cream
Scholl Dairy Company	Michigan City	Milk, Ice Cream, Butter
Shannon's Dairy	Jeffersonville	Milk, Butter
Sherman White & Company	Fort Wayne	Butter
Sherman White & Company	Goodland	Butter
Shiveley Bros.	Greenfield	Milk
Shiveleys Dairy	N. Manchester	Milk
Shortle Dairy Farms	Kokomo	Milk
Snyder Dairy	Seymour	Milk

South Bend Pure Milk Company	South Bend	Milk, Butter
Spring Brook Dairy	Bremen	Milk
Staley Dairy Products Company	Decatur	Milk, Butter, Ice Cream
Standard Dairy	Evansville	Milk, Butter
State Creamery	Fort Wayne	Milk
Suabedissen-Wittner Dairy	South Bend	Milk
Sugar Creek Creamery Company	Evansville	Butter
Sugar Creek Creamery Company	Indianapolis	Butter
Summers & Son	Elwood	Milk
Sunrise Dairies	Laketon	Butter
Sunshine Farms, Inc.	Lafayette	Milk, Butter, Condensed
Superior Dairy	Garrett	Milk, Ice Cream
Superior Ice Cream Company	Lafayette	Milk, Ice Cream
Swift & Company	Alexandria	Cheese
Swift & Company	Evansville	Butter
Swift & Company	Logansport	Butter
Swift & Company	Marion	Butter
Swift & Company	Wabash	Cheese
Tansy Milk Company	Beech Grove	Milk
Teegarden Dairy Corporation	Teegarden	Milk
Terre Haute Milk & Ice Cream Company	Terre Haute	Milk, Ice Cream, Butter, Condensed
Iola Terry	Orland	Butter
Thayers Dairy	Delphi	Milk
Thomas Dairy	Elkhart	Milk
Thompson Dairy Company	North Vernon	Milk
Thompson Dairy Company	Seymour	Milk, Ice Cream
Thompson Sanitary Dairy	Richmond	Milk
Tipton Ice Cream Company	Tipton	Ice Cream, Milk
Tip Top Creamery Company	Princeton	Milk
Tip Top Creamery Company	Vincennes	Butter, Milk, Ice Cream, Condensed
Tip Top Creamery Company	Washington	Milk
Tonne Dairy	Fort Wayne	Milk
Toto Cheese Manufacture	Knox	Cheese
Turner Creamery Company	Paoli	Ice Cream, Butter
United Dairy Company	Indiana Harbor	Milk
United Milk Products Company	Berne	Condensed
United Milk Products Company	Butler	Condensed
United Milk Products Company	Wolcottville	Condensed
United Milk Products Company	Yorktown	Condensed
Valparaiso Home Ice Company	Valparaiso	Milk, Ice Cream, Butter
Van Camp Milk Company, Inc.	Angola	Condensed
Wabash Valley Creamery Company	Vincennes	Milk, Butter
Wabash Valley Dairy Products Company	Vincennes	Cheese
Wadley Company	Indianapolis	Butter
Wagner & Sons	Logansport	Milk
Wakarusa Co-op. Creamery Company	Wakarusa	Butter, Milk

Wambaughs Sanitary Milk Company	Elkhart	Milk
Sidney Wanzer & Sons, Inc.	Monterey	Milk
Sidney Wanzer & Sons, Inc.	Servia	Milk
Warsaw Milk Company	Warsaw	Milk
Waterloo Dairy	Waterloo	Milk, Butter
Wayne Dairy Products Company	Richmond	Butter, Milk
L. H. Weaver	Indianapolis	Milk, Butter
Weber Milk Company	Indianapolis	Milk, Butter
West End Milk Company	Newcastle	Milk
Western Reserve Creamery	Kokomo	Butter
White Lily Milk & Ice Cream Company	Evansville	Milk, Butter, Ice Cream
Wiggam Milk Company	Indianapolis	Milk
Williams Dairy	Richmond	Milk
Willida Dairy	South Bend	Milk
Winona Dairy	Winona Lake	Milk
O. J. Wittner Dairy	South Bend	Milk
Zanesville Creamery	Zanesville	Butter
Zapp's Dairy & Creamery	New Albany	Milk, Butter

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The Evolution of the Sirloin

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An Address By
PROF. C. S. PLUMB

"Some hae meat and canna eat
And some there be that want it
But we hae meat and we can eat
And for this God be thank'et."
—ROBERT BURNS

Purdue University
Agricultural Experiment Station
Lafayette, Indiana

CHARLES S. PLUMB

Professor Emeritus in Animal Husbandry, Ohio State University.
Director of the Purdue University Agricultural Experiment Station from 1891 to 1902.

The Department of Animal Husbandry presents annually, in dramatized form, the knighting of Sir Loin, by King Charles II, at a special banquet to commemorate that historic event.

Professor Charles S. Plumb was chosen as the guest speaker for the occasion this year, and his manuscript records much of cultural and historic significance to those interested in animal husbandry.

THE EVOLUTION OF THE SIRLOIN

CHARLES S. PLUMB
Professor Emeritus in Animal Husbandry, Ohio State University

THIS is a story which will cover several centuries of English history. Perhaps you are already well informed of how the people of England originated and came into their own. However, I must remind you that it was invaded by the Romans under Julius Caesar before the time of Christ; was conquered by the Teutonic hordes of barbarians of Northern Europe, with tribes of Jutes, Angles and Saxons; and later subdued by the Normans, who established in the 11th century civilization and leadership for England. Thus it is apparent that very different lines of blood found root in that country. In spite of this, most Americans think all Britishers are built from a common stuff. Yet it is interesting to know that wide differences in speech and habits characterize the people in different sections of England. So broad is the dialect up in Yorkshire among those to the manor born, that a native Herefordshire man hearing it, thinks he is listening to a foreign tongue. While from an American viewpoint England is a small country, one finds in the different counties wide variations in speech, family habits or characteristics, and features of agricultural development.

If we wish to learn of the history of a country in any particular, it will be necessary to study the literature of the subject by consulting books in some form as a source of information. So in this connection let us make a study of the evolution of books, livestock husbandry, and the impress of great breeders; whereby a sirloin of supreme merit might be placed before The King.

While a number of documents were produced touching on agriculture in England as early as the fourteenth century, John Fitzherbert was the author in 1523 of the first book produced in that country which was on the subject of agriculture, or husbandry as it was then called.* Chapters on how to set out sheepfolds, to mow grass and make hay, to cause a ewe to love her lamb, as with also on cattle, horses and other stock, are given. He emphasizes the value of pastures, and in Chapter XIX, says of it: "And how many cattell it will grasse or finde by the yere, and what a beastes grasse is worthe by the yere, in suche a pasture." Fitzherbert also

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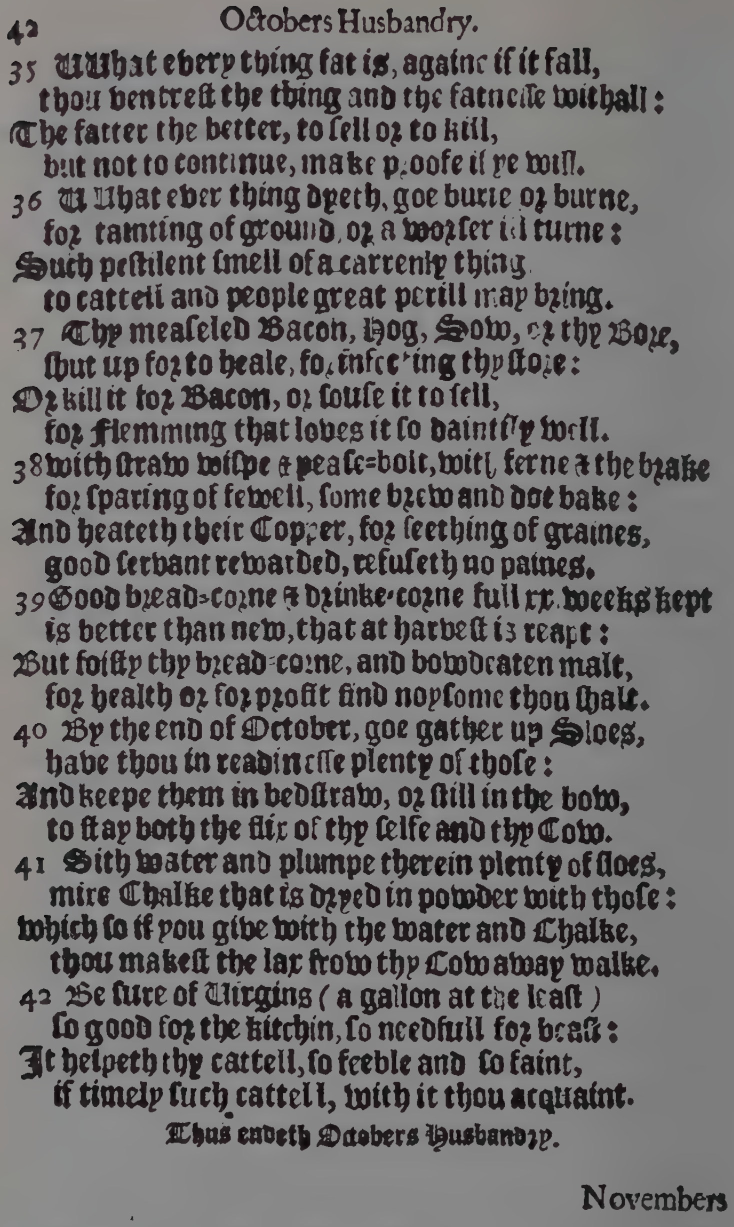
* The Booke of Husbandry. By John Fitzherbert, 1523.



42 Octobers Husbandry.

35 What every thing fat is, againe if it fall,
thou ventreſt the thing and the fatneſſe withall:
The fatter the better, to ſell or to kill,
but not to continue, make proofe if ye will.

36 What ever thing dyeth, goe burie or burne,
for tainting of ground, or a worſer ill turne:
Such peſtilent ſmell of a carrenly thing,
to cattell and people great perill may bring.

37 Thy meaſeled Bacon, Hog, Sow, or thy Bore,
ſhut up for to heale, for infecting thy ſtore:
Or kill it for Bacon, or ſouſe it to ſell,
for Flemming that loves it ſo daintily well.

38 with ſtraw wiſpe & peaſe-bolt, with ferne & the brake
for ſparing of fewell, ſome brew and doe bake:
And heateth their Copper, for ſeething of graines,
good ſervant rewarded, refuſeth no paines.

39 Good bread-corne & drinke-corne full xx. weeks kept
is better than new, that at harveſt is reapt:
But foiſty thy bread-corne, and bowdeaten malt,
for health or for profit find noyſome thou ſhalt.

40 By the end of October, goe gather up Sloes,
have thou in readineſſe plenty of thoſe:
And keepe them in bedſtraw, or ſtill in the bow,
to ſtay both the flix of thy ſelfe and thy Cow.

41 Sith water and plumpe therein plenty of ſloes,
mixe Chalke that is dryed in powder with thoſe:
which ſo if you give with the water and Chalke,
thou makeſt the lax frow thy Cow away walke.

42 Be ſure of Virgins (a gallon at the leaſt)
ſo good for the kitchin, ſo needfull for beaſt:
It helpeth thy cattell, ſo feeble and ſo faint,
if timely ſuch cattell, with it thou acquaint.

Thus endeth Octobers Husbandry.

Novembers

Reproduced from Thomas Tusser's "Five Hundred Points of Good Husbandry," London, 1638.

advocated enclosed fields or pastures whereby livestock was subject to control.

In 1557 Thomas Tusser was author of a small book entitled "A Hundred Good Pointes of Husbandrie." This has been rated by Donald McDonald,† "more as a series of good farming and domestic directions and axioms, than as a regular treatise upon agriculture."

In 1573 another little book by Tusser, entitled "Five hundreth pointes of good husbandry" was published. These two books were later brought out in revised editions. For example a copy published in 1638 in my possession, specifies on the title page that it is "Corrected, better ordered, and newly augmented to a fourth part more, with divers other lessons, as a dyet for the Farmer, of the properties of Windes, Plants, Hops, Hearbes, Bees, and approved Remedies for Sheepe and Cattell; with many other marter's both profitable, and not unpleasant to the Reader." These books are in poetical meter, set forth in old black-face type common three centuries ago. In this interesting form of expression Tusser for example writes of the care of farm animals as follows:

"Ewes yearely by twinning, rich masters doe make,
the lambe for such twinners, for breeders go take;
For twinnings be twiggers, increase for to bring,
though some for their twigging, *Peccavi* may sing."

Original copies of these publications of Tupper are real rarities, favorites of book collectors, and command a high price.

A reprint of the works of Thomas Tusser by Dorothy Hartley (London, no date), at its conclusion offers his epitaph, which is as follows:

"Here Thomas Tusser, clad in earth, doth lie,
who sometime made the Points of Husbandry;
By him then learn thou may'st—here learn we must,
when all is done, we sleep, and turn to dust;
And yet, through Christ, to heaven we hope to go,
Who reads his books, shall find his faith was so."

Fitzherbert and Tusser were the pioneer agricultural writers who gave attention to the merits of farm animals. In these later days of the sixteenth century a number of other writers appeared who were authors of books which contained comments on farm animals, though none of these deserve consideration here.

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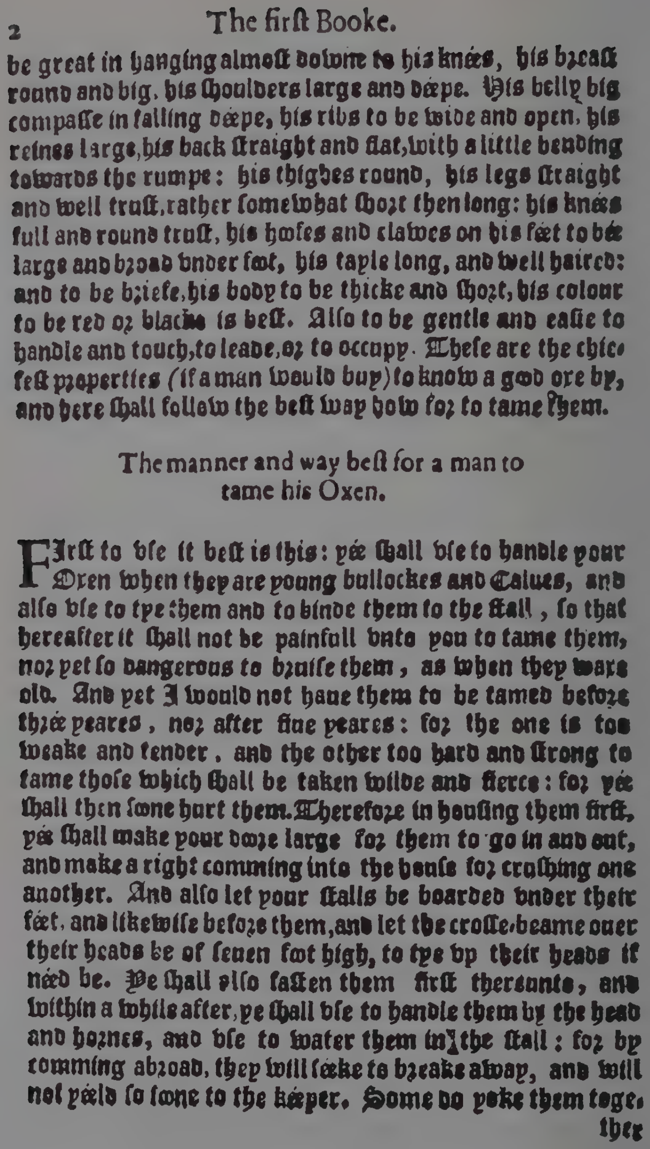
† Agricultural Writers from Sir Walter of Henley to Arthur Young—1200-1800, London, 1908, pp. 228, with many page illustrations.



be great in hanging almoſt downe to his knées, his breaſt round and big, his ſhoulders large and déepe. His belly big compaſſe in falling déepe, his ribs to be wide and open, his reines large, his back ſtraight and flat, with a little bending towards the rumpe: his thighes round, his legs ſtraight and well truſt, rather ſomewhat ſhort then long: his knées full and round truſt, his hoofes and clawes on his féet to bée large and broad vnder féet, his tayle long, and well haired: and to be briefe, his body to be thicke and ſhort, his colour to be red or blacke is beſt. Alſo to be gentle and eaſie to handle and touch, to leade, or to occupy. Theſe are the chiefeſt properties (if a man would buy) to know a good oxe by, and here ſhall follow the beſt way how for to tame them.

The manner and way beſt for a man to tame his Oxen.

FIrſt to vſe it beſt is this: yée ſhall vſe to handle your Oxen when they are young bullockes and Calues, and alſo vſe to tye them and to binde them to the ſtall, ſo that hereafter it ſhall not be painfull vnto you to tame them, nor yet ſo dangerous to bruiſe them, as when they ware old. And yet I would not haue them to be tamed before thrée yeares, nor after fiue yeares: for the one is too weake and tender, and the other too hard and ſtrong to tame thoſe which ſhall be taken wilde and fierce: for yée ſhall then ſoone hurt them. Therefore in houſing them firſt, yée ſhall make your doore large for them to go in and out, and make a right comming into the houſe for cruſhing one another. And alſo let your ſtalls be boarded vnder their féet, and likewiſe before them, and let the croſſe-beame ouer their heads be of ſeuen foot high, to tye vp their heads if néed be. Ye ſhall alſo faſten them firſt therevnto, and within a while after, ye ſhall vſe to handle them by the head and hornes, and vſe to water them in the ſtall: for by comming abroad, they will ſéeke to breake away, and will not yéeld ſo ſoone to the kéeper. Some do yoke them toge-
ther

Reproduced from "The Government of Cattell," by Leonard Mascal, London, 1633.

The first book exclusively devoted to livestock, was "gathered" by Leonard Mascall, upon "The Gouvernment of Cattell." The word cattle at this time, is generally used to relate to all kinds of farm livestock. Mascall is supposed to have been born about 1546, but the date is uncertain. He was the author in 1572 of "A booke of the Art and Manner how to graff and plant all sortes of Trees, how to set stones and sow Pepins, to make wilde trees to graff on, as also remedies and medicines, with other new practices." This, a translation from the French by the Abbey of St. Vincent, was published in many editions, and had a large sale for that day. Mascall also wrote on "The Husbandrye, Ordring and Government of Poultrie." The book on cattle was first published in 1596, and its contents were grouped in three books. "The first entreating of Oxen, Kine and Calves; and how to use Buls and other Cattell, to the yoake or sell. The second, discoursing of the Gouvernment of Horses, with approved Medicines against most diseases. The third, discouvering the ordering of Sheepe, Goates, Hogges and Dogges, with true Remedies to help the infirmities that befall any of them."

A 1633 and 7th edition of this book in my library occupies 309 pages. This volume and no doubt an earlier edition mainly deals with the diseases of animals and their treatment. The subject of breeds had not yet been introduced, though the evolution of some breeds was in process in English counties some 400 years ago.

In this book Mascall first discusses "what knowledge a man ought to have that wishest to buy and sell Oxen." He refers to the fact that beasts have many diversities, according to the countries in which bred, whether Asia, France, Spain, England, etc. He then describes the characteristics of a good ox as follows, which by the way is very similar to that of Columella, the noted Roman agricultural writer of the second century A. D. "He that will buy Oxen must buy young oxen, well quartered, having large and big members, with long horns, somewhat blacke, strong & big: his forehead broad, and his browes wrinkled: his eares rough within and hairy like velvet, his eyes great & large, his mouzell black, his nostrils crooked within, very open and wide, the chine of his necke long, thicke and straight, the dewappe or skinne that hangeth under his throat to be great in hanging almost downe to his knees, his breast round and big, his shoulders large and deep. His belly big compasse in falling deepe, his ribs to be wide and open, his reins large, his back straight and flat, with a little bending towards the rumpe: his thighes round, his legs straight and well trust, rather somewhat short then long: his knees full and round trust, his hoofes and clawes on his feet to bee large and broad underfeet, his tayle long, and well haired: and to be briefe, his body to be thicke and shorte, his colour to be red or blacke is best. Also to be gentle and easie to handle and touch, to leade or to occupy. These are the choicest properties (if a man would buy) to know a good oxe by, and here shall follow the best way how for to tame them."

This statement of what should be sought for in an ox, or steer, as set forth in English in 1596, now nearly 350 years ago, is the earliest on this subject, I have thus far discovered. In this case, it may be assumed that the word *reins* is synonomous with the word loins. Yet what a description of a beef animal, compared with that of today.

Many writers on agriculture offered their wares for public consumption in book form during the seventeenth century, but the subject of farm animals, aside from a discussion of diseases and their treatment, received slight attention. The horse was regarded as of first importance, with meat production decidedly secondary. Yet from the eleventh to the end of the seventeenth century, some remarkable developments had taken place in England. Many of the largest, most beautiful and dignified cathedrals of history, had been erected there, this in spite of the fact that the country was frequently at war with other nations. While the first census as to population was not taken until 1801, it is estimated* that in 1650 England and Wales contained a population of 5½ million, which in another century was probably increased to 6½. In 1558, Queen Elizabeth ascended the throne, where, as one of the greatest rulers of England she administered affairs until 1603. In 1688 came what was known as the glorious revolution, the final overthrow of royal despotism, the establishment of constitutional government, and the Bill of Rights—the great guarantee of English liberty. In 1693 the National Debt was started, there was a revolution in British finance, the Bank of England was founded in 1694, and the security of investments established. According to Lord Ernle† "the average dead weight of sheep and cattle in 1500 probably did not exceed 28 lbs. and 320 lbs. respectively. At the beginning of the seventeenth century the dead weight of the oxen and sheep supplied to the Prince of Wales household was no doubt exceptional; but the difference is considerable. 'An ox should weigh 600 lbs. the four quarters—a mutton should weigh 46 or 44 lbs.' "

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* Enclyclopedia Americana, vol. 10, 1922, p. 356.

† English Farming Past and Present, London, 1922, p. 98.

The word breed has hardly found use until along in the seventeenth century, when Gervaise Markham, one of the most prolific of early English agricultural writers, in 1615 wrote:† "As touching the right Breed of Kine through our Nation, it generally affordeth very good ones, yet some countries (meaning counties) do far exceed other countries, as Cheshire, Lancashire, Yorkshire and Derbyshire, for Black Kine: Gloucestershire, Somersetshire and some parts of Wiltshire for red Kine, and Lincolnshire for pied Kine." Color and horns were two of the most discussed subjects regarding cattle at that time.

It is important to note here that along in the seventeenth and notably the eighteenth century, the introduction of livestock, and especially cattle, from the Continent of Europe, but more especially Holland, took place. Consequently, says Prof. James Wilson* "it may be doubted whether the idea that their livestock might be improved, ever took much hold of British farmers' minds before the arrival of the importations of cattle and other stock from Holland. At any rate it was not the overmastering idea it has since become. For one thing, they knew of nothing either very much better or very much worse than their own, unless perhaps, on the common frontiers of two races, say the English and the Celtic, or here and there in the North."

It will be appropriate now to introduce an important comment on this period quoted from Lord Ernle,‡ one of the eminent recent authorities on English agriculture. "The gigantic advance of agriculture to the nineteenth century develops into insignificance any previous rate of progress. Yet the change between 1700 and 1800 was astonishing. England not only produced food for a population that had doubled itself, as well as grain for treble the number of horses, but during the first part of the period became, as M. de Lavergne has said, the granary of Europe. Population before 1760 grew so slowly that the soil without any great increase in farming skill or in cultivated areas, produced a surplus. Under the spur of the bounty, land which had been converted to pasture was again plowed for corn, and proved by its yield that it had profited by the prolonged rest. The price of wheat, between the years 1713 and 1764, in spite of large exports, averaged 34s. 11d. ($8.70) per quarter; poor-rates fell below the level of the preceding century; real wages were higher than they had been since the reign of Henry VI (1421-'71). In England, at least, there was little civil war or tumult, no glut of the labor market, no sudden growth of an artisan class. The standard of living improved. Instead of the salted carcasses of half starved and aged oxen, fresh meat began to be eaten by the peasantry. Wheaten bread ceased to be a luxury of the wealthy, and, at the accession of George III (1761) had become the breadstuff of half the population. Politically and morally the period was corrupt and coarse; materially it was one of the Golden Ages of the peasant. The only drawbacks to the general prosperity of agriculture during the first half of the century were the visitations of the rot and of the cattle plague."

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† The English Huswife, 1615, revised 1638.

* The Evolution of British Cattle. London, 1909, p. 110.

‡ English Farming Past and Present, (3d. ed.) London, 1922, pp. 148-9.

It was during the first half of the eighteenth century that Jethro Tull, born in 1674, became one of the foremost agricultural improvers, for he invented a drill of practical service, for the first time which deposited the seed in rows. He also invented various other agricultural implements, but the drill was what gave him the greatest distinction. In 1732 he was author of a dignified book.* The second edition, a copy of which is in my library, is of folio size and contains five beautiful full page engravings showing details of plows and drills. In this book of 278 pages, from page 205 to 274, he presents a "Supplement to the Essay on Horse-Hoing Husbandry containing Explanations and Additions both in Theory and Practice, wherein all the objections against that husbandry, which are come to the author's knowledge, are considered and answered," which might be regarded a remarkable procedure. Tull died in 1740, at Mt. Prosperous, in Berkshire, the most constructive student in agricultural progress in the history of England up to his time.

Attention may now be directed to a consideration of one, who in the estimation of many authorities, was one of the greatest, if not the greatest constructive breeder of farm animals in England prior to the 20th century. This was Robert Bakewell, born in 1725 on the farm known as Dishley in Loughborough, Leicestershire, England. At this time there were no standards of form with cattle in that country. "The qualities for which animals were valued," says Lord Ernle,† "were not propensity to fatten or early maturity, but their milking capacity or their power of draught. The pail and the plough set the standard; the butcher was ignored."

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* Horse-Hoing Husbandry; Complete in Four Parts, or an Essay on the Principles of Tillage and Vegetation. London, 1733. A second edition, 1743.

† English Farming Past and Present, (3d. ed) 1922, p. 179.

Bakewell represents the first breeder of livestock in England who made a careful study of animal form, and then mated animals with emphasis on the value of blood lines and the reproduction of like qualities from parents. Mr. Bakewell was not gifted with the use of the pen, and so did not contribute much to the literature of livestock husbandry as practiced by him.

One must look to the report on "The Rural Economy of the Midland Counties; including the management of Livestock In Leicestershire and its environs," by Mr. William Marshall, for the most authentic information concerning the methods of Bakewell. This book published in two volumes in 1796, Volume I being devoted to Live Stock and consideration of Mr. Bakewell and his work, as well as the practice of breeders of the county in general. While Bakewell bred cart horses, Long horn cattle and what he termed New Leicestershire sheep, his more important efforts were with cattle and sheep.

Without going into much detail, Mr. Bakewell obtained a cow from a local breeder named Webster of Canley, said to have been, "during many years the leading breeder of the Midland Counties." This cow, named Comely, produced the bull calf, Twopenny, that later was highly valued as a sire. A son of his that lived to some twelve years of age, and named D, also sired cattle of distinct superiority, that made a great impress in his day on beef cattle breeding. The policy of Mr. Bakewell was to use his bulls on their dams and sisters, thus involving incestuous breeding. The bull D for example was sired by Twopenny, and out of a daughter and sister of the same bull.

Mr. Bakewell is credited with the following principles as guiding him in his breeding operations:

1st. *Beauty of form,* a principle adhered to especially at the beginning of improvement.

2d. *Utility of form,* "abstractedly considered as separate from the beauty of form."

3d. *Flesh,* or texture of muscular parts, long familiar to butchers and consumers, but not to breeders.

4th. *Fat,* which "engrosses the greatest share of attention, and which, above all others, is entitled to the *grazier's* attention." This involves the natural propensity to acquire a state of fatness.

In and in-breeding, one might very appropriately add to this list of principles, because as already said, he used it quite freely and was really the first person to adopt such a policy.

It is important to note here that the practice of leasing bulls originated in Leicestershire and chiefly with Mr. Bakewell, and was generally adopted. The bulls were sent out in April or the beginning of May, and were returned in August. The prices varied from ten to fifty or sixty pounds ($50. to $250. or $300.); but in one case a bull named Shakespeare, sired by old D., owned by a man named Fowler, was let at eighty guineas ($400.) the season.

Before concluding this sketch of the operations of Robert Bakewell, attention should be given to the following from the Gentleman's Magazine of London, in which was a special article on Mr. Bakewell and quoted by Youatt.* "The gentleness of the different breeds of cattle could not escape the attention of any observer. It seemed to run through them all. At an age when most of his brethren are either foaming or bellowing with rage and madness, old C, a bull, a son of the old parent Comely, had all the gentleness of a lamb, both in his look and action. He would lick the hand of his feeder, and if any one patted or scratched him he would bow himself down almost to his knees.

"The same writer describes Mr. Bakewell's servants, one of whom had been with him 20 years, and another 32, and another 40 years. He likewise gives a curious account of Mr. Bakewell's hall. The separate joints and points of each of the more celebrated of his cattle were preserved in pickle, or hung up side by side; showing the thickness of the flesh and external fat on each, and the smallness of the offal. There were also skeletons of the different breeds, that they might be compared with each other, and the comparative difference marked. Some joints of beef, the relics of old Comely, the mother of the stock, and who was slaughtered when her existance had become burdensome to her, were particularly remarked. The fat of the sirloin on the outside was four inches in thickness."

The type of cattle and sheep of the nineteenth and twentieth centuries, are of a smaller and improved form, yet representative more or less of the days of Bakewell, including the recognized beef or mutton producing breeds at their best, such as are standard representatives of today, and that possess loins that are wide, long and thick. Here are found the most highly valued cuts of the carcass. Yet if one studies the literature of meat production, he will be impressed with the fact that the word loin was not in common usage prior to Bakewell. The word and the special cut, are much more common in those meat producing countries, where the population is great, and the carcass is sold in the retail market in many separate pieces, with which the housewife is generally familiar. Thus one of an English community is logically more familiar with the various retail cuts than would be the housewife in an American community. However, due to the fine instruction now being given over America to audiences addressed by qualified educators from the great packing houses, in which carcasses are cut up and their parts plainly shown and discussed, great progress in this country is now taking place in meat comprehension.

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* Cattle; their Breeds, Management and Diseases. By Wm. Youatt, Philadelphia, 1936, p. 193.

HOGHTON TOWER
NEAR
BLACKBURN
IN
LANCASHIRE
FEBRUARY 21, 1676
BANQUET
FOR
HIS MAJESTY
KING CHARLES II

Students of the Department of Animal Husbandry dramatizing the Knighting of Sir Loin.

In the Knighting of Sir Loin at the Banquet in 1934 at Purdue University, a program was given as representing a Knighting at

Lancashire, England, on Feb. 21, 1676, in honor of His Majesty King Charles II. A poem of 26 lines by Robert Herrick set forth a bill of fare, and the back page quoted a discussion of table manners.

An invitation that I should attend your 1935 Knighting festivities, and be your speaker, suggested that I should be more familiar with what it was all about. I turned to my library, containing a large collection of English publications on agriculture and livestock husbandry, but in spite of my hunt I could find nothing satisfactory. Turning elsewhere, I naturally looked to the library of the Ohio State University, and here in the Oxford Dictionary of the English Language (1919, vol. IX Si-St) I found that for which I sought, as may be seen in the following three quotations from that great Dictionary.

The earliest record quoted by the dictionary* dates back to the first part of the 16th century in which it states that "a Sir-loyne of beef was set before Him (so knighted, saith tradition) by this King Henry VIII" (1491-1547).

King Charles II has been credited by various authorities with dubbing the knighthood on this piece of meat. His life covered the period 1630-1685, and the dictionary gives the following quotation as applied to him.† "*Sir-Loin of Beef*. This joint is said to own its name to King Charles the 2d, who, dining upon a loin of Beef said, "for its merit it should be knighted and henceforth called Sir-Loin."

The more complete explanation is quoted by Dean Swift.‡ This presumes to be a question as put by a Miss. "But, pray why is it called a Sir-Loyne?" Lord Sparkish replied, " 'Why, our King James 1st (1566-1625) being invited to Dinner by one of his Nobles, and seeing a large Loyn of Beef at his Table, he drew out his sword and knighted it.' "

In my own library among my treasures was a book by Thomas F. DeVoe, published in 1867 in New York City, with the title "*The Market Assistant*, containing a brief description of Every Article of Human Food sold in the Public Markets of the Cities of New York, Boston, Philadelphia and Brooklyn, including the various Domestic and Wild Animals, Poultry, Game, Fish, Vegetables, Fruits, etc. with many curious incidents and anecdotes." Under the very last features indicated in this extensive title I found yet another explanation of the knighting of Sir Loin. However, my

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* Fuller's "Church History of England," VI, ii, 299.

† Cook's Oracle, 1822, p. 163.

‡ For Light Conversation, vol. II, p. 121.

Knight here proved to be a Baron. Webster gives a satisfactory explanation of this, because in the item of cookery under the word Baron, it defines as "Two loins or sirloins not cut apart at the backbone; as a baron of beef." In view of the fact however, that a Baronet should always be addressed with *Sir* as a prefix to his given name only, I had located the correct title to the roast.

In a consideration of the part to be Knighted, DeVoe offers the following explanation.

"*The Hind-Quarters* are usually considered the choice quarters, as from them are cut or taken the large and famous "Baron of Beef," which the English hold in the highest estimation as the crowning dish for the Christmas dinner. This joint is seldom prepared in this country (America) but it is cut much like a saddle of mutton; that is, by leaving the two sirloins together, when being dressed, the hind-quarters of the animal are not separated, but cut so as to saddle or baronize them, by taking off the buttocks, rumps, sockets, tops of sirloins, and a part of the suet, which leaves almost a square looking piece, first known in England as the baron of beef; and this enormous piece is roasted whole."

Having thus set forth a new description as it were for this University, I will conclude this somewhat lengthy address with two interesting tales as presented by the author of *"The Market Assistant."*

"The principal dish, from time immemorial, for the Sovereigns of England at their Christmas dinner is the 'Royal Baron of Beef.' In an English print I read that 'it was this year (1854) cut from a fine Highland ox, fed by Prince Albert, and weighed 840 lbs. It was put down before an enormous fire on Saturday afternoon, and for 14 hours was watched and basted by relays of assistants under the head cook, after which it was trimmed and decorated, with holly and mistletoe apparently sprouting from the outside fat of the meat.' "

In an interesting publication by Armour and Company entitled "King Beef," of which my old friend Robert C. M. Auld is author,* in referring to the baron of beef, he said: "It was the masterpiece of all baronial feasts on high occasions, and its maintenance at the Christmas board of the present royal family of Britain is a tradition. The baron of beef which was served at Queen Victoria's Christmas table in 1867, was from Wm. McCombie's famous champion Angus bullock of that year, Black Prince. He offered the entire animal to Her Majesty, which she declined, but she was 'graciously pleased to accept the baron,' thus making it royal."

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* Monthly letter to Animal Husbandmen, vol. XII, No. 9, Dec. 1931, p. 8.

"I am also much indebted to Charles H. Webb, Esq., the Almoner of St. George Society," again quoting Mr. DeVoe, "who informs me that this Society has had several barons of beef served up at their anniversary dinners, which were principally prepared by Mr. and Mrs. William Niblo. The following incident will show one of the mistakes which occurred with perhaps the largest baron of beef ever prepared for, or attempted to be roasted in New York, or elsewhere. This, no doubt, occurred from the anxiety of Mrs. Niblo to outdo all former efforts of giving this choice piece in the greatest perfection. She gave the order and the instructions to Mr. Andrew C. Wheeler (butcher, No. 19 Fulton Market) that it should be the *largest* and *finest* that he could procure. It was taken from a very choice animal, and, when trimmed, weighed some 280 lbs., then sent to Niblo—who then kept his famous garden and hotel corner of Broadway and Prince St.—the day before the grand dinner of the St. George Society was to take place. The same night, late, Mrs. Niblo was about to put it down to roast. She found it so large and unwieldly that she could not spit it, let alone roast it; so, about midnight she sent for Mr. Wheeler, who came and after cutting some 100 lbs. or more from it, they were enabled to get it spitted, and near enough to the fire to commence this great roast for the next afternoon's dinner. They had, however, almost given it up in despair before they succeeded; but it was said that it was superbly cooked and served, as everything else was with which Mrs. Niblo had to do."

In conclusion, no matter when or where Sir-Loin was first Knighted, one may be sure that no better beef is available for this great honor than such as the British or Yankee product of today, with Purdue University exemplifying the best.

Come, sons of summer, by whose toil,
We are the lords of wine and oil;
By whose tough labours and rough hands,
We rip up first, then reap our lands.
Crowned with the ears of corn, now come,
And to the pipe sing harvest home.
Come forth, my lord, and see the cart
Dressed up with all the country art. . . .
Well on, brave boys, to your lord's hearth,
Glitt'ring with fire, where, for your mirth,
Ye shall see first the large and chief
Foundation of your feast, fat beef;
With upper stories, mutton, veal,
And bacon which makes full the meal
With several dishes standing by
As here a custard, there a pie,
And here all-tempting frumentry.
And for to make the merry cheer,
If smirking wine be wanting here,
There's that which drowns all care, stout beer,
Which freely drink to your lord's health,
Then to the plough (the commonwealth)
Next to your flails, your fans, your vats,
Then to the maids with wheaten hats;
To the rough sickle, and crook'd scythe,
Drink, frolic, boys, till all be blythe.

—Robert Herrick—(1591-1674).

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Circular No. 210 April, 1935

COMMERCIAL FEEDING STUFFS

UNIVERSITY OF ARIZONA
LIBRARY

Properly Tagged Feed Combined with Inspection and Analysis Provides Protection to Purchasers of Commercial Feeding Stuffs

Purdue University
Agricultural Experiment Station
Lafayette, Indiana

This circular contains a condensed report of commercial feed inspection in Indiana for the year 1934 and includes additional information pertaining to the Indiana Feeding Stuffs Law and to the composition of feeding stuffs.

Table 1 shows the estimated tonnage based on the sale of inspection tags and the retail value of each class of feed sold in Indiana during the year 1934. It is estimated that 354,565 tons of commercial feeding stuffs were sold at a retail value of $13,088,287.

Table 2 gives the estimated annual total tonnage and expenditures for commercial feeding stuffs since 1911.

Table 3 shows the shipments withdrawn from sale and the reasons for taking such action.

Table 4 states the names and addresses of the manufacturers whose feeds were sampled and analyzed in 1934 and the number of samples passed and not passed. Of the 2,659 samples collected 407 were found to be incorrectly guaranteed and 286 were classed as being seriously deficient or misbranded.

Suggestions are given to manufacturers, dealers and purchasers of feed which if followed should be valuable to all concerned.

Table 5 gives the calcium and phosphorus content of feeding stuffs.

Table 6 contains the analyses of cereals and by-products for formulating guarantees.

Definitions of the various classes of feeding stuffs and explanation of the terms used in the analysis of them are given.

COMMERCIAL FEEDING STUFFS

H. R. KRAYBILL, *State Chemist*

P. B. CURTIS, *Associate Chemist* O. S. ROBERTS, *Chief Inspector*
Assistant Chemists, C. C. YUND, G. E. HALLIDAY, D. M. DOTY
Inspectors, C. M. COHEE, J. W. JACKMAN

The Indiana Feeding Stuffs Law is primarily a labeling law and imposes certain specific duties upon the manufacturers of commercial feeding stuffs. It requires the manufacturer to label each sack, package or container of commercial feed sold or offered for sale in Indiana with an Official Indiana State tag showing the minimum percentage guarantees for crude protein and crude fat, a maximum percentage guarantee for crude fiber and the specific name of each ingredient used in preparing the feed. Before such tags or labels can be issued it is necessary to register each brand of feed on a certificate furnished by the State Chemist. There is no registration fee but a minimum order for Indiana tags of $5.00 must accompany each certificate of registration. Mineral feeds containing no organic ingredient do not require the usual chemical feed guarantee but do require a declaration of each ingredient contained therein and minimum percentages of lime (CaO), phosphoric acid (P_2O_5), iodine (I) and the maximum percentage of salt (NaCl).

Amendment of Feeding Stuffs Law

The Indiana Feeding Stuffs Law as amended in 1933 permits the manufacturer or agent desiring to sell any concentrated commercial feeding stuff in packages or containers of five pounds or less to register such feeding stuff under an annual registration fee of $20.00. If this method of registration is chosen it is unnecessary for the manufacturer to attach an Indiana State label to each container of five pounds or less but it is necessary that the same information, as required on the Indiana tag, be stated on the private label or wrapper of the container. This amendment is of special interest to the Dog Food Industry which has developed so rapidly during the last few years. Copies of this amendment together with the law may be secured by making application to the State Chemist.

Estimated Sales of Commercial Feeding Stuffs in 1934

In order to enforce this law Inspectors of the State Chemist Department are constantly in the field inspecting commercial feeding stuffs in feed mills, mixing plants, cars, stores, and on the farm. Inspection samples of the different lots of feed are taken with specially designed samplers so as to secure a representative sample from each lot and these samples are then forwarded to the laboratory of the State Chemist where they are analyzed. During the year 1934, 2,659 samples were collected in all parts of the state. One inspection sample was secured from approximately each 133 tons of commercial feed sold in Indiana. This is computed from the estimated tonnage shown in Table 1, entitled "Estimated Sales of Commercial Feeding Stuffs in Indiana." Based on the sale of official state tags it is estimated that 354,565 tons of commercial feed with a retail value of $13,088,287 were sold in Indiana during the year 1934. Compared with the sales of 1933 there was an increase of 10 per cent in tonnage and a corresponding increase of 26 per cent in expenditures. The principal increases in tonnage were for hominy feed, poultry mash and cattle and dairy feeds while the principal decreases were for cottonseed meal and milk products.

From Table 2 it may be seen that the total tonnage sold in 1934 was higher than in any of the three preceding years.

Table 1.—Estimated Sales of Commercial Feeding Stuffs in Indiana

Kind of Feed	Estimated Tons			Estimated Retail Values, Dollars	
	1932	1933	1934	1933	1934
Alfalfa meal and leaf meal	2,906	3,125	3,313	$89,688	$108,666
Animal by-products (tankage, meat scraps, etc.)	35,656	38,531	39,313	1,392,896	1,486,031
Brewers', distillers' and yeast dried grains	94	1,750	1,969	40,513	62,220
Condimental poultry and stock feeds*	594	625	688	90,625	98,590
Corn feed meal	750	1,313	1,250	29,674	34,375
Corn germ meal	219	188	813	4,794	24,390
Corn gluten meal and feed	1,313	1,969	2,594	56,313	86,380
Corn and oats chop and miscellaneous chops	2,563	3,219	4,406	72,749	132,180
Cottonseed meal	5,563	5,875	4,625	150,988	177,600
Dried buttermilk, dried skimmed milk, condensed, etc.	6,531	8.375	4,531	798,137	421,836
Hominy meal and hominy feed	2,750	28,000	42,250	649,600	1,233,700
Linseed oil meal	3,656	3,782	3,563	126,697	153,209
Mill by-products—wheat bran, middlings, rye feeds, etc. with and without screenings	69,781	94,438	96,125	2,167,352	2,917,394
Mineral feeds	3,063	3,719	3,063	245,454	177,654
Oat meal by-products—oat shorts, oat hulls, oat middlings, oat groats, etc.	719	1,313	1,375	27,967	37,537
Poultry scratch feed—with and without grit	14,375	14,938	15,281	448,140	531,779
Poultry mash	72,125	82,938	91,938	2,952,593	3,852,202
Proprietary feeds—					
Cattle and dairy feeds	10,563	12,906	21,625	362,659	730,925
Hog and pig meals	5,438	7,406	6,875	294,018	294,250
Horse and mule feeds	750	719	1,750	18,478	58,275
Small animal and pet feeds (rabbit, dog, etc.)	1,656	2,656	2,656	220,182	229,213
Calf meals	375	438	500	28,470	37,000
Sheep feeds	....	63	31	1,890	1,085
Soybean oil meal	2,000	938	1,031	26,545	43,096
Miscellaneous—beet pulp, rice bran, processed garbage, cocoanut oil meal, kelp, peanut oil meal, etc.	1,469	3,094	3,000	77,350	158,700
Totals†	244,909	322,318	354,565	$10,373,772	$13,088,287

*Not all condimental feeds come under the law.

†Does not include feeds registered under annual registration fee.

Table 2.—Summary of the Annual Tonnage and Expenditures for Commercial Feeding Stuffs Since 1911

Year	1911	1912	1913	1914	1915	1916
Estimated sales, tons	179,000	196,752	217,689	271,751	270,339	317,664
Estimated retail value, dollars	$5,056,906	$6,371,571	$6,406,645	$8,461,751	$8,221,684	$10,316,516
Year	1917	1918	1919	1920	1921	1922
Estimated sales, tons	379,152	439,152	506,958	390,078	283,256	340,197
Estimated retail value, dollars	$21,700,101	$26,717,086	$33,013,463	$27,014,049	$11,716,745	$14,244,175
Year	1923	1924	1925	1926	1927	1928
Estimated sales, tons	389,971	419,441	408,713	337,298	440,534	524,476
Estimated retail value, dollars	$18,026,682	$19,720,313	$20,945,026	$16,837,512	$24,173,605	$29,818,566
Year	1929	1930	1931	1932	1933	1934
Estimated sales, tons	498,887	512,096	322,125	244,909	322,318	354,565
Estimated retail value, dollars	$26,491,777	$24,293,652	$11,939,153	$6,853,043	$10,373,772	$13,088,287

Results of Inspection

All of the 2,659 samples were examined microscopically and 2,393 of them were analyzed chemically for moisture, crude protein, crude fat, crude fiber and ash content. Forty-eight samples of mineral feed were analyzed for lime (CaO), phosphoric acid (P_2O_5), iodine (I) and salt (NaCl) content.

Of the 2,659 samples examined, 407 of them were found to be technically misbranded while only 286 of them were found to be seriously deficient or misbranded. This latter group of samples representing 10.8% of the total samples are listed in Table 4 under the heading of "Number of Samples Not Passed."

Refunds

Shipments or batches of feed found to be seriously deficient were removed from sale immediately and the manufacturers were required to replace or rebuild such deficient lots to meet their guarantees or relabel them with correct guarantees. Refunds totaling $824.76 were made to dealers and consumers by 53 different feed manufacturers on 90 deficient lots of feed. Most of the refunds were made on shipments of protein deficient tankages and meat and bone scraps.

All refunds are required to be distributed to the consumers wherever possible and receipts for same must be filed with the State Chemist. In case there are no records as to the consumers the refunds may be turned over to a local charitable organization in the community where the feed was sold. In any case receipts must be secured and filed with the State Chemist.

The payment of a refund by the manufacturer to the consumer does not remove the violation but it does indicate good intentions on the part of the manufacturer and shows his willingness to do what he can to correct the violation. However, the payment of the refund does not nullify the right of anyone in the state to call a deficiency of analysis to the attention of the prosecuting attorney.

The most frequent violation of the Indiana Feeding Stuffs Law is in the matter of non-tagging (Table 3). Of the 553.7 tons of commercial feed withdrawn from sale 427.1 tons were removed because of the lack of Indiana State tags. Proper tagging of feeding stuffs cannot be emphasized too strongly. Neglect on the part of the manufacturer, distributor or dealer in attaching the official tag to each bag of feed may lead to serious violations of the Indiana Feeding Stuffs Law. On conviction the penalty of such violations is fifty dollars for the first offense and one hundred dollars for each subsequent offense.

Misbranding of feeding stuffs, especially poultry mashes, occurs quite often. Manufacturers incorporating cod liver oil in their mashes should bear in mind that such mashes require separate registrations from those of plain mashes. The Official Indiana State tag must state cod liver oil as an ingredient if it is added.

Table 3.—Withdrawals From Sale

Number of Shipments Withdrawn From Sale	Number of Manufacturers Represented	Reasons for Withdrawal From Sale	Amount Withdrawn Tons
186	129	Not tagged	427.1
40	35	Misbranded	21.8
30	21	Deficient in crude protein	73.0
12	5	Deficient in crude protein and excess crude fiber	14.8
8	6	Mutilated tags	3.0
4	1	Short weight	13.2
1	1	Deficient in iodine and excess salt	0.6
1	1	Deficient bone phosphate of lime	0.2
282	199	Totals	553.7

Table 4 gives the standing of the various feed manufacturers whose feeds were inspected during the year 1934. This summary of feed inspection may be of considerable value to purchasers of commercial feeds in that it shows just how careful the different manufacturers were in maintaining their guarantees and also in tagging their feeds.

Table 4.—Summary of Feed Inspection January 1, 1934, to December 31, 1934

NAME AND ADDRESS OF MANUFACTURER	Number of Samples Examined	Number of Samples Passed	Number of Samples Not Passed	Number of Samples Not Tagged
Ace Feed Store, Indianapolis, Ind.	1	1		
Acme Evans Co., Indianapolis, Ind.	11	10	1	2
Acme Milling Co., Aurora, Ind.	2	2		
Akron-Urbana Mills, Inc., Urbana, Ohio	2	1	1	
Allen, J. P., Farmersburg, Ind.	1	1		
Allied Mills, Inc., Chicago, Ill.	28	27	1	2
Allomong, B. J., Ashley, Ind.	1	1		
American National Mineral Corp., Hillsboro, Ind.	14	11	3	
American Soya Products Corp., Evansville, Ind.	1	1		1
Amo Milling Co., Amo, Ind.	2	2		
Amos, Carl, Kokomo, Ind.	1	1		
Anchor Feed Store, Kokomo, Ind.	1	1		
Anchor Milling Co., Rochester, Ind.	4	4		
Anderson Hatchery, Mable, Noblesville, Ind.	4	3	1	
Anderson Mercantile Exchange, Inc., Anderson, Ind.	1	1		
Andry Bros. Flour Mill, Bird's Eye, Ind.	1	1		
Angola Flour Mills, Angola, Ind.	2	2		
Anheuser-Busch, Inc., St. Louis, Mo.	1		1	1
Animal Bi-Products Co., New Carlisle, Ind.	1	1		
Arcady Farms Milling Co., Chicago, Ill.	22	21	1	9
Archer-Daniels Midland Co., Minneapolis, Minn.	3	2		1
Armour & Co., Chicago, Ill.	23	21	2	
Armour Creameries, Chicago, Ill.	1		1	
Arnold Milling Co., Sterling, Kansas	2	2		
Ashpaugh & McCorkle, Flora, Ind.	2	2		2
Attica Electric Hatchery, Attica, Ind.	1	1		1
Aubrey & Co., Louisville, Ky.	18	12	5	3
Aukerman Bros. Co., Peru, Ind.	4	4		
Aurora Farmers Supply Co., Aurora, Ind.	2	2		
Aurora Flour & Feed Co., Aurora, Ind.	5	5		
Bahler Feed Co., Remington, Ind.	2	1	1	
Bahler Grain & Feed Co., Galveston, Ind.	1	1		
Baker Packing Co., Chicago, Ill.	1			1
Baldwin & Co., J. Jay, Crown Point, Ind.	2	1	1	
Ballard & Ballard Co., Louisville, Ky.	2	2		
Ballard Packing Co., Marion, Ind.	2	1	1	
Bargersville Grain Co., Bargersville, Ind.	2	1	1	
Barry Milling Co., Leavenworth, Ind.	1	1		1
Bash & Co., Inc., C. E., Huntington, Ind.	3	3		
Bashore Feed Store & Hatchery, Silver Lake, Ind.	1	1		
Bashore Feed Store & Hatchery, Warsaw, Ind.	3	3		
Batesville Fertilizer Co., Batesville, Ind.	2	2		
Battle Creek Dog Food Co., Battle Creek, Mich.	3	3		
Bauman's Feed Mill, Demotte, Ind.	3	3		
Bausback Fertilizer Co., Shelbyville, Ind.	4	3	1	
Bellman & Bortz, LaPorte, Ind.	3	3		
Benz Co. Inc., The, Batesville, Ind.	2	2		
Berghoff Brewing Corp., Ft. Wayne, Ind.	1	1		
Berghoff Bros. Brewery, Inc., Ft. Wayne, Ind.	1	1		
Berne Milling Co., Berne, Ind.	1	1		
Best & Co., Phillip, Paris, Ill.	2	2		
Bickel's Feed & Supply Store, Corydon, Ind.	3	3		
Big 4 Elevator Co., Mattoon, Ill.	3	2	1	
Big 4 Stock Mineral Co., Cicero, Ind.	1	1		
Bisbee Linseed Co., Chicago Heights, Ill.	2	1	1	1
Bisbee Linseed Co., Philadelphia, Pa.	2	2		1
Blanton Milling Co., Indianapolis, Ind.	1	1		
Blanton Feed Store, Jasonville, Ind.	1	1		
Blanton Mills, Clayton, Ind.	3	3		
Blatchford Calf-Meal Co., Waukegan, Ill.	3	3		1
Blish Milling Co., Seymour, Ind.	14	14		
Blocher, Roy, Silver Lake, Ind., R. R. 2	1	1		
Bloomingdale Mill Co., Bloomingdale, Ind.	1	1		
Bloomington Packing Co., Bloomington, Ind.	11	9	2	
Blue River Reduction Co., Edinburg, Ind.	4	4		
Bluff City Mills & Elevator Co., Mt. Carmel, Ill.	2	2		
Bohnert & Son, A. M., Jasper, Ind.	3	2	1	
Boldt Milling Co., Waynetown, Ind.	2	2		
Boonville Milling Co., Boonville, Ind.	10	10		
Bortz Feed Store, LaPorte, Ind.	3	3		
Boston Grain Co., Boston, Ind.	1	1		
Bourbon Elevator & Feed Mill, Bourbon, Ind.	2	1	1	
Bowling Green Milling Co., Bowling Green, Ind.	1	1		
Brazil Flour & Feed Co., Brazil, Ind.	4	4		
Brazil Tankage Co., Brazil, Ind., R. R. 4	1	1		
Bremen Elevator, Bremen, Ind.	1	1		1
Bremen Roller Mills, Bremen, Ind.	2	2		

Table 4.—Continued

NAME AND ADDRESS OF MANUFACTURER	Number of Samples Examined	Number of Samples Passed	Number of Samples Not Passed	Number of Samples Not Tagged
Brewer Milling Co., Gosport, Ind.	1	1		
Brizius Co., Charles W., Newburg, Ind.	1	1		
Brizius Co., Inc., Charles W., Evansville, Ind.	6	6		
Brode Corp., F. W., Memphis, Tenn.	4	2	2	1
Brook Feed Mill, Brook, Ind.	1	1		
Brown Bros., Indianapolis, Ind.	2	2		
Brown Ice & Fuel Co., W. Terre Haute, Ind.	1	1		
Buchsieb Inc., E. G., Columbus, Ohio	4	4		
Buhner Fertilizer Co., Seymour, Ind.	20	13	7	
Bundy Bros. Mill Co., Medora, Ind.	9	9		
Bundy Bros. Mill Co., Vallonia, Ind.	14	13	1	
Burk Elevator Co., Decatur, Ind.	3	3		
Burnettsville Elevator Co., Burnettsville, Ind.	3	3		1
Busenbark Grain Co., Crawfordsville, Ind.	5	2	3	
Butler Feed Store, Oakland City, Ind.	2	1	1	
Butt & Co., L. T., Centerpoint, Ind.	5	5		1
Cadick Milling Co., Grandview, Ind.	4	3	1	
Cairo Meal & Cake Co., Cairo, Ill.	10	10		
Campbellsburg Milling Co., Campbellsburg, Ind.	5	5		
Campbellsburg Milling Co., Salem, Ind.	1	1		
Cambridge Feed Mills, Inc., Cambridge City, Ind.	6	4	2	
Capitol Flour Mills, Inc., Minneapolis, Minn.	1	1		
Caple Co., The A. B., Toledo, Ohio	2	2		1
Carman Supply Co., Lynn, Ind.	2	2		
Carney Hatchery, Franklin, Ind.	1			1
Carney Hatcheries, Inc., Shelbyville, Ind.	4	4		
Cauble, O. L., Pekin, Ind.	7	6	1	2
Cayuga Milling Co., Cayuga, Ind.	2	2		
Centlivre Brewing Corp., Ft. Wayne, Ind.	1	1		
Central Elevator Co., St. Louis, Mo.	1	1		
Central Michigan Grain Corp., Battle Creek, Mich.	1		1	1
Chapman-Doake Co., Decatur, Ill.	25	23	2	
Chappel Bros., Inc., Rockford, Ill.	1	1		
Charlestown Milling Co., Charlestown, Ind.	11	11		1
Chicago Meat Products Co., Chicago, Ill.	2	1	1	2
City Coal Co., Alexandria, Ind.	2	2		
City Feed Store, Plymouth, Ind.	1	1		
City Roller Mills, Vevay, Ind.	2	2		
Clay County Farm Bureau Coop. Assoc. Inc., Brazil, Ind.	3	3		
Clayton Feed Store, Clayton, Ind.	1	1		
Clendenin & Co., Richmond, Ind.	1	1		
Clover Leaf Creameries, Inc., Decatur, Ind.	2	2		
Clover Leaf Mills, Kokomo, Ind.	10	8	2	
Columbus Milling Co., Columbus, Ind.	11	10	1	
Columbus Sanitary Reduction Co., Columbus, Ind.	3	3		
Conkey Co., G. E., Cleveland, Ohio	4	4		1
Consolidated Products Co., Danville, Ill.	9	7	2	3
Consumer's Feed Store, Indianapolis, Ind., R. R. 12	4	4		
Consumer's Import Co., Inc., New York, N. Y.	5	3	2	1
Consumer's Supply Co., Fulton, Ind.	1	1		
Cooper Co., O. A., Humbolt, Nebraska	1	1		
Cooperative Elevator Co., Francesville, Ind.	1	1		
Cooperative Elevator Co., Winamac, Ind.	1	1		
Corn Belt Feed Co., Boswell, Ind.	7	6	1	
Corn Products Refining Co., New York, N. Y.	2	2		
Corunna Feed Mill, Corunna, Ind.	3	3		2
Cottrell Bros., Terre Haute, Ind.	14	11	3	
Couch & Sons, Geo., New Harmony, Ind.	2	2		
Crabbs Reynolds Taylor Co., Lafayette, Ind.	20	18	2	
Crescent Mills, (Branch of Blish Milling Co.), Seymour, Ind.	3	3		
Crete Mills, Crete, Nebraska	2	2		
Cripe, C. F., New Waverly, Ind.	1	1		
Cripe, Frank W., Rossville, Ind., R. R. 1	1		1	
Cromwell Feed Mill, Cromwell, Ind.	1	1		
Cross Plains Mills, Cross Plains, Ind.	2		2	
Culver City Grain & Coal Co., Culver, Ind.	2	2		
Cut Rate Feed Store, Sullivan, Ind.	1	1		
Cynthiana Reduction Plant, Cynthiana, Ind.	3		3	1
Dailey, Esten, Milton, Ind.	1	1		
Daniel Bros., Inc., Columbia City, Ind.	2	2		
Danville Electric Hatchery, Danville, Ind.	1	1		
Danville Rendering Co., Danville, Ill.	1		1	
Darling & Company, Chicago, Ill.	15	13	2	3
Daviess County Farm Bureau, Washington, Ind.	4	4		
Davis, G. G., Tipton, Ind.	1	1		
Davis Elevators, G. G., Atlanta, Ind.	3	3		1

Table 4.—Continued

NAME AND ADDRESS OF MANUFACTURER	Number of Samples Examined	Number of Samples Passed	Number of Samples Not Passed	Number of Samples Not Tagged
Davis, S. P., Little Rock, Arkansas	4	4		
Davis Grain Co., Michigantown, Ind.	1	1		
Daylight Feed Mill, Daylight, Ind.	1	1		
Decatur Milling Co., Decatur, Ill.	6	6		
Decatur Rendering Plant, Decatur, Ind.	2	1	1	
Deck, James H., Roann, Ind.	2	2		
Decker Packing Co., The Val, Piqua, Ohio	1			1
Dekalb Tanking Co., Auburn, Ind.	2	2		
Denver Alfalfa Milling & Products Co., Lamar, Colo	4	4		1
Depoy Feed Mill, Ben, Muncie, Ind.	6	6		
Deshler Alfalfa Milling Co., Deshler, Ohio	6	2	4	
Dewey Bros. Co., Blanchester, Ohio	5	5		3
Dextora Co., Indianapolis, Ind.	2	2		
Dickinson & Co., The Albert, Chicago, Ill.	5	4	1	2
Donselman, Herman G., Dillsboro, Ind.	2	2		
Doyle Packing Co., Los Angeles, Calif.	1		1	1
Dry Milk Products Co., Columbus, Ohio	3	3		1
Dryfus Packing & Provision Co., Lafayette, Ind.	3	3		
Dubois County Farm Bureau, Inc., Huntingburg, Ind.	2	1	1	
Dubois Milling Co., Dubois, Ind.	1	1		1
Duluth-Superior Milling Division of Standard Milling Co., Minneapolis, Minn.	1	1		
Dutschke Milling Co., Cannelton, Ind.	7	5	2	
Dwiggins & Sons, Waynetown, Ind.	3	2	1	
Early & Daniel Co., The, Cincinnati, Ohio	8	8		3
Eberts Grain Co., Louisville, Ky.	10	9	1	1
Edwards & Co., Inc., S. T., Chicago, Ill.	11	10		4
Egloff Milling Co., Vincennes, Ind.	4	4		
Elkhart Packing Co., Elkhart, Ind.	3	3		1
Ellis Co., Wilbur, San Francisco, Calif.	1	1		1
Emge & Sons, Ft. Branch, Ind.	6	3	3	
Emmert Co., F. L., Cincinnati, Ohio	1	1		
English Milling Co., English. Ind.	5	4	1	
Enos Grain Co., Morocco, Ind.	3	2	1	
Erwin Feed Mill, J. R., Daylight, Ind.	1		1	
Etna Lumber & Elevator Co., Etna Green, Ind.	13	13		
Evans Milling Co., Indianapolis, Ind.	8	8		
Ewing Mill Co., Brownstown, Ind.	15	15		
Ewing Von Allman Dairy Co., Louisville, Ky.	1	1		1
Excelsior Milling Co., Minneapolis, Minn.	1	1		
Fairmount Grain Co., Fairmount, Ind.	1	1		
Fall City Feed Mills, Louisville, Ky.	1	1		
Fall Creek Flour & Feed Co., Indianapolis, Ind.	1	1		
Fall Creek Milling Co., Indianapolis, Ind.	1	1		
Farm Bureau Elevator & Supply Co., Crawfordsville, Ind.	5	5		
Farm Bureau Service, Inc., Columbus, Ind.	7	7		
Farm Producers Association, Indianapolis, Ind.	1	1		
Farm Products Association, Indianapolis, Ind.	2	2		
Farmers & Merchants Exchange New Albany, Ind.	7	7		1
Farmers Cooperative Co., Centerville, Ind.	1	1		
Farmers Cooperative Co., Cicero, Ind.	6	6		
Farmers Cooperative Co., LaFontaine, Ind.	1	1		
Farmers Cooperative Co., Sheridan, Ind.	5	4	1	
Farmers Cooperative Co., Southport, Ind.	3	3		
Farmers Cooperative Co., Wolcott, Ind.	1	1		
Farmers Cooperative Elevator, Winamac, Ind.	2	1	1	
Farmers Cooperative Elevator Co., Seymour, Ind.	21	18	3	1
Farmers Elevator Co., South Whitley, Ind.	8	8		
Farmers Elevator Co., Twelve Mile, Ind.	1	1		
Farmers Feed & Coal Co., Bloomington, Ind.	6	6		
Farmers Feed & Grain Co., Darlington, Ind.	5	5		
Farmers Feed Store, Dunkirk, Ind.	3	3		
Farmers Grain & Coal Co., Frankton, Ind.	2	2		
Farmers Grain & Lumber Co., South Wanatah, Ind.	1	1		
Farmers Grain & Supply Co., Oak, Ind.	2	2		
Farmers Grain & Supply Co., Windfall, Ind.	1	1		
Farmers Grain Co., Pershing, Ind.	2	1	1	
Farmers Marketing Association, Columbus, Ind.	5	5		
Farmers Mill, The, Huntingburg, Ind.	2	1	1	
Farmers Mill & Elevator Co., Columbia City, Ind.	3	2		1
Farmers Mill & Elevator, Ferdinand, Ind.	2	2		
Farmers Produce Co., Salem, Ind.	1	1		
Farmers Service Station, Corydon, Ind.	2	2		
Farmers Supply Co., Boston, Ind.	7	6	1	
Farmers Tankage Co., Newberry, Ind.	2	1	1	
Feed Dealers Exchange, Argos, Ind.	6	[illegible]		1
Fehr Brewing Co., Frank, Louisville, Ky.	1			1

Table 4.—Continued

Name and Address of Manufacturer	Number of Samples Examined	Number of Samples Passed	Number of Samples Not Passed	Number of Samples Not Tagged
Fernando Valley Milling & Supply Co., Los Angeles, Calif.	1		1	1
Finch, O. T., Portland, Ind.	1	1		
Finch & Co., E. P., Hillsboro, Ind.	3	3		
Finch & Weisel Elevator Co., Portland, Ind.	3	3		
Fischer Packing Co., Inc., Henry, Louisville, Ky.	4	2	2	1
Fisher's Grain Co., Fisher's Ind.	5	5		
Fisher-Lambert Feed & Coal Co., Anderson, Ind.	1		1	
Foell Packing Co., Chicago, Ill.	1	1		1
Forrest Park Mills, N. Terre Haute, Ind.	2	2		
Foster-Kendall Co., Carmel, Ind.	9	8	1	
Fowler Milling Co., Fowler, Ind.	1	1		
Fowler Roller Mills, Fowler, Ind.	1	1		
Franke Grain Co., Milwaukee, Wis.	1	1		
Frankfort Electric Hatchery, Frankfort, Ind.	1	1		
Frankfort Rendering Co., Frankfort, Ind.	12	12		
Franklin Grain Co., Franklin, Ind.	3	3		
French Lick Milling Co., French Lick, Ind.	3	2	1	
Fretz Feed Store, R. C., Waterloo, Ind.	4	4		
Friendship Milling Co., Friendship, Ind.	3	3		
Frierson III, John S., Mt. Pleasant, Tenn.	2	2		1
Fuhrer-Ford Milling Co., Mt. Vernon, Ind.	2	2		
Fulks & Sons, Willard, Columbus, Ind.	1	1		
Funk Bros. Seed Co., Bloomington, Ill.	1	1		
Furst-McNess Co., Freeport, Ill.	2	1	1	1
Fyke Milling Co., Kendallville, Ind.	5	4	1	1
Gaines Food Co., Sherburne, N. Y.	2	1		1
Garten Feed Co., Indianapolis, Ind.	8	6	1	3
Geneva Equity Exchange, Geneva, Ind.	1	1		
Geneva Milling & Grain Co., Geneva, Ind.	8	8		
Germantown Rendering Co., Germantown, Ohio	1	1		
Gibson County Shipping Association, Princeton, Ind.	3	2	1	
Goeke Sons, Edward F., Evansville, Ind.	17	13	4	1
Goldreich Fertilizer Mfg. Co., Marion, Ind.	2	2		
Goodrich Bros. Co., Winchester, Ind.	20	18	2	
Graft, C. V., Winchester, Ind.	11	11		
Graham Farms, Washington, Ind.	10	10		
Granger Feed Mill, Granger, Ind.	4	2	2	1
Grant Coal & Feed Co., Marion, Ind.	3	2	1	1
Gray's Hatchery, Rossville, Ind.	5	5		
Griffith Feed Store, Coal City, Ind.	1		1	
Great Atlantic & Pacific Tea Co., New York, N. Y.	5	5		1
Greene County Farm Bureau Cooperative Association, Linton, Ind.	3	3		
Greenfield Mills, Greenfield Mills, Ind.	1	1		
Greenville Fertilizer Co., Greenville, Ohio	1	1		1
Groub Co., J. C., Seymour, Ind.	1	1		
Gust, E. G., Westville, Ind.	4	4		
Gutwein Milling Co., Francesville, Ind.	10	7	2	2
Habig Bros., Indianapolis, Ind.	6	6		
Hagerman & Co., H. J., South Bend, Ind.	3	3		
Hagerstown Grain Co., Hagerstown, Ind.	1	1		
Haines-Thompson Milling Co., Crawfordsville, Ind.	1	1		
Haldeman-Baum Co., Akron, Ind.	1	1		
Hales & Hunter Co., Chicago, Ill.	5	3	1	1
Hamlet Grain & Feed Co., Hamlet, Ind.	1	1		
Hammond Brooder Specialties, Inc., Hammond, Ind.	1	1		
Hancock County Farm Bureau Cooperative Association, Greenfield, Ind.	1	1		
Hardy & Son, M. N., Scottsburg, Ind.	3	2	1	
Hartford City Milling Co., Hartford City, Ind.	2	2		
Hartman & Dotterer, Bluffton, Ind.	2	2		
Hartz Flour Mill, Bernard, Chrisney, Ind.	1	1		
Hayes, W. E., Kokomo, Ind.	2	2		
Haynes Milling Co., Portland, Ind.	13	11	2	
Hays Branch Mills, Dillsboro, Ind.	2	2		
Heinz Co., The Dr., Cincinnati, Ohio	1		1	1
Heise Bros., Orleans, Ind.	12	12		
Heldt Co., The, Evansville, Ind.	2	2		
Hemlock Grain Co., Hemlock, Ind.	1	1		
Heppe Co., The, Logansport, Ind.	5	4	1	
Hill Packing Co., Topeka, Kansas	1			1
Hirst & Begley Linseed Works, Chicago, Ill.	3	2	1	3
Hi-Test Products Co., San Jose, Calif.	1	1		1
Hobbs Grain Co., Hobbs, Ind.	1	1		
Holser & Co., B. I., Walkerton, Ind.	2	1	1	
Home Packing & Ice Co., Terre Haute, Ind.	3	3		
Hoosier Abattoir Co., Indianapolis, Ind.	2	2		
Hoosier Mineral Feed Co., Greenwood, Ind.	4	2	2	

Table 4.—Continued

Name and Address of Manufacturer	Number of Samples Examined	Number of Samples Passed	Number of Samples Not Passed	Number of Samples Not Tagged
Hopkins Fertilizer Co., New Albany, Ind.	1			1
Hornung's Mill, Greensburg, Ind.	1	1		
Howard County Farm Bureau Cooperative Association, Kokomo, Ind.	1	1		1
Hughes-Curry Packing Co., Anderson, Ind.	6	6		
Hult's Feed Store, Terre Haute, Ind.	1	1		1
Humphreys- Godwin Co., Memphis, Tenn.	7	6	1	2
Hunter Packing Co., East St. Louis, Ill.	1	1		
Huntington Fertilizer Corp., Huntington, Ind.	8	6	2	
Huntington Mill Co., Huntington, Ind.	2	2		
Hurn Milling Co., W. D., Leavenworth, Ind.	3	2	1	
Hurt, E. E., Hale, Ind.	2	1	1	
Hutchins Bros. Mineral Works, Hillsboro, Ind.	1		1	
Ideal Sales Co., DesMoines, Iowa	1		1	1
Igleheart Bros., Inc., Evansville, Ind.	1	1		
Illinois Cereal Mills, Inc., Paris, Ill.	4	4		
Imperial Mills, Cambridge City, Ind.	2	2		
Indiana Dairy Marketing Association, Muncie, Ind.	3	3		
Indiana Farm Bureau Cooperative Association, Indianapolis, Ind.	100	96	4	1
Indiana Feed & Seed Co., Ft. Wayne, Ind.	1		1	1
Indiana Flour & Feed Co., Muncie, Ind.	4	4		
Indiana Hide & Tallow Co., South Bend, Ind.	3	3		
Indiana Provision Co., Indianapolis, Ind.	2	2		
International Milling Co., Minneapolis, Minn.	1	1		1
Iroquois Roller Mills, Rensselaer, Ind.	8	8		
Irwin Feed Store & Hatchery, Madison, Ind.	4	4		
Jacob Feed & Supply Co., W. E., Jasonville, Ind.	1	1		
Jefferson County Farm Bureau Cooperative Association, Madison, Ind.	1	1		1
Jenner & Sons, W. E., Marengo, Ind.	1	1		
Jennings County Farm Bureau Cooperative Association, Inc., Mt. Vernon, Ind.	3	3		
Jersee Co., The, Minneapolis, Minn.	2	2		
Johnson County Farm Bureau Cooperative Association, Inc., Franklin, Ind.	2	2		
Johnson Feed & Supply Co., Linton, Ind.	12	11	1	
Johnson & Co., Meade, Evansville, Ind.	1	1		
Jones, Hiram, West Lebanon, Ind.	3	3		
Jones & Co., J. W., Heltonville, Ind.	1	1		
Joslin-Schmidt Corp., Cincinnati, Ohio	17	16	1	
Kahn Sons Co., The E., Cincinnati, Ohio	4	4		
Kansas Flour Mills Corp., Kansas City, Mo.	1	1		
Karsell Co., Inc., The, Bloomington, Ind.	11	10	1	
Kasch, Louis, Logansport, Ind.	2	2		
Kehoe, Inc., James E., Chicago, Ill.	1	1		
Kell, R. C., Oakland City, Ind.	6	6		
Kellogg & Sons, Inc., Spencer, Buffalo, N. Y.	1	1		1
Kendallville Fertilizer Co., Kendallville, Ind.	1			1
Kentucky Chemical Manufacturing Co., Covington, Ky.	1	1		
Kentucky Feed Mills, Louisville, Ky.	5	3	2	
Kerlin Bros. & Co., Delphi, Ind.	2	2		
Kiefer Feed & Supply Co., Elwood, Ind.	7	7		
Kiest Milling Co., Knox, Ind.	5	4		1
Kingan & Co., Indianapolis, Ind.	6	5	1	
King Elevator Co., Wabash, Ind.	2	2		
Kinne Milling Co., Valparaiso, Ind.	5	5		
Kirk Feed Co., Indianapolis, Ind.	1	1		
Klondike Milling Co., Danville, Ind.	2	2		
Knapp & Co., C. E., South Bend, Ind.	2	2		
Knight & Sons, A. H., Zanesville, Ind.	4	4		
Knightstown Grain Co., Knightstown, Ind.	2	1	1	
Knox County Farm Bureau Cooperative Association, Inc., Vincennes, Ind.	2	2		
Knox County Fertilizer Co., Vincennes, Ind.	1	1		
Kokomo Electric Hatchery, Kokomo, Ind.	2	2		
Kopp's Feed Store, Rockport, Ind.	2	1	1	
Koschnick & Co., Indianapolis, Ind.	9	8	1	
Krause Milling Co., Charles A., Milwaukee, Wis.	13	13		2
Kuhner Packing Co., Muncie, Ind.	21	14	7	
LaBudde Feed & Grain Co., Milwaukee, Wis.	3	3		2
Lafayette Cooperative Elevator Co., Lafayette, Ind.	4	4		
Lafayette Milling Co., Lafayette, Ind.	6	6		
LaGrange County Farm Bureau, LaGrange, Ind.	3	3		
Lake Milling Co., Richland, Ind.	2	2		1
Lakeville Elevator, Lakeville, Ind.	2	2		
Lamar Alfalfa Milling Co., Lamar, Colo.	1	1		1
Lanesville Milling Co., Lanesville, Ind.	4	3	1	

Table 4.—Continued

Name and Address of Manufacturer	Number of Samples Examined	Number of Samples Passed	Number of Samples Not Passed	Number of Samples Not Tagged
Langston, Ira, Straughn, Ind., R. R. 1	1	...	...	1
Lapaz Grain Co., Lapaz, Ind.	1	1	...	...
LaPorte County Farm Bureau Cooperative Association, Inc., LaPorte, Ind.	1	1	...	...
LaPorte County Hatcheries, LaPorte, Ind.	3	3	...	...
Larrowe Milling Co., Detroit, Mich.	2	2	...	2
Lash Milling Co., Farmersburg, Ind.	4	2	2	...
Lawrence County Farm Bureau Cooperative Association, Inc., Bedford, Ind.	3	3	...	1
Lawrenceburg Roller Mills Co., Lawrenceburg, Ind.	4	4	...	...
Lebanon Grain Co., Lebanon, Ind.	1	1	...	...
Lemon Milling Co., Bedford, Ind.	7	7	...	...
Lennertz Feed Store, Merrillville, Ind.	2	1	1	...
Levy Grain Co., Ben., New Haven, Ind.	1	...	1	...
Liberty Mills, Liberty, Ind.	4	4	...	...
Lima Elevator Co., Howe, Ind.	3	3	...	1
Logansport Elevator Co., Logansport, Ind.	6	6	...	...
Loughry Bros. Milling & Grain Co., Monticello, Ind.	3	3	...	...
Louisville Cereal Mills Co., Louisville, Ky.	2	2	...	...
Louisville Feed Mills, Louisville, Ky.	1	1	...	...
Lovitt & Co., L. B., Memphis, Tenn.	10	8	2	...
Lowell Hay & Grain Co., Lowell, Ind.	1	1	...	...
Loyal Packing Co., Chicago, Ill.	1	...	...	1
Loy's Mill, Brookville, Ohio	2	1	1	1
Lucas Cash Store, Brownstown, Ind.	8	5	3	...
Lyon & Greenleaf Co., Ligonier, Ind.	2	2	...	...
McCardle & Wallace, Terhune, Ind.	1	1	...	...
McCarty Seed Co., J. A., Evansville, Ind.	16	15	1	...
McComas & Pritchard, Mohawk, Ind	6	2	4	1
McConnon & Co., Winona, Minn.	1	1	...	1
McKinzie Milling Co., Quincy, Mich.	1	1	...	...
MacDonald, C. L., Marion, Ind., R. R. 3	2	2	...	...
Madison Glue Corp., Madison, Ind.	2	...	...	2
Magee, E. R., Monticello, Ind., R. R. 2	1	1	...	...
Major Bros. Packing Co., Mishawaka, Ind.	8	7	1	...
Majot Mills, E. C., Michigan City, Ind.	2	2	...	...
Marianna Sales Co., Memphis, Tenn.	11	7	4	2
Marlatt Feed Store, Attica, Ind.	1	1	...	...
Marshall County Farm Bureau Cooperative Association, Inc., Plymouth, Ind.	1	1	...	...
Marshall Feed & Grain Co., Marshall, Ind.	1	1	...	...
Martin, John D., Lafayette, Ind.	11	10	1	...
Martin Grain Co., A. B., Lafontaine, Ind.	1	1	...	...
Martinsville Milling Co., Martinsville, Ind.	4	4	...	...
Massie Hatchery, Columbus, Ind.	2	2	...	...
Mayer Grain Co., South Whitley, Ind.	6	6	...	...
Mayflower Mills, Ft. Wayne, Ind.	1	1	...	...
Medaryville Cooperative Co., Medaryville, Ind.	1	1	...	...
Meier Packing Co., Indianapolis, Ind.	2	2	...	...
Merchants Creamery Co., Inc., Cincinnati, Ohio	3	1	2	...
Meyer Products Co., Kansas City, Mo.	1	...	1	1
Mexico Elevator Co., Mexico, Ind.	1	1	...	...
Mexico Roller Mills, Mexico, Ind.	4	4	...	...
Middlebury Milling Co., Middlebury, Ind.	5	4	1	...
Midland Creameries, Inc., Greenville, Ohio	2	2	...	...
Miesenhelder Bros., Palestine, Ill.	2	2	...	...
Milan Milling Co., Milan, Ind.	2	2	...	...
Milford Mills, The, Milford, Nebr.	1	1	...	...
Miller, A. J., Montpelier, Ind.	1	1	...	...
Miller & Thomas, Jonesboro, Ind.	2	1	1	...
Miller Cereal Mills, Omaha, Nebr.	5	5	...	1
Miller Grain Co., Inc., Bainbridge, Ind.	7	7	...	...
Milltown Milling Co., Milltown, Ind.	2	1	1	...
Mishawaka Grain & Coal Co., Mishawaka, Ind.	4	4	...	...
Missouri Cotton Oil Co., Cairo, Ill.	3	3	...	...
Moellering's Flour Mill, Ft. Wayne, Ind.	2	2	...	...
Monroe County Farm Bureau Cooperative Association, Inc., Bloomington, Ind.	2	2	...	...
Monroeville Equity Union Exchange, Monroeville, Ind.	4	4	...	...
Monticello Feed & Seed Store, Monticello, Ind.	3	3	...	...
Montpelier Creamery, Montpelier, Ohio	1	1	...	1
Moore Bros., Kirklin, Ind.	1	...	...	1
Morgan, Frank, Plainville, Ind.	2	2	...	1
Morgan County Farm Bureau Cooperative Association, Inc., Martinsville, Ind.	2	2	...	...
Morrell & Co., John, Ottumwa, Ia.	3	3	...	3
Morris & Co., Chicago, Ill.	16	15	1	1

Table 4.—Continued

Name and Address of Manufacturer	Number of Samples Examined	Number of Samples Passed	Number of Samples Not Passed	Number of Samples Not Tagged
Morris Flour Mills, Morris, Ind.	1		1	
Morrow Grain Co., Wabash, Ind.	1	1		
Moutoux, P. E., Evansville, Ind.	2	2		
Mt. Jackson Feed & Seed Co., Indianapolis, Ind.	3	3		
Mt. Vernon Feed & Seed Co., Mt. Vernon, Ind.	3	3		
Mt. Vernon Milling Co., Mt. Vernon, Ind.	9	9		
Muff Grain & Coal Co., Liberty, Ind.	1		1	
Muller Milling Co., Ferdinand, Ind.	3	1	2	
Murphy Products Co., Burlington, Wis.	10	10		
Mutschler Packing Co., Fred, Decatur, Ind.	1	1		
Mutual Grain Co., Servia, Ind.	1	1		
Myers & Smith, Chili, Ind.	1	1		
Naber & Co., Chas. F., Alexandria, Ind.	6	6		
Napoleon Feed Mill, Napoleon, Ind.	3	3		1
Nappanee Milling Co., Nappanee, Ind.	6	6		
National Feed Co., St. Louis, Mo.	1	1		
National Ice & Products Co., New Albany, Ind.	4	4		1
National Live Stock Remedy Co., Chicago, Ill.	3	1	2	
National Milling Co., Toledo, Ohio	2	2		
Nelson Feed Co., Princeton, Ind.	4	4		
Neumond Co., The, St. Louis, Mo.	1	1		1
New Albany Milling Co., New Albany, Ind.	5	5		
New Castle Hatchery, Inc., New Castle, Ind.	2	2		
New Paris Creamery Co., New Paris, Ind.	2	1	1	
New Paris Elevator Co., New Paris, Ohio	7	5	1	1
New Paris Feed & Coal Co., New Paris, Ind.	2	2		
Newsome Feed & Grain Co., Pittsburgh, Pa.	6	6		
Niles Creamery Co., Niles, Mich.	1	1		
Noblesville Electric Hatchery, Noblesville, Ind.	4	3	1	
Noblesville Milling Co., Noblesville, Ind.	4	4		
Noblesville Rendering Co., Noblesville, Ind.	4	3	1	
Nora Grain & Coal Co., Nora, Ind.	22	20	2	
Norman & Roberts, G. M., Bedford, Ind.	4	4		
Northern Illinois Cereal Co., Lockport, Ill.	1		1	1
Northern Indiana Cooperative Association, Mentone, Ind.	3	2	1	
North Manchester Fertilizer Co., North Manchester, Ind.	1	1		
Nowak Milling Corp., Hammond, Ind.	1	1		
Nunn & Sons Milling Co., Chas., Evansville, Ind.	11	10	1	
Oakland City Milling Co., Oakland City, Ind.	4	4		
O'Brien Milling Co., Greenville, Ohio	2	2		1
Odon Milling Co., Odon, Ind.	6	5	1	
Orestes Fertilizer Co., Anderson, Ind.	1		1	
Owen Farmers Supply Co., Inc., Spencer, Ind.	2	1	1	
Palestine Mill, Palestine, Ind.	1	1		
Paoli Milling Co., Paoli, Ind.	1	1		
Paramount Canning Co., Kansas City, Mo.	1	1		1
Parke County Farm Bureau Cooperative Association, Rockville, Ind.	1		1	
Parke, Inc., Phillip R., San Pedro, Calif.	2	1	1	1
Pearl Packing Co., Madison, Ind.	2	1	1	
Pecos Valley Alfalfa Milling Co., Hagerman, New Mexico	4	4		
Penick & Ford, Ltd., Cedar Rapids, Ia.	3	2		2
Pennington Feed Store, Bloomington, Ind.	6	5	1	
Pennville Milling Co., Pennville, Ind.	5	5		
Peoples Cooperative Feed Store, Wolcott, Ind.	3	3		
Perkins Oil Co., Inc., Memphis, Tenn.	4	4		1
Perry County Farm Bureau, Tell City, Ind.	1		1	
Peru Grain & Coal Corp., Peru, Ind.	3	2	1	
Petersburg Milling & Grain Co., Petersburg, Ind.	2	2		
Pfeffer Milling Co., Lebanon, Ill.	2	2		
Phillips, J. C., Star City, Ind.	1	1		
Pho-So-Ash Products Corp., Kendallville, Ind.	3		3	
Pierceton Elevator Co., Pierceton, Ind.	1	1		
Pioneer Elevator Co., Worthington, Ind.	2	2		
Pittsburg Plate Glass Co., Red Wing, Minn.	1	1		
Plainville Mill & Elevator Co., Plainville, Ind.	3	3		2
Plymouth Fertilizer Co., Plymouth, Ind., R. R. 1	2	2		
Polk Sanitary Milk Co., Indianapolis, Ind.	2	2		
Porter County Farm Bureau Cooperative Association, Inc., Valparaiso, Ind.	2	2		
Portland Fertilizer Plant, Portland, Ind.	2	2		
Poseyville Grain & Feed Co., Inc., Poseyville, Ind.	8	5	3	
Postum Co., Inc., Battle Creek, Mich.	5	5		1
Powers, Wayne, Angola, Ind., R. R. 2	1	1		
Pratt Food Co., Hammond, Ind.	5	5		1
Price Fertilizer Co., Converse, Ind.	1			1
Procter & Gamble Distributing Co., Cincinnati, Ohio	1	1		1

Table 4.—Continued

NAME AND ADDRESS OF MANUFACTURER	Number of Samples Examined	Number of Samples Passed	Number of Samples Not Passed	Number of Samples Not Tagged
Producers Creamery, Marion, Ind.	2	2		
Purcell Seed Co., Evansville, Ind.	4	4		
Quaker Oats Co., Chicago, Ill.	7	6	1	1
Ragsdale & Co., Chas., Bedford, Ind.	2	2		
Ragsdale & Owen, Bedford, Ind.	1	1		
Rakestraw, H. E., Oakford, Ind.	1	1		
Ralston Purina Co., St. Louis, Mo.	46	45	1	4
Rankin & Co., M. G., Milwaukee, Wis.	1	1		
Rath Packing Co., Waterloo, Ia.	1	1		1
Rauh & Sons Animal Feed Co., E., Indianapolis, Ind.	5	5		
Read Phosphate Co., New Albany, Ind.	5	4	1	
Records, James L., Edinburg, Ind.	5	4	1	
Red Cedar Alfalfa Milling Co., Williamston, Mich.	6	4	2	
Red Key Grain Co., Red Key, Ind.	1	1		1
Red Mills, The, Fairland, Ind.	2	2		1
Reed Elevator Co., Decatur, Ind.	8	7	1	
Reese & Co., Wm., Mishawaka, Ind.	1	1		
Reising & Sons, N., Poseyville, Ind.	1	1		
Reveal & Beydler, Lebanon, Ind.	1	1		
Richmond Milling & Grain Co., Richmond, Ind.	8	5	3	
Riedling, R. D., Louisville, Ky.	2	1	1	2
Riverdale Products Co., Chicago, Ill.	23	21	2	1
Roberts Cotton Oil Mill, Cairo, Ill.	2		2	
Robinson Feed Co., Perrysville, Ind.	2	2		
Robinson Milling Co., Perrysville, Ind.	1	1		
Rochester Cooperative Elevator Co., Rochester, Ind.	1	1		
Rochester Fertilizer & Tankage Co., Rochester, Ind.	2	2		
Rolling Prairie Grain & Lumber Co., Rolling Prairie, Ind.	5	5		
Roper & Brown, Inc., Hobart, Ind.	1	1		
Rotex Milling Co., Cleveland, Ohio	2	2		
Rowe Sons Co., A., Terre Haute, Ind.	3	3		
Rund Packing Co., Lafayette, Ind.	4	1	3	
Rush County Mills, Rushville, Ind.	26	18	6	5
Russell & Martin, Elkhart, Ind.	1	1		
Russiaville Milling Co., Russiaville, Ind.	6	6		2
Ryde & Co., Chicago, Ill.	7	7		
Salamonie Mills, Warren, Ind.	1	1		
Sanitary Milk & Ice Cream Co., Peru, Ind.	1	1		
Santa Fe Elevator Co., Santa Fe, Ind.	3	3		
Saunders Mills, Inc., Toledo, Ohio	6	3	3	
Saxony Mills, St. Louis, Mo.	2	2		
Schaefer, John H., Columbus, Ind.	5	4	1	
Scheer's Electric Hatchery, Boonville, Ind.	6	6		
Schlemmer, John, Harrison, Ohio	3	3		
Schenkel & Schmitt Milling Co., Brookville, Ind.	1	1		1
Schlensker, C. F., Daylight, Ind.	4	4		
Schlosser Bros., Frankfort, Ind.	2	2		
Schmadel Packing & Ice Co., Evansville, Ind.	3	3		
Schnellville Flour Mills, Schnellville, Ind.	2	2		
Schultz-Baujan & Co., Beardstown, Ill.	8	7	1	4
Schultz Bros., Elberfeld, Ind.	7	7		
Schussler Packing Co., Indianapolis, Ind.	2	2		1
Scott & Son, Ed., West Terre Haute, Ind.	1		1	
Sears, Roebuck & Co., Chicago, Ill.	2	2		
Shavers Hatchery & Feed Store, Crawfordsville, Ind.	1	1		
Shaw Co., W. R., Orestes, Ind.	1	1		1
Shellabarger Grain Products Co., Decatur, Ill.	1	1		1
Sheridan Milling Co., Sheridan, Ind.	8	8		
Sherwin-Williams Co., Cleveland, Ohio	1	1		
Shine & Co., J. H., New Albany, Ind.	7	7		
Shirley, A. D., Walton, Ind.	1	1		
Shirley Fertilizer Co., Knightstown, Ind.	1	1		
Silver Lake Egg Farm & Hatchery, Silver Lake, Ind.	1	1		
Sims Milling Co., Frankfort, Ind.	4	3	1	
Smith, Wm. B., Logansport, Ind.	1	1		
Smith Agricultural Chemical Co., Indianapolis, Ind.	1	1		
Smith & Cascadden, Lapel, Ind.	2	2		
Southern Feed & Grain Co., Louisville, Ky.	1		1	
Southern Indiana Reduction Co., Salem, Ind.	8	7	1	
Southwestern Milling Division of Standard Milling Co., Kansas City, Mo.	1	1		1
Sparks Milling Co., Terre Haute, Ind.	2	2		
Spencer Fertilizer & Tankage Co., Spencer, Ind.	4	1	3	
Sprague-Warner & Co., Chicago, Ill.	1	1		1
St. Joe Flour Mills, St. Joe, Ind.	1	1		
Stadler Products Co., Cleveland, Ohio	8	6	2	
Stafford Grain Co., Hope, Ind.	4	4		

Table 4.—Continued

Name and Address of Manufacturer	Number of Samples Examined	Number of Samples Passed	Number of Samples Not Passed	Number of Samples Not Tagged
Stahl Packing Co., Evansville, Ind.	2	2		
Standard Fertilizer Co., Greensburg, Ind.	1		1	
Standard Hatcheries, Terre Haute, Ind.	2	2		
Stanley Feed Co., Salem, Ind.	3	3		
Star Milling Co., Shoals, Ind.	1	1		
Star Roller Mills, Burlington, Ind.	3	3		
Starr Mills, South Bend, Ind.	6	6		
Steckley's Feed Mills, Kendallville, Ind.	5	5		1
Steeb, William, Crown Point, Ind.	1	1		
Steventon Bros., Rockville, Ind.	4	4		
Stockton Co., Morgantown, Ind.	3	2	1	
Stolle & Sons, Anton, Richmond, Ind.	2	2		
Strait & Son Milling Co., Asa, Nashville, Mich.	9	5	4	
Strauch, Albert H., Royal Center, Ind.	2	1	1	
Strauss & Sons, J. W., North Manchester, Ind.	1			1
Sugar Creek Creamery Co., Danville, Ill.	1		1	
Sugar Creek Grain Co., Thorntown, Ind.	4	3	1	
Sullivan Fertilizer Co., Sullivan, Ind.	3	3		
Sunman Flour Mills, Sunman, Ind.	1	1		
Sunnyside Milling Co., Evansville, Ind.	3	3		
Sunshine Farms, Inc., Lafayette, Ind.	2	2		
Sunshine Feed Store, Scottsburg, Ind.	5	5		
Sunshine Store, Terre Haute, Ind.	1	1		
Sunshine Stores, Inc., Ft. Wayne, Ind.	1	1		
Swarthout, Jacob, Vernon, Ind.	1	1		
Swayzee Grain Co., Swayzee, Ind.	2	2		
Swift & Co., Chicago, Ill.	23	22	1	2
Swift & Co. Oil Mill, Memphis, Tenn.	1	1		1
Syler & Syler, Nappanee, Ind.	2	2		
Syler & Syler, Plymouth, Ind.	2	1	1	
Tarkio Molasses Feed Co., Kansas City, Mo.	1	1		1
Tell City Flouring Mills, Tell City, Ind.	9	8	1	
Terre Haute Abattoir & Stock Yards Co., Terre Haute, Ind.	2	2		
Terre Haute Brewing Co., Inc., Terre Haute, Ind.	1	1		
Terre Haute Grease & Tallow Factory, Terre Haute, Ind.	5	4	1	
Thomas Milling Co., Marion, Ind.	8	8		
Thornburg Milling & Elevator Co., Martinsville, Ind.	1	1		
Three-Minute Cereal Co., E. St. Louis, Ill.	1			1
Tipton County Farm Bureau Cooperative Association, Tipton, Ind.	2	1		1
Tipton Milling Company, Tipton, Ind.	3	3		
Topeka Roller Mill, Topeka, Ind.	2	2		
Tower & Merryman, Marengo, Ind.	2	2		
Tri-State Cooperative Association, Montgomery, Mich.	1	1		1
Tri-State Fertilizer & Feed Mills, Inglefield, Ind.	1		1	
Tucker Feed & Grist Mill, Springville, Ind.	8	6	2	2
Tuholski, Albin A., Michigan City, Ind.	2	1	1	
Uhl-Snider Milling Co., Connersville, Ind.	4	4		1
Union Mills, Wabash, Ind.	2	2		
Valentine & Co., Terre Haute, Ind.	3	3		
Valier & Spies Milling Corp., St. Louis, Mo.	1	1		
Vanek Bros., North Judson, Ind.	3	3		
Veedersburg Grain Co., Veedersburg, Ind.	2	2		
Vermillion County Farmers, Inc., Dana, Ind.	2	2		
Vevay Flour Mills, Vevay, Ind.	4	2	2	
Victoria Mill & Elevator Co., Jasper, Ind.	4	4		
Victory Packing Co., Oakland, Calif.	1	1		1
Vigo County Farm Bureau Cooperative Association, Inc., Terre Haute, Ind.	1	1		1
Vitality Mills, Inc., Chicago, Ill.	3	3		2
Vogel Bros., Seymour, Ind.	5	5		
Wachtel Co., John, Indianapolis, Ind.	10	9	1	
Wadley Company, The, Indianapolis, Ind.	1	1		
Wakarusa Milling Co., Wakarusa, Ind.	1	1		
Walker & Co., Peter M., Washington, Ind.	1	1		
Walsh & Co., Inc., James, Lawrenceburg, Ind.	1		1	
Ward Dry Milk Co., St. Paul, Minn.	2	2		
Warren Elevator Co., Warren, Ind.	1	1		
Warsaw Milling & Grain Co., Warsaw, Ind.	2	2		
Washburn-Crosby Co., Minneapolis, Minn.	1	1		1
Washington County Farm Bureau Cooperative Association, Salem, Ind.	7	7		
Waterloo Mills, Waterloo, Ind.	4	4		
Walter Grain Co., Auburn, Ind.	1	1		
Walton Elevator Co., Walton, Ind.	1	1		
Wayne Distributors, Inc., Ft. Wayne, Ind.	6	2	4	
Weber Milling Co., Brookville, Ind.	5	5		

Table 4.—Continued

Name and Address of Manufacturer	Number of Samples Examined	Number of Samples Passed	Number of Samples Not Passed	Number of Samples Not Tagged
Wedeking & Co., C. W., Dale, Ind.	2	2		
Welborn-Holland Co., Frankton, Ind.	3	1	1	2
Weller, Gordon, Macy, Ind.	1	1		
Wellington Milling Co., Anderson, Ind.	7	7		
Western Feed & Coal Exchange, Newcastle, Ind.	1	1		
Westville Hammer Mill, Westville, Ind.	1	1		
Wheatland Grain Co., Wheatland, Ind.	2	2		
Wheatland Milling Co., Wheatland, Ind.	1	1		
White & Co., Sherman, Goodland, Ind.	2	2		
Wildcat Roller Mills, Cutler, Ind.	5	4	1	
Williams Electric Hatchery, Elwood, Ind.	1	1		
Wilson & Co., Chicago, Ill.	10	9	1	1
Wilson Grain & Coal Co., Rochester, Ind.	1	1		
Wilson Grain Co., Sulphur Springs, Ind.	2	2		
Winders, J. G., Arcadia, Ind.	1	1		1
Wiseman & Son, W. H. P., Corydon, Ind.	1	1		
Witte Milling Co., Dale, Ind.	7	5	2	
Wolf Grain Co., Shipshewana, Ind.	3	3		
Wolf & Son Hatchery & Feed Co., North Judson, Ind.	10	10		
Woodbury Elliott Grain Co., Muncie, Ind.	1	1		
Woodstock Mills, Seymour, Ind.	1	1		
Worthington Grain Co., Worthington, Ind.	1	1		
Wuichet Fertilizer Co., Dayton, Ohio	2	2		
Wyatt Grain Co., Wyatt, Ind.	3	3		
Ziliak & Schafer Milling Co., Evansville, Ind.	20	20		
Ziliak & Schafer Milling Co., Haubstadt, Ind.	4	4		
Zionsville Grain Co., Zionsville, Ind.	3	3		

Attention Manufacturers, Dealers and Consumers!

The Official State tag required by the Indiana Feed Law bears the facsimile signature of the State Chemist and states the manufacturer's guarantee. Manufacturers and dealers should not neglect to attach these Official Indiana tags to each and every bag of feed sold or offered for sale in Indiana.

Batch-mixing is permitted without registering and tagging of the final product, only when the purchaser or his agent actually comes to the mixing plant, makes a bona fide purchase of properly tagged ingredients, sees them before the mixing is done, and also assures himself that they are mixed according to the formula furnished. Unless the above conditions are fulfilled, all feed mixed according to formulas submitted must be registered for sale in Indiana and properly tagged with Official Indiana State tags.

Feed manufacturers when packing feeding stuffs in printed second-hand bags are requested to turn the bags inside out so that the original printing or stenciling will not be exposed.

Feed manufacturers when registering commercial feeding stuffs are requested to follow the following resolutions which have been adopted by the Association of American Feed Control Officials:

"Resolved, That this Association go on record as condemning the use of the word 'vitamin' in a brand name, and as opposing the acceptance of registration of feeds with this word in the brand name. (Adopted 1929.)"

"Resolved, That this Association go on record as condemning the use of any contraction of the word 'vitamin,' or any word suggesting vitamin in a brand name, and as opposing the acceptance of registrations of feeds under names which are in conflict with this resolution. (Adopted 1932.)"

For the benefit of manufacturers of mineral feeds and those interested in maintaining a definite calcium and phosphorus ratio in their feeds, Table 5 is again presented. The percentages are stated not only in terms of calcium and phosphorus, but also in terms of lime (CaO) and phosphoric acid (P_2O_5).

Table 5.—Calcium and Phosphorus Content of Feeding Stuffs

MATERIAL	Calcium (Ca)%	Lime (CaO)%	Phosphorus (P)%	Phosphoric Acid (P_2O_5)%
Alfalfa meal	1.22	1.70	0.23	0.53
Brewers' dried grains	0.16	0.22	0.45	1.03
Buttermilk dried	2.43	3.40	0.96	2.20
Corn	0.01	0.02	0.28	0.65
Corn gluten feed	0.25	0.35	0.27	0.62
Cottonseed meal	0.26	0.37	1.26	2.89
Cowpeas	0.10	0.14	0.45	1.02
Distillers' grain corn	0.04	0.06	0.29	0.67
Fish meal (20.0% ash)	6.65	9.30	3.50	8.00
Hominy feed	0.03	0.04	0.45	1.03
Linseed oil meal	0.36	0.51	0.72	1.65
Malt sprouts	0.15	0.21	0.70	1.61
Meat and bone scraps (30.0% ash)	11.18	15.64	5.06	11.58
Meat scraps (22.0% ash)	8.19	11.46	3.71	8.49
Oats	0.10	0.14	0.37	0.85
Skimmed milk dried	1.29	1.80	0.96	2.20
Soybeans	0.21	0.29	0.60	1.37
Soybean oil meal	0.27	0.38	0.76	1.75
Tankage digester (20.0% ash)	7.10	9.93	3.21	7.35
Wheat	0.04	0.06	0.38	0.86
Wheat bran	0.09	0.13	1.20	2.74
Wheat middlings	0.07	0.10	0.90	2.06
Wheat red dog flour	0.12	0.17	0.85	1.95
Bone meal steamed	28.60	40.00	13.11	30.00
Bone black	28.60	40.00	13.11	30.00
Dicalcium phosphate	22.88	32.00	17.48	40.00
Rock phosphate	28.60	40.00	13.11	30.00
Super phosphate 16%	17.16	24.00	6.99	16.00
Super phosphate 20%	17.88	25.00	8.74	20.00
Phosphatic limestone	35.75	50.00	4.37	10.00
Limestone (95% calcium carbonate)	37.90	53.00	....	....
Oyster shells (95% calcium carbonate)	37.90	53.00	....	....
Wood ashes	21.45	30.00	....	....
Gypsum	25.03	35.00	....	....

Table 6, entitled "Analyses of Cereals and By-Products," may also be helpful to manufacturers in calculating safe guarantees for their feed formulas. Although the percentages of Ash and Nitrogen Free Extract are not required on the official tag, they are included in Table 6 this year in response to numerous requests.

Table 6.—Analyses of Cereals and By-Products

MATERIAL	POUNDS IN ONE HUNDRED				
	Crude Protein	Crude Fat	Crude Fiber	Ash	Nitrogen Free Extract
Alfalfa leaf meal	20.0	2.5	18.0	12.0	40.0
Alfalfa meal	13.0	1.5	33.0	9.0	35.0
Alfalfa stem meal	9.0	0.8	40.0	7.5	32.0
Barley	11.0	1.8	6.0	2.5	69.0
Beet pulp	8.5	0.9	19.0	3.5	59.0
Blood meal	80.0	0.5	....	3.3	3.0
Bone meal raw	23.0	3.0	2.0	60.0	3.0
Bone meal steamed	6.0	0.5	2.0	80.0	2.0
Brewers dried grains	26.0	6.0	15.0	3.8	41.0
Buckwheat	10.5	2.5	10.0	2.0	62.0
Buckwheat middlings	28.8	7.3	6.0	4.8	43.0
Buckwheat mixed feed	13.0	3.2	28.5	3.2	40.0
Buttermilk condensed	10.0	2.0	....	3.7	12.0
Buttermilk dried	32.0	5.0	....	12.0	43.0
Cane seed	9.0	2.5	2.5	2.0	71.0
Charcoal	....	....	80.0	3.5	....
Cocoanut oil meal	22.0	8.0	9.0	5.5	45.0
Cod liver oil	....	100.0	....	....	....
Corn	9.5	4.0	2.0	1.5	72.0
Corn ear	8.0	3.5	8.0	1.5	67.0
Corn cob	2.0	0.5	32.0	1.5	54.0

Table 6.—Continued

MATERIAL	POUNDS IN ONE HUNDRED				
	Crude Protein	Crude Fat	Crude Fiber	Ash	Nitrogen Free Extract
Corn bran	7.0	2.5	10.0	2.5	67.0
Corn feed meal	9.0	3.5	1.5	1.0	74.0
Corn mill feed	11.0	7.5	4.0	2.5	65.0
Corn germ meal	20.0	8.0	8.0	2.5	50.0
Corn gluten feed	25.0	2.5	7.0	2.0	53.0
Corn gluten meal	40.0	1.0	2.0	1.0	46.0
Cottonseed meal 43% protein	43.0	5.2	12.0	5.5	27.0
Cottonseed meal 41% protein	41.0	5.0	13.0	5.7	28.0
Cottonseed meal 36% protein	36.0	4.5	16.0	6.1	29.5
Cottonseed feed	23.0	4.0	22.0	4.5	35.0
Cottonseed hulls	4.5	1.8	44.0	2.7	37.0
Cowpeas	23.0	1.5	4.0	3.5	56.0
Distillers dried grains corn	28.0	9.0	12.0	3.0	40.0
Emmer (spelt)	11.5	2.0	10.0	3.0	63.0
Fish meal	60.0	5.0	2.0	20.0	3.0
Flax plant by-product	15.0	2.0	31.0	5.0	38.0
Flaxseed	22.0	32.0	7.0	4.5	23.0
Flaxseed screenings	14.0	8.0	14.0	8.5	45.0
Hominy feed or meal	11.0	6.0	6.0	3.0	65.0
Kafir corn	10.5	2.5	2.5	1.7	70.0
Kelp dried	8.0	1.0	9.0	42.0	32.0
Linseed oil meal old process	34.0	6.0	8.0	5.5	36.0
Malt sprouts	27.0	1.3	12.5	6.0	45.0
Meat and bone scraps	50.0	6.0	3.0	30.0	2.0
Meat scraps 55% protein	55.0	9.0	3.0	22.0	2.0
Millet seed	11.0	3.5	9.5	3.2	64.0
Milo	10.5	2.5	2.5	1.7	70.0
Molasses beet	3.0	......	......	10.0	63.0
Molasses cane	3.0	......	......	8.0	65.0
Oats	11.0	4.0	11.0	3.5	60.0
Oat-clipped by-product	9.0	2.0	30.0	12.0	40.0
Oat groats or meal	15.0	6.5	2.0	2.0	67.0
Oat hulls	4.0	1.5	32.0	6.0	51.0
Oat middlings	15.0	5.0	5.0	3.2	62.0
Oat mill feed	6.0	2.0	28.0	5.0	52.0
Peanut oil feed	30.0	6.0	25.0	4.5	23.0
Peanut oil meal	40.0	6.0	6.0	5.0	30.0
Peanut shells or hulls	5.5	1.2	70.0	5.5	12.0
Rice	8.0	2.0	9.0	4.0	67.0
Rice bran	12.0	12.0	12.0	10.0	45.0
Rice hulls	3.0	0.5	36.0	16.5	34.0
Rye	11.5	1.5	2.0	2.0	73.0
Rye feed	16.0	3.5	5.0	4.0	62.0
Skimmed milk dried	34.0	0.5	......	8.0	50.0
Soybeans	36.0	19.0	5.0	5.0	26.0
Soybean oil meal	41.0	6.0	6.0	5.0	32.0
Sunflower seed	16.0	19.0	30.0	3.0	22.0
Sunflower seed oil meal	21.0	10.0	32.0	4.0	28.0
Tankage 60% protein	60.0	6.0	3.0	20.0	2.0
Velvet bean feed	19.0	4.0	17.0	4.0	48.0
Wheat	12.0	2.0	2.4	1.9	71.0
Wheat bran soft	14.5	3.5	10.0	6.0	56.0
Wheat standard middlings	16.0	4.0	9.5	4.5	56.0
Wheat flour middlings	16.0	4.0	6.0	3.5	60.0
Wheat white middlings	14.0	3.0	3.5	1.5	68.0
Wheat reddog flour	15.0	3.0	4.0	1.5	67.0
Wheat low grade feed flour	12.0	1.5	1.5	1.0	74.0
Wheat mixed feed	15.0	3.5	8.5	5.0	58.0
Whey dried	12.0	0.5	......	8.0	72.0

It is important that all of the terms used in the analysis of feeding stuffs and also the definitions of the various classes of feeding stuffs be thoroughly understood by the feed trade; therefore, this information is given in detail on the remaining pages of this circular.

Explanation of Terms Used in the Analysis of Feeding Stuffs

Moisture is the varying quantity of water occurring in feeding stuffs which can be driven off by heat at the temperature of boiling water. The amount of water present varies with the temperature, moisture content of the air, processes of manufacture and the character of the substance. In most concentrates this value ranges from 5 to 15 per cent.

Crude Fat consists mainly of fats and oils with small amounts of waxes, resins, coloring matter and similar substances, dissolved from feeding stuffs by dry ether. In calculating the heat and energy value of a feed, the fat is considered 2.25 times greater than that of either carbohydrates or protein.

Crude Protein is the term applied to the nitrogenous constituents of a feeding stuff. It is obtained by multiplying the total nitrogen by 6.25. Protein is the most important as well as the most costly constituent in a feed. Plants have the power of building up protein from the inorganic elements of the soil and air while animals must secure their protein from the plants or other animals. The plant proteins contain varying amounts of the essential amino acids; therefore, it is necessary to carefully select a variety of feeds which will furnish the essential amino acids economically.

Crude Fiber is the woody portion of a feeding stuff, for the most part cellulose, and is insoluble in dilute acids and alkalis. Most of the common seeds and grains contain very little fiber while the hulls, husks and stems are high in this constituent. In poultry and swine, crude fiber, when present in considerable quantities, exerts a retarding influence on the digestion of nutrients present.

Ash, the mineral matter of plants, is the residue left after burning a feeding stuff at low redness. It consists chiefly of the phosphates, sulphates, chlorides and carbonates of sodium, potassium, calcium and magnesium. The calcium and phosphorus are absolutely essential for the proper nutrition of the animal.

Nitrogen Free Extract consists of sugars, starches, pentoses, non-nitrogenous organic acids, etc., and is determined by subtracting the sum of moisture, crude fat, crude protein, crude fiber and ash from 100.

Carbohydrates is the sum of the crude fiber and nitrogen-free extract.

DEFINITIONS OF FEEDING STUFFS*

Alfalfa Products

1. **Chopped Alfalfa** is the entire alfalfa hay, chopped and not ground finely enough to become a meal. It must not contain an admixture of alfalfa straw or other foreign material. (Adopted prior to 1928.)

2. **Alfalfa Meal** is the product obtained from the grinding of the entire alfalfa hay, without the addition of any alfalfa stems, alfalfa straw or foreign material, or the abstraction of leaves. It must be reasonably free from other crop plants and weeds, and must not contain more than 33 per cent of crude fiber. (Adopted 1928.)

3. **Alfalfa Leaf Meal** is the ground product consisting chiefly of leafy materials separated from alfalfa hay. It must be reasonably free from other crop plants and weeds and must not contain more than 18 per cent of crude fiber. (Adopted 1928.)

4. **Alfalfa Stem Meal** is the ground product remaining after the separation of the leafy material from alfalfa hay or meal. It must be reasonably free from other crop plants and weeds. (Adopted 1928.)

Animal Products

5. **Blood Meal** is ground, dried blood. (Adopted 1926.)

6. **Blood Flour** is dried blood, prepared by special processes and reduced to a fine powder. (Adopted prior to 1928.)

7. **Digester Tankage, Meat Meal Tankage or Feeding Tankage** is the residue from animal tissues exclusive of hoof, horn, manure and stomach

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* These definitions have been adopted by the Association of American Feed Control Officials.

contents, except in such traces as might occur unavoidably in good factory practice, especially prepared for feeding purposes by tanking under live steam or by dry rendering or a mixture of the products made suitable by drying and grinding. It must not contain more than 10 per cent of phosphoric acid (expressed as P_2O_5). If it bears a name descriptive of its kind, composition or origin, the material must correspond thereto. (Adopted 1928; amended 1933.)

8. **Digester Tankage with Bone, Meat and Bone Meal Digester Tankage, Meat and Bone Meal Tankage, or Feeding Tankage with Bone** is the residue from animal tissues, exclusive of hoof, horn, manure and stomach contents, except in such traces as might occur unavoidably in good factory practice, especially prepared for feeding purposes by tanking under live steam or by dry rendering or a mixture of the products made suitable by drying and grinding, and containing more than 10 per cent of phosphoric acid (expressed as P_2O_5). If it bears a name descriptive of its kind, composition or origin, it must correspond thereto. Adopted 1928; amended 1933.)

9. **Meat Scraps** is the ground, dry-rendered residue from animal tissues, exclusive of hoof, horn, manure and stomach contents, except in such traces as might occur unavoidably in good factory practice. When this product contains more than 10 per cent of phosphoric acid (expressed as P_2O_5), it shall be designated Meat and Bone Scrap. If it bears a name descriptive of its kind, composition or origin, it must correspond thereto. (Adopted 1928.)

10. **Raw Bone Meal** is the dried, ground product suitable for animal feeding, obtained by cooking in water at atmospheric pressure, undecomposed bone, just enough to remove excess fat and meat. It must not contain less than 23 per cent of protein. (Adopted 1929.)

11. **Steamed Bone Meal** is the dried, ground product suitable for animal feeding obtained by cooking bones with steam under pressure. (Adopted 1929.)

12. **Special Steamed Bone Meal** is the dried, ground product suitable for animal feeding, obtained by cooking dried bone after the removal of grease and meat fiber with steam under pressure in the process of obtaining gelatine or glue. (Adopted 1929.)

Apple Products

13. **Dried Apple Pomace** is the sound, dried residue obtained by the removal of cider from apples. (Adopted 1929.)

14. **Dried Apple Pectin Pulp** is the sound, dried residue obtained by the removal of pectin from apple products. (Adopted 1929.)

Barley Products

15. **Barley Hulls** is the product consisting of the outer coverings of the barley. (Adopted prior to 1928.)

16. **Barley Feed** is the entire by-product resulting from the manufacture of pearl barley from clean barley. (Adopted prior to 1928.)

17. **Barley Mixed Feed** is the entire offal from the milling of barley flour from clean barley and is composed of barley hulls and barley middlings. (Adopted prior to 1928.)

18. **Ground Barley** is the entire product obtained by grinding clean, sound barley containing not less than 90 per cent of pure barley and not more than 10 per cent of other grains, weed seeds and other foreign material and not more than 6 per cent of crude fiber; provided that no portion of this stated 10 per cent of other grains, weed seeds or other foreign material shall be intentionally added. (Adopted prior to 1928.)

19. **Mixed Feed Barley** is the entire product obtained by grinding coun-

try-run barley, containing not less than 75 per cent of pure barley and not more than 25 per cent of other grains, weed seeds and other foreign material; provided that no portion of this stated 25 per cent of other grains, weed seeds or foreign material shall be intentionally added. The ingredients must be stated as barley, other grains, weed seeds and foreign material. (Adopted prior to 1928.)

Beet Products

20. **Dried Beet Pulp** is the dried residue from sugar beets which have been cleaned and freed from crowns, leaves and sand, and from which the sugar has been extracted. (Adopted prior to 1928.)

Brewers' and Distillers' Products

21. **Brewers' Dried Grains** is the dried residue obtained in the manufacture of beer. (Adopted prior to 1928.)

22. **Distillers' Corn Dried Grains or Distillers' Rye Dried Grains** is the dried residue obtained in the manufacture of alcohol and distilled liquors. The product must bear the designation indicating the cereal predominating. (Adopted prior to 1928.)

23. **Distillers' Corn Solubles** is a by-product from the manufacture of alcohol from corn solids obtained by the evaporation of the mash liquor after the removal of the alcohol and wet grains. (Adopted prior to 1928.)

24. **Distillers' Rye Solubles** is a by-product from the manufacture of alcohol from rye solids, obtained by the evaporation of mash liquor after the removal of the alcohol and wet grains. (Adopted prior to 1928.)

25. **Distillers' Corn and Rye Solubles** is a by-product from the manufacture of alcohol from corn and rye solids, obtained by the evaporation of mash liquor after the removal of the alcohol and wet grains. (Adopted prior to 1928.)

26. **Malt Sprouts** are the sprouts of the barley grain obtained from malted barley. Sprouts derived from any other malted cereal must be designated by the name of that cereal. (Adopted prior to 1928.)

27. **Yeast Dried Grains or Vinegar Dried Grains** is the properly dried residue from the mixture of cereals, malt and malt sprouts (sometimes cottonseed meal) obtained in the manufacture of yeast or vinegar, and consists of corn or corn and rye from which most of the starch has been extracted, together with malt added during the manufacturing process to change the starch to sugars, and malt sprouts (sometimes cottonseed meal) added during the manufacturing process to aid in filtering the residue from the wort and to serve as a source of food supply for the yeast. (Adopted prior to 1928.)

Buckwheat Products

28. **Buckwheat Shorts or Buckwheat Middlings** are the portions of the buckwheat grain immediately inside the hull secured after separation from the flour. (Adopted prior to 1928.)

Chop

29. **Chop** is a ground or chopped feed composed of one or more different cereals or by-products thereof. If it bears a name descriptive of the kind of cereals, it must be made exclusively of the entire grains of those cereals. (Adopted prior to 1928.)

Cocoanut Products

30. **....Per Cent Protein Cocoanut Oil Meal or....Per Cent Protein Copra Oil Meal** is the ground residue from the extraction of part of the oil from the dried meat of the cocoanut. (Adopted prior to 1928.)

Corn Products

31. **Corn Meal** (Feeding) is finely ground, unbolted corn. (Adopted prior to 1928.)

32. **Corn Bran** is the outer coating of the corn kernel, with little or none of the starchy part or germ. (Adopted 1931.)

33. **Corn Feed Meal** is the fine siftings obtained in the manufacture of screened corn chop, screened ground corn or screened cracked corn, with or without its aspiration products added. (Adopted 1931.)

34. **Corn Chop, Ground Corn or Cracked Corn** is the entire product made by grinding, cutting or chopping the grains of sound Indian corn, and may be fine, medium or coarse, and must not contain more than 4 per cent of foreign material. (Adopted 1931.)

35. **Screened Corn Chop, Screened Ground Corn, or Screened Cracked Corn** is the coarse portion of corn chop, ground corn or cracked corn from which most of the fine particles have been removed, and must not contain more than 4 per cent of foreign material. (Adopted 1931.)

36. **Corn Grits or Hominy Grits** is the product consisting of the fine or medium sized, hard flinty portions of sound Indian corn containing little or none of the bran or germ. (Adopted 1931.)

37. **Ear Corn Chops** is corn and cob chopped, without the husk, with no greater proportion of cob than occurs in the ear corn in its natural state. (Adopted prior to 1928.)

38. **Corn Gluten Meal** is that part of commercial shelled corn that remains after the separation of the larger part of the starch, the germ and the bran, by the processes employed in the manufacture of corn starch. It may or may not contain corn solubles. (Adopted prior to 1928.)

39. **Corn Gluten Feed** is that part of commercial shelled corn that remains after the separation of the larger part of the starch and the germs by the processes employed in the manufacture of corn starch. It may or may not contain corn solubles. (Adopted prior to 1928.)

40. **Maltose Process Corn Gluten Feed** is the dried residue from degermed corn, after removal of the starch in the manufacture of malt syrup. (Adopted prior to 1928.)

41. **Hominy Feed, Hominy Meal or Hominy Chop** is the kiln-dried mixture of the mill-run bran coating, the mill-run germ, with or without a partial extraction of the oil, and a part of the starchy portion of the white corn kernel obtained in the manufacture of hominy, hominy grits, and cornmeal by the degerming process. (Adopted prior to 1928.)

42. **Yellow Hominy Feed, Yellow Hominy Meal or Yellow Hominy Chop** is the kiln-dried mixture of the mill-run bran coating, the mill-run germ, with or without a partial extraction of the oil, and a part of the starchy portion of the yellow corn kernel obtained in the manufacture of yellow hominy grits and yellow corn meal by the degerming process. (Adopted prior to 1928.)

43. **Corn Oil Cake** consists of the corn germ from which part of the oil has been pressed and is the product obtained in the wet milling process of manufacture of corn starch, corn syrup, and other corn products. (Adopted prior to 1928.)

44. **Corn Oil Meal** is ground corn oil cake. (Adopted prior to 1928.)

45. **Corn Germ Cake** consists of corn germ with other parts of the corn kernel from which part of the oil has been pressed, and is the product obtained in the dry milling process of manufacture of corn meal, corn grits, hominy feed, and other corn products. (Adopted prior to 1928.)

46. **Corn Germ Meal** is ground corn germ cake. (Adopted prior to 1928.)

47. **Corn Screenings** is the product consisting of the small light grains of

corn, parts of grains of corn and/or other cereals, and other materials having feeding value, obtained by screening shelled corn, excluding sand, dirt and other similar inert materials. (Adopted 1931.)

Cottonseed Products

48. **Cottonseed Meal** is a product of the cottonseed only, composed principally of the kernel with such portion of the hull as is necessary in the manufacture of oil; provided that nothing shall be recognized as cottonseed mea that does not conform to the foregoing definition and that does not contain at least 36 per cent of protein. Cottonseed meal shall be graded and classed as follows: (Adopted prior to 1928.)

49.....**Per Cent Protein Cottonseed Meal, Prime Quality.** Cottonseed meal prime quality, must be finely ground, not necessarily bolted, of sweet odor reasonably bright in color, yellowish, not brown or reddish, free from excessive lint, and shall contain not less than 36 per cent of protein. It must be designated and sold according to its protein content. Cottonseed meal with 36 per cent of protein must be termed "36 per cent Protein Cottonseed Meal, Prime Quality," and higher grades similarly designated (as "43 per cent Protein Cottonseed Meal, Prime Quality"), etc. (Adopted prior to 1928.)

50.....**Per Cent Protein Cottonseed Meal, Off Quality.** Cottonseed meal not fulfilling the above requirement as to color, odor and texture must be graded "36 per cent Protein Cottonseed Meal, Off Quality," and higher grades similarly designated. (Adopted prior to 1928.)

51. **Cottonseed Feed** is a mixture of cottonseed meal and cottonseed hulls containing less than 36 per cent of protein. (Adopted prior to 1928.)

52.....**Per Cent Protein Whole Pressed Cottonseed**, Prime Quality, is the product resulting from subjecting the whole, sound, mature, clean undecorticated cottonseed to pressure for the extraction of oil, and includes the entire cottonseed less the oil extracted and the lint removed. It must be dsignated and sold according to its protein content. (Adopted 1932.)

53.....**Per Cent Protein Ground Whole Pressed Cottonseed,** Prime Quality is whole pressed cottonseed, ground. It must be designated and sold according to its protein content. (Adopted 1932.)

Garbage

54. **Processed Garbage** is composed of dried animal and vegetable waste from garbage collected sufficiently often that harmful decomposition has not set in, and separated from material such as crockery and glass. Its odor must not be suggestive of the presence of decomposition and it must contain less than one per cent of glass. None of it shall contain knife-like or needle-like particles, and the maximum percentage of glass should be stated on the label when present in excess of one-fifth of one per cent. (Adopted prior to 1928.)

Ivory Nut Products

55. **Ivory Nut Meal** is the ground waste material resulting from the manufacture of buttons and similar articles from the vegetable ivory nut. (Adopted prior to 1928.)

Linseed and Flax Products

56.....**Per Cent Protein Linseed Cake or Linseed Meal** is the product obtained in the removal of the oil from flaxseed; provided that the final product contains less than 6 per cent of weed seeds and other foreign materials; and provided, further, that no portion of the stated 6 per cent of weed seeds and other foreign materials shall be deliberately added. It shall not contain more than 0.5 per cent of acid insoluble ash. (Adopted 1933.)

57.....**Per Cent Protein Old Process Oil Meal or....Per Cent Protein Old**

Process Linseed Meal is oil meal as defined below, produced by crushing, cooking and hydraulic pressure. (Adopted prior to 1928.)

58.....**Per Cent Protein New Process Oil Meal or....Per Cent Protein New Process Linseed Meal** is oil meal as defined below, produced by crushing, heating and the use of solvents. (Adopted prior to 1928.)

59. **Flax Plant By-Product** is that portion of the flax plant remaining after the separation of the seed, the bast fibre and a portion of the shives, and consists of flax shives, flax pods, broken and immature flax seeds, and the cortical tissues of the stem. (Adopted prior to 1928.)

60. **Ground Flaxseed or Flaxseed Meal** is the product obtained by grinding flaxseed which has been screened and cleaned of weed seeds and other foreign materials by the most improved commercial process; the final product must contain less than 4 per cent of weed seeds and other foreign materials, and no portion of the stated 4 per cent of weed seeds and other foreign materials shall be intentionally added. (Adopted prior to 1928.)

61. **Unscreened Flaxseed Oil Feed Cake** is the product obtained by extraction of part of the oil from unscreened flaxseed by crushing, cooking and hydraulic pressure, or by crushing, heating and the use of solvents. The ingredients must be stated as "partially extracted flaxseed and foreign seeds (wheat, wild buckwheat, pigeon grass, wild mustard, etc.)." (Adopted prior to 1928.)

62. **Ground Unscreened Flaxseed Oil Feed** is the ground unscreened flaxseed oil feed cake. (Adopted prior to 1928.)

63. **Screenings Oil Feed** is the ground product obtained after extraction of part of the oil by crushing, cooking and hydraulic pressure, or by crushing, heating and the use of solvents from the smaller imperfect flaxseed, weed seeds and other foreign materials having feeding value, separated in cleaning flaxseed. The name of the grain from which the screenings are separated must be prefixed to "screenings oil feed." (Adopted prior to 1928.)

64.....**Per Cent Protein Oil Cake** is the product obtained after the extraction of part of the oil by crushing, cooking, and hydraulic pressure, or by crushing, heating and the use of solvents, from flaxseed which have been screened and cleaned of weed seeds and other foreign materials by the most improved commercial process. When used alone the term "Oil Cake" shall be understood to designate linseed cake as defined. When used to cover any other product the name of the seed from which it is obtained must be prefixed to the words "Oil Cake." (Adopted prior to 1928.)

65.....**Per Cent Protein Oil Meal or....Per Cent Protein Ground Oil Cake** is oil cake ground to a meal. (Adopted prior to 1928.)

Marine Products

66. **Fish Meal** (Feeding) is clean, dried, ground tissues of undecomposed whole fish and/or fish cuttings with or without the extraction of part of the oil, and contains not more than 3 per cent of salt (NaCl). If it contains more than 3 per cent of salt (NaCl) the amount of salt must constitute a part of the brand name, provided that in no case shall the salt content of this product exceed 7 per cent. (Adopted 1933.)

67. **Fish Residue Meal** (Feeding) is the clean, dried, undecomposed residue from the manufacture of glue from non-oily fish, and contains not more than 3 per cent of salt (NaCl). If it contains more than 3 per cent of salt (NaCl) the amount of salt must constitute a part of the brand name, provided that in no case shall the salt content of this product exceed 7 per cent. (Adopted 1933.)

68. **Crab Meal** (Feeding) is prepared from the undecomposed dried waste of the crab industry and contains the shell, viscera and part or all of the flesh. It contains not less than 25 per cent of protein and not more than 3 per cent of salt (NaCl). If it contains more than 3 per cent of salt (NaCl) the amount

of salt must constitute a part of the brand name, provided that in no case shall the salt content of this product exceed 7 per cent. (Adopted 1933.)

69. **Shrimp Meal** (Feeding) is prepared from the undecomposed dried waste of the shrimp industry and contains the heads, hull and/or the whole shrimp and not more than 3 per cent of salt (NaCl). If it contains more than 3 per cent of salt (NaCl) the amount of salt must constitute a part of the brand name, provided that in no case shall the salt content of this product exceed 7 per cent. (Adopted 1933.)

70. **Whale Meal** (Feeding) is prepared from the clean, dried undecomposed flesh of the whale, after part of the oil has been extracted. It contains not more than 3 per cent of salt (NaCl). If it contains more than 3 per cent of salt (NaCl) the amount of salt must constitute a part of the brand name, provided that in no case shall the salt content of this product exceed 7 per cent. (Adopted 1933.)

71. **Cod Liver Oil** is the product obtained by extraction of part of the oil from cod livers. (Adopted 1932.)

72. **Sardine Oil or Pilchard Oil** is the product obtained by extraction of part of the oil from the whole Pacific sardine or pilchard or from cannery refuse of this species of fish. (Adopted 1932.)

73. **Salmon Oil** is the product obtained by extraction of part of the oil from the cannery refuse of salmon. (Adopted 1932.)

74. **Tuna Oil** is the product obtained by extraction of part of the oil from the cannery refuse of tuna. (Adopted 1932.)

75. **Menhaden Oil** is the product obtained by extraction of part of the oil from whole menhaden. (Adopted 1932.)

76. **Herring Oil** is the product obtained by extraction of part of the oil from the whole herring or part of the herring. (Adopted 1933.)

77. **Salmon Liver Oil** is the product obtained by extraction of part of the oil from salmon livers. (Adopted 1933.)

78. **Stearine (Feeding)** is the solid material obtained by filtration from an animal or vegetable oil after chilling or freezing in the process of refining. When this product is sold as a feed, the term shall be prefixed by the name of the oil from which it is obtained. (Adopted 1934.)

Milk Products

79. **Dried Buttermilk** (Feeding) is the product resulting from the removal of water from clean, sound buttermilk derived from natural cream to which no foreign substances have been added, excepting such as are necessary and permitted in the manufacture of butter. It contains not more than 8 per cent of moisture, not more than 13 per cent of mineral matter (ash), and not less than 5 per cent of butterfat, as determined by the Roese-Gottlieb method. (Adopted 1932.)

80. **Evaporated Buttermilk** (Feeding), **Concentrated Buttermilk** (Feeding) or **Condensed Buttermilk** (Feeding) is the product resulting from the removal of a considerable portion of water from clean, sound buttermilk derived from natural cream to which no foreign substances have been added excepting such as are permitted and necessary in the manufacture of butter. It contains not less than 27 per cent of total solids, not less than 2 per cent of butterfat, and not more than .14 per cent of ash for each per cent of solids. This definition does not prohibit the use of a distinctive trade name, provided it is followed by one of the names given. (Adopted prior to 1928.)

81. **Dried Skimmed Milk** (Feeding) is the product resulting from the removal of water from clean, sound skimmed milk. It contains not more than 8 per cent of moisture. (Adopted 1930.)

82. **Dried Soured Skimmed Milk** (Feeding) is the product resulting from the removal of water from clean, sound skimmed milk which has been soured by a suitable culture of lactic bacteria. It contains not more than 8 per cent moisture. (Adopted 1932.)

83. **Evaporated Soured Skimmed Milk** (Feeding), **Concentrated Soured Skimmed Milk** (Feeding) or **Condensed Soured Skimmed Milk** (Feeding) is the product resulting from the removal of a considerable portion of water from clean, sound skimmed milk which has been soured by a suitable culture of lactic bacteria. It contains not less than 27 per cent of total solids. (Adopted 1932.)

84. **Condensed Skimmed Milk** (Feeding) is the product resulting from the removal of a considerable portion of water from clean, sound skimmed milk. It contains not less than 27 per cent of total solids. (Adopted 1930.)

85. **Milk Sugar Feed or Dried Whey** (Feeding) is the by-product from the manufacture of cheese and should contain at least 70 per cent of lactose (milk sugar). (Adopted 1932.)

86. **Dried Whey** (Feeding) is the by-product from the manufacture of cheese and/or casein. This product shall contain at least 65 per cent of lactose (milk sugar.) (Adopted 1934.)

Mineral Feeds

87. Mixed feeds containing both feed and more than 5 per cent of mineral ingredients requires, in addition to the usual declaration of the chemical feed analysis, a declaration of each ingredient contained therein and the minimum percentages of lime expressed as CaO, phosphoric acid expressed as P_2O_5, iodine (I), and the maximum percentage of salt (NaCl) if same be present. If minerals predominate in the mixture, the usual declaration of the chemical feed analysis, with the exception of protein, may be omitted.

In mineral feeds containing no organic ingredient, the usual chemical feed guarantee need not be made. A declaration should be made of each ingredient contained therein and the minimum percentage of lime expressed as CaO, phosphoric acid expressed as P_2O_5, iodine (I), and the maximum percentage of salt (NaCl) if same be present.

The mineral ingredients should be stated in the common English terms, if any such terms exist.

It being impossible to classify separately the drug ingredients and the mineral ingredients, be it resolved:

(a) That all mixtures containing mineral ingredients generally regarded as dietary factors essential for the normal nutrition of animals and which are sold or represented for the primary purpose of supplying these minerals as additions to rations in which these same mineral factors may be deficient, be classified as mineral feeds.

(b) That all other preparations which are sold or represented primarily for the cure, mitigation or prevention of disease be classified by this Association as drugs, medicines or specifics. (Adopted prior to 1928.)

Oat Products

88. **Oat Hulls** is the product consisting of the outer covering of the oat. (Adopted prior to 1928.)

89. **Oat Middlings** is the product consisting of the floury portions of the oat groat obtained in the milling of rolled oats. (Adopted prior to 1928.)

90. **Oat Shorts** is the product consisting of the covering of the oat grain lying immediately inside the hull, being a fuzzy material carrying with it considerable portions of the fine floury part of the groat obtained in the milling of rolled oats. (Adopted prior to 1928.)

91. **Oat Chop, Ground Oats, Pulverized Oats, Crushed Oats, or Crimped Oats** consists of the entire product made by chopping, cutting, grinding, crushing, or crimping whole oats. (Adopted 1931.)

92. **Oat Groats** are the kernels produced from cleaned and dried oats in the process of manufacturing oat meal. (Adopted 1931.)

93. **Hulled Oats, or Undried Oat Groats** are the kernels produced from the undried grain in the process of hulling oats. (Adopted 1931.)

94. **Oat Meal, or Ground Oat Groats** is the product produced by cutting, cracking or grinding oat groats. (Adopted 1931.)

95. **Rolled Oat Groats or Rolled Oats** is the product obtained in the process of rolling oat groats. (Adopted 1931.)

96. **Clipped Oat By-Products** is the by-product obtained in the manufacture of clipped oats. It may contain the light chaffy material broken from the end of the hulls, empty hulls, light immature oats and dust. It must not contain an excessive amount of oat hulls. (Adopted prior to 1928.)

97. **Oat Mill Feed** (Oat Hulls, Oat Shorts and Oat Middlings) is the entire by-product produced in the manufacture of Oat groats and consists of oat hulls, oat shorts and oat middlings. If used in a mixed feed, it shall be called Oat Mill Feed (Oat Hulls, Oat Shorts and Oat Middlings). (Adopted 1932.)

Palm Products

98. **Palm Kernel Oil Meal** is the ground residue from the extraction of part of the oil by pressure or solvents from the kernel of the fruit of Elaeis guineensis or Elaeis molanococco. (Adopted prior to 1928.)

Peanut Products

99. **.....Per Cent Protein Peanut Oil Cake** is the residue after the extraction of part of the oil by pressure or solvents from peanut kernels. (Adopted prior to 1928.)

100. **.....Per Cent Protein Peanut Oil Meal** is ground peanut oil cake. (Adopted prior to 1928.)

101. **Unhulled Peanut Oil Feed** is the ground residue obtained after extraction of part of the oil from whole peanuts, and the ingredients must be designated as **Peanut Meal and Hulls.** (Adopted prior to 1928.)

Rice Products

102. **Rice Bran** is the pericarp or bran layer of the rice, with only such quantity of hull fragments as is unavoidable in the regular milling of rice. (Adopted prior to 1928.)

103. **Rice Hulls** is the product consisting of the outer coverings of the rice. (Adopted prior to 1928.)

104. **Rice Polish** is the finely powdered material obtained in polishing the kernel. (Adopted prior to 1928.)

105. **Rice Meal** is ground brown rice or ground rice after the hull has been removed. (Adopted prior to 1928.)

106. **Ground Rough Rice** is ground rice from which the hull has not been removed or ground paddy rice. (Adopted prior to 1928.)

107. **Rice Stone Bran** is the siftings from the materials secured in removing hulls from rice and contains rice germs, broken rice and some rice hulls. (Adopted prior to 1928.)

108. **Rice Huller Bran** is a product secured by the huller and comes from brown rice and consists mostly of the bran and germs. (Adopted prior to 1928.)

Rye Products

109. **Rye Bran** is the coarse outer covering of the rye kernel as separated from the cleaned and scoured rye. (Adopted prior to 1928.)

110. **Rye Feed** is a by-product obtained in the usual process of the milling of rye flour from cleaned and scoured rye grain, consisting principally of the mill-run of the outer covering of the rye grain and the germ with small quantities of flour and aleurone. (Adopted prior to 1928.)

111. **Rye Red Dog** is a by-product obtained in the usual process of the milling of rye flour, consisting principally of aleurone with small quantities of flour and fine bran particles and must not contain more than 3.5 per cent of crude fiber. (Adopted prior to 1928.)

112. **Rye Low-Grade Feed Flour** consists principally of dark rye flour and small quantities of aleurone and fine bran particles and must not contain more than 1.5 per cent of crude fiber. (Adopted prior to 1928.)

113. **Rye Middlings** consists of rye feed and rye red dog combined in the proportions obtained in the usual process of milling rye flour. (Adopted prior to 1928.)

114. **Rye Flour Middlings** consist of rye feed, rye red dog and pure dark rye flour combined in the proportions obtained in the milling of rye flour and must not contain more than 5 per cent of crude fibre. (Adopted prior to 1928.)

Screenings

115. **Screenings** consist of the smaller imperfect grains, weed seeds, and other foreign materials, having feed value, separated in cleaning the grain. (Adopted prior to 1928.)

116. **Scourings** consist of such portions of the cuticle, brush, white caps, dust, smut and other materials as are separated from the grain in the usual commercial process of scouring. (Adopted prior to 1928.)

(NOTE) If to any of the wheat or rye by-product feeds there should be added screenings or scourings—as above defined, either ground or unground, bolted or unbolted, such brand shall be so registered, labeled and sold as clearly to indicate this fact. The word "Screenings," or "Scourings," as the case may be, shall appear as part of the name or brand and shall be printed in the same size and face of type as the remainder of the brand name. When the word "Screenings" appears it is not necessary to show also on the labeling the word "Scourings." (Adopted prior to 1928.)

Sorghum Products

117. **Head Chops** is the product consisting of the entire heads of the grain sorghums chopped, and should bear the name of the sorghum from which it is made. This includes, among others, kaffir head chops, milo head chops, feterita head chops, and sorghum head chops. (Adopted prior to 1928.)

118. **Head Stems** is the product consisting of the stems from the heads of the grain sorghums after the grain has been removed, and should bear the name of the sorghum from which it is made. (Adopted prior to 1928.)

Soybean Products

119. **Ground Soybeans** is the product obtained by grinding whole soybeans without cooking or removing any of the oil. (Adopted 1933.)

120.....**Per Cent Protein Soybean Oil Cake or Soybean Oil Chips** is the product obtained by crushing, cooking and removing part of the oil from soybeans. (Adopted 1933.)

121.....**Per Cent Protein Soybean Oil Meal** is ground soybean oil cake or ground soybean oil chips. (Adopted 1933.)

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Velvet Bean Products

122. **Velvet Bean Meal** is ground velvet beans containing only an unavoidable trace of hulls or pods. (Adopted prior to 1928.)

123. **Ground Velvet Bean and Pod** is the product derived by grinding velvet beans with the pod. It contains no additional pods or other materials. (Adopted prior to 1928.)

Wheat Products

124. **Wheat Bran** is the coarse outer covering of the wheat kernel as separated from cleaned and scoured wheat in the usual process of commercial milling. (Adopted prior to 1928.)

125. **Wheat Standard Middlings** consists mostly of fine particles of wheat bran, wheat germ, and very little of the fibrous offal obtained from the "tail of the mill." This product must be obtained in the usual commercial process of milling and must not contain more than 9.5 per cent of crude fiber. (Adopted prior to 1928.)

126. **Wheat Flour Middlings** shall consist of wheat standard middlings and wheat red dog combined in the proportions obtained in the usual process of milling and must not contain more than 6.0 per cent of crude fiber. (Adopted prior to 1928.)

127. **Wheat Red Dog** is a by-product obtained in the usual commercial process of flour milling, consisting principally of aleurone with small quantities of wheat flour and fine wheat bran particles and must not contain more than 4.0 per cent of crude fiber. (Adopted prior to 1928.)

128. **Wheat Low-Grade Feed Flour** is a by-product obtained in the usual commercial process of flour milling, consisting principally of wheat flour with small quantities of aleurone and fine wheat bran particles and must not contain more than 1.5 per cent of crude fiber. (Adopted prior to 1928.)

129. **Wheat Bran and Wheat Standard Middlings** consists of the two commodities as defined above, mixed in the proportions obtained in the usual process of commercial milling. (Adopted prior to 1928.)

130. **Hard Wheat Mixed Feed** (mill-run wheat feed) consists of wheat bran and wheat flour middlings combined in the proportions obtained in the usual process of commercial milling. This product must not contain more than 9.5 per cent of crude fiber. (Adopted prior to 1928.)

131. **Wheat Brown Shorts** (Wheat Red Shorts) consists mostly of the fine particles of wheat bran, wheat germ and very little of the fibrous offal obtained from the "tail of the mill." This product must be obtained in the usual commercial process of milling and must not contain more than 7.5 per cent of crude fiber. (Adopted prior to 1928.)

132. **Wheat Gray Shorts** (Wheat Gray Middlings or Wheat Total Shorts) consists of the fine particles of the outer bran, the inner bran or bee-wing bran, the germ and the offal or fibrous materials obtained from the "tail of the mill." This product must be obtained in the usual process of commercial milling and must not contain more than 6.0 per cent of crude fiber. (Adopted prior to 1928.)

133. **Wheat White Shorts or Wheat White Middlings** consists of a small portion of the fine wheat bran particles and the wheat germ and a large portion of the fibrous offal obtained from the "tail of the mill." This product must be obtained in the usual process of flour milling and must not contain more than 3.5 per cent of crude fiber. (Adopted prior to 1928.)

134. **Wheat Mixed Feed** (Mill-run wheat feed) consists of wheat bran and the gray or total shorts combined in the proportions obtained in the usual process of commercial milling. This product must not contain more than 8.5 per cent of crude fiber. (Adopted prior to 1928.)

Circular No. 211 April, 1935

INSECT PESTS OF MINT

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INSECT PESTS OF MINT

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Department of Entomology

The mint crop has been considered as unusually free from attacks by insects, with no major pests until the advent of the mint fleabeetle. In 1926 this fleabeetle was discovered to be rather widespread in the muck areas of St. Joseph County, where it caused considerable damage to both peppermint and spearmint. Since then it has spread through the principal mint sections of the state and is a serious menace to profitable mint production. In addition to the fleabeetle several other insects are found attacking the crop every year, in greater or lesser numbers. The early recognition of these pests and their injury is important to the grower in order that he may apply proper remedial measures to protect his crop.

The muck regions of Northern Indiana and Southern Michigan are well adapted climatically to the production of mint. About half of the world's output of peppermint and spearmint oils is produced in this region.* In Indiana many growers follow the practice of leaving the mint on the soil for six to ten years before changing to another crop. With the spread and increase of the mint fleabeetle a short rotation is becoming a necessity.

The Mint Fleabeetle

The first authentic record of the mint fleabeetle (*Longitarsus waterhousei* Kutsch.) in Indiana was made by L. G. Gentner near Mishawaka on October 21, 1925. Growers in some localities visited by Gentner reported injury as early as 1922. Beetles were collected in Michigan in 1922 and were reported by growers as having been present for six to eight years previous. This fleabeetle has been known as an enemy of mint in Europe for some time and it is frequently a serious problem. The insects apparently came into this country through the shipment of mint roots from England to Canada, some of which were brought in as early as 1870.

In Indiana the mint fleabeetle and its injury has been observed in eight counties: Elkhart, Fulton, Kosciusko, LaPorte, Marshall, St. Joseph, Starke and Whitley. No doubt it is present in the mint fields of the adjoining counties, although growers have not called it to our attention yet. The spread appears to be toward the east and within a year or two all mint sections will probably be infested. Field collections in 1933 showed a small population in fields in Whitley County, while in Kosciusko and other counties to the west severe damage was recorded. The southern limit of the infestation is not known but beetles have been collected about two miles south of Akron in Fulton County. Commercial mint fields are seldom found south of this.

Life history. In the life cycle of this insect occurs the four stages, egg, larva, pupa and adult, typical of all beetles. The egg is quite small, being 1/40 of an inch long, and is orange-yellow in color. The larva is 1/5 of an inch long and whitish in color, while the pupa is only half as long. The adult beetle is approximately 1/12 of an inch in length. Its color is pale brown and the hind legs are enlarged for jumping. The female is slightly larger than the male and has the second or membraneous wings developed for flying.

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* C. B. Sayre. Mint Growing in Northern Indiana. Purdue University Agricultural Experiment Station Circular No. 65, 1917.

Eggs are laid in the loose muck from August until the death of the females in the fall. No special care in oviposition has been observed, for the female deposits the eggs singly in the upper inch or so of soil about the mint roots. In the fall when the mint sod is plowed under for winter protection, the eggs are also covered over by four or five inches of soil and plants. In this situation the eggs remain until they hatch about the middle of May. The small larvae crawl to the nearby roots to feed, all underground portions of the plants being attacked. They destroy the small roots by feeding externally, while the larger roots are girdled and tunnelled. Larvae reach maturity in four or five weeks and pupate in the soil. Eight to 20 days are required in this stage before the beetles emerge and crawl to the surface where they commence to feed on the mint foliage. The length of time in each stage varies with the food supply and climatic conditions.

Beetle emergence starts from the first to the tenth of July, varying with the season and the locality, while the peak of adult abundance is reached late in the month. Beetles feed for two or three weeks before oviposition, so that the first eggs are laid about August 1. These facts have an important bearing on control, as the most efficient results are obtained through the use of insecticides applied as near the peak of abundance as possible and yet before oviposition takes place. There is a single generation a year with a seven to nine months' period in the egg stage.

Feeding habits. The food plants of the fleabeetle, so far as known, are all members of the mint family, with the adults feeding on the foliage and the larvae on the roots. Peppermint (*Mentha piperita* L.) is the preferred host, although spearmint (*M. spicata* L.) is severely attacked. Beetles were collected also on a species of Mentha growing wild along a small stream of water. A. W. Trippel collected numerous specimens on *Calamintha alpina*, a cultivated mint in his garden at Mishawaka. Other members of the mint and related families, including catnip (*Nepeta cataria* L.), are found in and around cultivated fields, but were never attacked, even though the peppermint was severely injured.

The beetles prefer to feed upon the terminal growth where they eat small, circular holes in the leaves and occasionally bite into the stems. During the heat of the day a tendency is shown to stay in the shade and most beetles are found on the lower stems or on the ground beneath the plants. The extremely high temperatures on the soil surface in the sun is usually fatal to any unwary individual alighting there. Since the oil accumulates in the leaves, any condition affecting the foliage influences the yield of oil. Severely damaged plants are characterized by their brown, almost leafless appearance.

Larval damage to the root system of the plants is of a more serious nature for, if these parts are destroyed, the plant has little chance for recovery. Small rootlets are fed on first and then the larger roots are attacked. Sometimes they are girdled, while others are tunnelled for a distance of several inches by the larvae. At times the larvae even work up in the stems an inch or so above ground. The destruction of the roots soon shows in the appearance of the plant. It is stunted in growth and takes on the reddish color of frost-injured plants. The number of new shoots put out is greatly reduced and such a plant does well to survive the attack. Of course, the damage to any one plant depends largely upon the number of insects present and the vigor of the plant itself.

Spread. The mint fleabeetle is spread by three methods: hopping, flight of the females and the carrying of larvae or eggs on the mint roots in setting out new fields. Little migration takes place as long as plenty of food is present. However, when the mint is cut, the beetles hop in all directions. On the loads of mint hay going to the still, the insects are abundant and, of course, are spread along the road. The unloading platform at the still is alive with beetles. Those fields adjoining the still always have the heaviest infestations on the farm, which suggests that the location of the still should be as far distant as possible from the mint fields.

The female beetle has the hind wings developed and is capable of flight, although this is seldom observed. Beetles collected on ornamental mint in Mishawaka were more than three miles from mint fields. Distances that they can hop or fly has never been determined but, when one sees how abundant wild and volunteer mint is in Northern Indiana, the rapid spread of this pest is easily understood.

In the past the method of planting a new field was to plow up the mint roots early in the spring and after removing much of the soil, to set them out in rows in the new location. Recently many growers are transplanting small plants about six inches high during May and June and, occasionally, July. This practice requires more soil to remain on the roots to give the plant a start. Since either the eggs, larvae or pupae are in the soil at this time, it is easy to understand how these stages are established in a new field. In 1934 an unusual condition existed in the mint area, for about three-fourths of the fields were killed by a late frost and resetting in some instances continued until late July. Where mint was set in the old mint fields, there was an abundance of insects in the soil which immediately concentrated their activities on the newly placed plants. Consequently, growers had poorer stands in August than they have had for several years.

Control. Experiments have been conducted in Northern Indiana for three seasons to determine the most effective method or material to control this insect and, secondly, the best time to apply such a control. Since eight to ten months in the cycle are spent in the soil, control of the foliage-feeding stage is necessary. As mentioned before the practice of plowing under the mint sod in the fall for winter protection, also plows the eggs under to a depth of four to six inches where they are little influenced by freezing weather. Frequent rotation is advisable in the beetle-infested fields, provided, of course, all volunteer mint is eliminated when other crops are being grown. The destruction of wild mint around the edge of the field and along ditch banks is also essential. Many growers follow the practice of summer fallowing a field at least one year before setting to mint. In such fields all wild or volunteer plants must be destroyed.

Observations on the life cycle show that the newly emerged beetles feed for two or three weeks before mating and egg-laying. The peak of emergence is reached about four weeks after the first beetles are found or about August 1. From these two observations, then, it is evident that the majority of the beetles are feeding on the foliage by the last ten days of July, and yet few eggs have been laid. Consequently, the treatment attempting to kill the beetles should be applied during or shortly after this period. In other words —treatment should start about July 20, and should be completed by August 5.

Insecticide tests were conducted in both laboratory and field to determine the most effective materials. The best results were obtained through the use of calcium arsenate on the growing mint and a Paris green mixture on the mint stubble. Calcium arsenate, when diluted with five to ten per cent bentonite or dusting clay as a sticker, is applied at the rate of 15 pounds to the acre, while a 50 per cent dust is applied at about 25 pounds to the acre. After the mint is harvested, a Paris green-flour mixture at 1-9 dilution is safe to use. This mixture gives a better kill but can not be used on the growing mint. Barium fluosilicate gave a higher percentage of control in cage tests, but caused some injury to plants in the field.

Both the calcium arsenate and Paris green mixtures should be applied at night or early in the morning when dew is present and very little breeze blowing. When the standing mint is dusted with calcium arsenate, it should not be used as hay for animals after the oil is distilled from it. In those seasons when the insecticide applications will interfere with the normal harvesting of the crop, it is advisable to cut the mint a week or so early. Then the Paris green mixture can be applied to the mint stubble at the proper time to obtain the most efficient results.

Special care should be taken to prevent infestation of first-year mint. When ready to cut a field of meadow mint adjoining row mint, a 20-foot border strip should be thoroughly poisoned and left uncut to kill the beetles as they migrate from the stubble. In that portion of the farm where plants for transplanting in the new field are to be obtained, special care should be taken to kill all beetles. At least three applications should be made to such areas. Then, in the transplanting procedure, as much soil as possible should be knocked from the roots. Plants set out after July 10 should be dipped in a solution of arsenate of lead (six pounds in 50 gallons of water) and allowed to dry. If no rain occurs, this poison will protect the plants during the first week or ten days after transplanting in the new field.

Cutworms

Cutworms are a group of caterpillars which have the habit of feeding on low-growing plants, cutting off the stems near the soil surface. The adult stage of these insects is a brownish or grayish moth with wing expanse of an inch and a half. In the mint fields a number of different species occur but, as they all have a similar life history and the same control measures, they are grouped here under one heading.

The moths fly at night and feed upon the nectar of various plants. The females lay their eggs preferably on grass in the fields. Eggs hatch in August and September and the young caterpillars feed upon grass and other vegetation until frost. Winter is passed as a half grown caterpillar at the roots of the plants. The following spring they emerge and feed voraciously upon various plants. Cutworms become full grown in June and July when they pupate in cells a few inches below the surface of the soil. The moths emerge in July and August and deposit eggs for the next generation. Thus, there is a single generation of most species each year.

In the mint fields cutworms are frequently serious pests in the spring and early summer, especially in areas where grass is abundant. Seasons with a cold, wet spring are especially favorable to cutworms. Plants are attacked at the surface of the muck and are cut completely off, as are also the upper roots.

The usual practice of plowing under mint sod in the fall aids in keeping down the cutworm population. Poisoned bran bait is best method to destroy the caterpillars when they become abundant in the spring. This bait is prepared by mixing together 25 pounds of bran, Paris green (white arsenic or sodium arsenite may be substituted) one pound, cheap molasses two quarts, and water two to three gallons. The poison and bran are mixed dry and the molasses is diluted with some water. Then the liquid is added to the poisoned bran, mixed and more water added, until the mixture is damp enough to stick together. It should be broadcasted late in the evening as the cutworms work at night. The usual rate is 15 to 20 pounds per acre with somewhat more in grassy and weedy fields.

Grasshoppers

Grasshoppers are another group of general feeders which occasionally attack mint. As a rule, feeding on mint takes place along the edges of the field where the grasshoppers move in from adjoining grass land. In all stages the grasshopper is a big eater and can strip the leaves from mint plants in a short time.

Females lay their eggs in sodlands, clover fields and weedy areas, as a rule from August to late fall. A clay or loam soil is preferred for this purpose and muck is avoided. Eggs hatch the following spring into small nymphs, which feed upon grass crops as long as they are present and then may migrate to neighboring fields. Nymphs grow in size during the summer and by August are mature with fully developed wings. Damage to mint seldom occurs beyond a hundred feet from the edge of the field.

Cultural practices such as fall plowing and the destruction of feeding places along the edge of mint fields will greatly reduce the grasshopper population. The scattering of poisoned bran bait mentioned under cutworm control is quite effective in controlling grasshoppers. The bait should be put out in the early morning as the insects are feeding at that time. Both the grassy areas and the edge of the mint field should be covered with the bait.

Wireworms

Wireworms are frequently found in muck soils with poor drainage or a high water level. These insects are an inch long, hard and light brown in color. Their favorite food is members of the grass family, but mint is attacked when these are not present. The adult stage of the wireworm is a beetle known as a "skip-jack" or click-beetle.

Drainage of the land aids in reducing the number of wireworms in the soil. Mint should not follow a grass crop and should not be planted the first season sod land is broken up. In the rotation practice one or two crops of clover, alfalfa or buckwheat should precede mint.

White Grubs

In certain sections of the state white grubs are a serious problem on muck soils. The adult of the grub, which is commonly known as a June beetle, prefers to lay eggs in sod land. Since the grub stage lives in the soil for nearly three years, the suggestions for the control of wireworms would also apply to white grubs.

Millipeds

Millipeds belong to a group of animals closely allied to insects. They are characterized by their round, wire-like form and have two pairs of legs to each body segment. Occurring in soils with a high humus content, they are frequently abundant in muck land. Their food apparently is decaying vegetable matter but they do attack a number of growing plants. In recent years millipeds have been recorded as damaging potatoes, carrots, corn and mint in Northern Indiana. An interesting example of injury to all kinds of plants in a home garden was reported from Nappanee in 1932. A load of mint hay, which had been decaying on a mint field for two years, was hauled in and spread on the garden as fertilizer. In the following years the millipeds increased to such an extent that all plants were killed in 1932.

Control of millipeds in a muck soil is difficult, as the pests feed on the roots and are never exposed to the surface. Acid soils are somewhat repellent to them but certain species even prefer that type of soil. During 1932 a muck field near Nappanee was under observation, in which millipeds were exceptionally numerous and were damaging potatoes and mint. Following a heavy rain in July, water backed up in the drainage ditches and overflowed most of the potato land. Four days later when the water receded, dead millipeds were found in great numbers in the soil depressions. Since then the grower has had no trouble on that portion of the farm.

As millipeds prefer soils with much decaying vegetable matter present, an effort should be made to remedy this condition, if at all possible. Old mint hay should not be scattered about on infested fields. The practice of plowing under a green crop as fertilizer should likewise be avoided. Summer fallowing of the soil for a year or two before setting to mint is of value not only for milliped control but for other insects as well.

Crane Fly Maggots

Mint is occasionally injured by crane fly maggots of several species. *Tipula mingwe* Alex. is recorded by Pettit as causing severe damage in Michigan in 1929 (5). The maggots are called "leather-jackets" and eat notches in the roots and stems at or below the surface of the ground. The maggots are an inch long, gray, leathery in texture and have four protuberances on the head. In the adult stage this insect is a long-legged, two-winged fly.

As a rule the maggots live at or near the soil surface where they feed on decaying vegetable matter and sometimes on the roots of grasses. They prefer moist conditions where there is a rank growth of grass. Injury to mint is found in small areas and to date has not warranted the development of controls.

Plant Lice

Several species of plant lice occur on field mint but no serious infestation has been observed to date. Plants used in the laboratory for insecticide tests were severely infested with *Phorodon menthae* (Buckton) (Mason det.). A decided preference was shown for the terminal growth with most of the lice feeding on the stems, although a few were found on the undersides of the leaves. In a few weeks' time the stems became twisted and the leaves curled so that the plants had to be discarded. The field infestations observed to date would not warrant the usual insecticide control operations recommended for plant lice.

Thrips

Thrips are commonly found on various mint plants, although the infestation is usually light and little damage results. The species observed in Indiana was thought to be *Thrips tabaci* Linde. Gentner (3) in Michigan reports that several acres of spearmint were infested with *Thrips nigropilosus* Uzel in 1928. The infestation coming a short time before harvest reduced the oil content of the plants by causing most of the leaves to drop. Dusting with sulphur followed by two heavy rains eliminated further trouble. Morgan in 1925 describes a new species of thrips, *Frankliniella gilmorei* from Tennessee (4) on mint. As in the case of plant lice, the infestations by thrips that have been observed would not warrant insecticide treatment.

Mint Looper

During August and September of 1934 both peppermint and spearmint plants in experimental plots of the Department of Botany at Lafayette were severely injured by a looper, *Autographa ou* Gn. (Benjamin det.). The terminal growth was attacked with the leaves and some of the stems being eaten. The plots had a very ragged appearance from the attack of this caterpillar. About 20 loopers were collected and placed in cages for rearing but all were killed by parasites. Of a second lot of ten specimens, three pupated and the moths emerged in October. The looper resembles the cabbage looper somewhat, but is slightly longer, more hairy and of a darker green color.

In preparing for pupation the caterpillar webs together the leaves of several terminal shoots. This case is about an inch in length and a half inch across. Instead of the usual round pupal case the sides and ends are angular. The case is inconspicuous because of the leaves and stems woven in the silk. Two species of parasites were found. The common species was a small hymenopteran which kills the larvae before the final molt into the pupae. The larval skin is packed tight with small pupal cells of the parasites (determined as *Copidosoma trumcatellum* Dalm. by Gahan). Although no definite count was made of the number present, there must have been several hundred. The other parasites were flies of the family Tachinidae, which killed the insect immediately after pupation. In the pupal case from one to three dipterous pupae were found. Both parasites emerged in October. A predaceous stink bug, *Perillus bioculatus* Fabr., was captured while feeding upon a looper.

The looper can be controlled by the use of the common arsenical poisons.

Miscellaneous Insects on Mint

A number of insects feed upon mint, but rarely become a serious problem. The corn earworm (*Heliothis obsoleta* Fabr.) was reported from Laporte County as damaging mint in October 1934. This pest was unusually abundant during the season and fed upon a number of different plants. A small, brightly spotted moth, *Sparganothis sulfureana* Clemens (Busck det.) was reared from peppermint in the Botany plots. The larva had spun up in a small silken case on a terminal shoot.

In making studies of the insect populations of mint fields, a number of different insects are collected. These fall into three groups: those feeding on mint, those preying upon the mint insects, and those alighting there by chance. It is difficult to separate the insects into the various groups without definite records of feeding. Among the Hemiptera at least two species, the tarnished plant bug (*Lygus pratensis oblineatus* Say), and the rapid plant bug (*Adelphocoris rapidus* Say), do some feeding on the plants.

In the family of leaf-feeding beetles, Chrysomelidae, 13 species were collected on mint. Of these, three species were definitely known to have been feeding when captured. These are *Longitarsus waterhousei* Kutsch. (already discussed as the mint fleabeetle), *Lema trilineata* Oliv. and *Chaetocnema denticulata* Ill. Among the other species the following were collected on cultivated mint: *Systena taenida blanda* Melsh., *Systena frontalis Fab.*, *Longitarsus suspectus* Blatch., *Phyllotreta zimmermanni* Cr., *Psylliodes punctata* Melsh., *Epitrix fuscula* Cr., and *E. cucumeris* Harris. In addition to the last two mentioned, the following two species were collected on wild mint: *Pachybrachys atomarius* Melsh. and *P. othonus* Say.

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Circular No. 212 April, 1935

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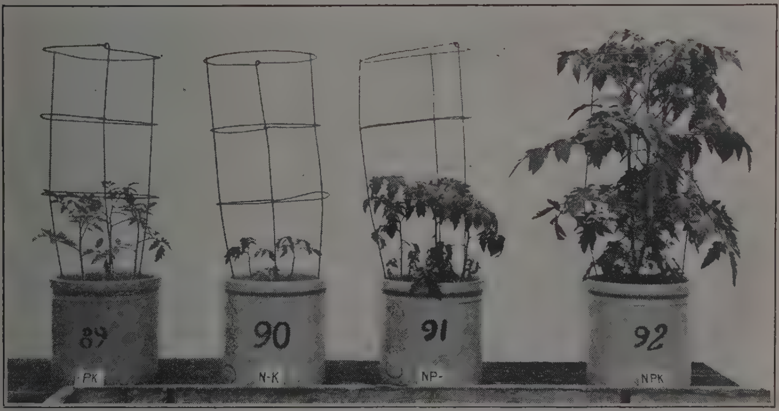
COMMERCIAL FERTILIZERS



The Effect of Fertilizer on the Growth of Tomatoes
92 Fertilizer containing nitrogen, phosphoric acid and potash
91 Fertilizer containing only nitrogen and phosphoric acid
90 Fertilizer containing only nitrogen and potash
89 Fertilizer containing only phosphoric acid and potash

Purdue University
Agricultural Experiment Station
Lafayette, Indiana

This circular is a report of the inspection of commercial fertilizers for the year 1934. The inspectors visited every county in the state in both the spring and fall seasons and collected 1,425 official samples.

The Indiana Fertilizer Law is essentially a correct labeling act. It protects the honest and efficient manufacturer, dealer and agent as well as the consumer. In order to obtain maximum protection, the consumer must read carefully and understand thoroughly the information on the state tag or label.

Refunds amounting to $268.23 were paid by 21 manufacturers on 58 shipments of fertilizer that were deficient in analysis.

Table 1 shows the average composition of the common fertilizer materials as well as their comparative values per ton.

Table 3 gives the tonnages of the different analyses which were in the greatest demand. The tonnage of 2-12-6 amounted to 35 per cent of all the fertilizer sold. More than 85 per cent of the total tonnage was confined to 33 analyses, while less than 15 per cent was divided among the 108 other grades as reported by manufacturers.

Table 5 shows the tonnage retail value and pounds per ton of plant food. The cost per pound of plant food was slightly higher than for any year during the previous four years. The average content of plant food (N, P_2O_5 and K_2O) sold in 1934 was 467 pounds per ton. The average analysis was 2.1 per cent nitrogen, 13.1 per cent available phosphoric acid and 6.6 per cent water soluble potash.

Table 6 gives the classified tonnage sales of low and high analysis fertilizers for the last 20 years. Table 12 shows the standing of manufacturers as determined by inspection of the year 1934. Table 13 shows the analysis of each of the 1,425 official samples collected.

COMMERCIAL FERTILIZERS

H. R. KRAYBILL, *State Chemist*
O. W. FORD, *Assistant Chemist* O. S. ROBERTS, *Chief Inspector*
Assistant Chemists, L. E. HORAT, M. H. THORNTON
Inspectors, C. M. COHEE, J. W. JACKMAN

The Indiana Fertilizer Law is essentially a correct labeling act. The intent of the law is not to determine what type of fertilizer may be sold. The law is designed to furnish the purchaser with a true statement of certain information on the state tag that will enable him to decide whether or not the fertilizer is the type that will meet his needs. The state tag gives a statement of the percentages of total nitrogen, total or available phosphoric acid, and water soluble potash. With this information the purchaser should be able to judge whether the fertilizer offered for sale meets his requirements. *In order to do this the consumer must read carefully and understand thoroughly the information on the state tag.*

The Indiana Fertilizer Law protects the honest and efficient manufacturer, dealer and agent, as well as the consumer. Full cooperation on the part of the manufacturer, dealer, agent and consumer is necessary in order to accomplish the purpose of the law.

A copy of the full text of the law will be sent to persons making request for the same to the State Chemist, Purdue University Agricultural Experiment Station, Lafayette, Indiana.

This circular presents the results of the inspection of commercial fertilizers sold in Indiana during the year 1934. It is estimated from tag sales that 152,824 tons of fertilizer were sold. From the manufacturers' reports a tonnage of 140,526 is indicated. It is believed that the latter figure represents more nearly the actual tonnage sold. The difference between the two estimates is apparently due to the fact that the manufacturers increased their stocks of tags on hand during the year. The estimated tonnage in 1934 is about 33 per cent larger than in 1933.

Inspectors from the department visited every county in the state in both the spring and fall season and collected 1,425 official samples of fertilizer. One sample was drawn for each 107 tons of fertilizer that was sold. Of these samples 1,311 were equal to or above the guarantee in value; 109 were within 10 per cent of the guaranteed value and 5 were 10 per cent or more below the guaranteed value. Eight of the 1,034 samples which contained nitrogen showed the presence of inferior nitrogen, of which three were dried manure and five were muck. Both of these materials are inferior sources of nitrogen.

REFUNDS

Every year a few cases of deficiencies occur, due to errors in labeling the fertilizer. This results from carelessness on the part of the person responsible for attaching the tags. Manufacturers should guard against such errors.

When deficiencies in analysis amounting to $1.00 or more per ton on raw materials, as calculated from the wholesale price, are found, refunds are calculated and indicated on the report of the analysis which is sent to the manufacturer and to the consumer. Refunds on mixed fertilizers are usually calculated when one ingredient is deficient to the extent of $1.00 or more per ton, regardless of the excess in amounts of the other ingredients. Nitrogen, phosphoric acid and potash play definite roles in crop production. An excess of one ingredient will not necessarily compensate for a deficiency of another.

All refunds are required to be distributed to the consumer wherever possible, and receipts for the same must be filed with the State Chemist. In case there are no records as to the consumer, the refunds may be turned over to a local charitable organization, but receipts for the same must be filed with the State Chemist.

The payment of a refund by the manufacturer to the consumer does not remove the violation, but it does indicate good intentions on the part of the manufacturer and shows his willingness to do what he can to correct the violation. However, the payment of the refund does not nullify the right of anyone in the state to call a deficiency of analysis to the attention of the prosecuting attorney.

Refunds amounting to $268.23 were paid by 21 manufacturers on 58 shipments of deficient fertilizer in 1934.

MANUFACTURERS

The term "Commercial Fertilizer" is defined by law to include all materials used for manurial purposes except barnyard manure, marl, lime, wood ashes and plaster. Barnyard manure, sheep manure and muck when dried or processed in any way come under the provisions of the law. Before any commercial fertilizer is exposed or offered for sale or sold in the state it is necessary to register the fertilizer with the State Chemist and tag it properly with Indiana State Tags or Labels. Bulk shipments must be accompanied with sufficient labels to cover the total weight of the material.

Manufacturers should not ship fertilizer without having it properly tagged with Indiana State Tags. Experience has shown that when this is done it is difficult to avoid the sale of untagged fertilizer. The State Chemist has no authority to grant permission to a manufacturer to ship unlabeled fertilizer.

AGENTS, DEALERS AND DISTRIBUTORS

Agents should familiarize themselves with the provisions of the Indiana Fertilizer Law. Each package of fertilizer offered or exposed for sale or sold in Indiana must have attached to it the Indiana State Tag bearing the facsimile signature of the State Chemist (see reproduction, page 9). *In case you receive a car of untagged fertilizer, wire the manufacturer for tags and notify the State Chemist. Do not accept the shipment until proper tags are furnished.*

Since local agents are responsible for the fertilizer that they offer for sale they should deal only with those manufacturers who agree to assume full responsibility in cases where the fertilizer fails to meet the requirements of the law.

When inspection reports show that fertilizer in your possession is deficient enough so that a refund is calculated on it, withdraw it from sale at once and notify the State Chemist, giving the date and the amount withdrawn from sale.

CONSUMERS

The Indiana State Tag is your guarantee of the fertilizer that you purchase. Read the tag. Let the analysis on the state tag be your guide rather than the brand name. Refuse to accept any fertilizer which does not have the Indiana State Tag attached to each package.

When analysis of a fertilizer is desired, do not forward a sample, but notify the State Chemist, telling how much you have on hand and send in a copy of the official label which is attached to the fertilizer.

Purchase the type of fertilizer that will meet the plant food requirements of your crops. Consult Circular No. 162 of the Purdue University Agricultural Experiment Station, entitled "Fertilizers for Indiana Soils and Crops."

CAUTION

The consumer should remember that the presence of the Indiana state label with the facsimile signature of the State Chemist does not mean that the State Chemist recommends the fertilizer. Poor quality fertilizer may be sold legally, provided it is correctly labeled. The consumer should be guided by the analysis of the fertilizer.

MEANING OF ANALYSIS

Nitrogen.—In 1881 when the Indiana Fertilizer Law was passed the principal source of nitrogen was from organic materials. The nitrogen was derived largely from such products as dried blood, bone, tankage and slaughter house by-products, garbage tankage, cotton seed meal, castor pomace, tobacco stems, manure sweepings and dried peat. Although there is little water soluble nitrogen in the above products, all carry a good source of nitrogen with the exception of garbage tankage, manure sweepings, spent tobacco stems and dried peat. In more recent years most of the animal products have been diverted into the mixed feed channels, and water soluble forms of nitrogen have taken their place in fertilizer mixtures. Today we find that most of the nitrogen carrying fertilizers have more than 80 per cent of their nitrogen content in some water soluble form.

A few of the sources of water soluble forms of nitrogen are as follows: nitrate of soda (natural and synthetic), ammonium sulphate, cal-urea, cal-nitro, urea, cyanamid and calcium nitrate.

Since water soluble forms of nitrogen are considered as readily available for plant growth, we class a fertilizer as satisfactory that has 60 per cent of its guaranteed nitrogen in water soluble form.

If less than 60 per cent of its guaranteed nitrogen is water soluble, then the availability of the insoluble organic nitrogen is determined by the alkaline permanganate method. In this case, if the active water insoluble nitrogen is equal to or greater than the inactive, the nitrogen is classed as satisfactory. If less than half of the insoluble nitrogen is active, the nitrogen is classed as inferior.

Manures and garbage tankages that have not been acidulated show an inferior quality of nitrogen. This is not the fault of the manufacturer when they are sold as manure and garbage tankage.

Phosphoric Acid.—The phosphorus in the fertilizer is linked up as chemical compounds with calcium, iron and aluminum. It may be present as mono-, di- or tricalcium phosphate.

As monocalcium phosphate $CaH_4(PO_4)_2$ it is water soluble and readily available to plants for growth.

As dicalcium phosphate $Ca_2H_2(PO_4)_2$ it is soluble in the soil solution and rendered available to plants for growth.

As tricalcium phosphate $Ca_3(PO_4)_2$ it is somewhat less available to plants.

As a complex tricalcium phosphate combined with fluorine and lime (raw rock phosphate) it is much less available to plants and becomes available only slowly in the soil.

The bulk of the fertilizer sold today contains mixtures of large amounts of mono- and dicalcium phosphate and some tricalcium phosphate. This is in contrast to the earlier years when most of the fertilizer used was bone where the phosphorus is present as tricalcium phosphate.

In acidulated goods the phosphorus is sold only on the basis of the available phosphoric acid (P_2O_5) content. The available is the sum of the soluble and reverted phosphoric acid (P_2O_5).

In bone and rock phosphate, when sold as such, the phosphorus is sold only on the basis of the total phosphoric acid (P_2O_5) content. It is only fair to state, however, that about 60 to 75 per cent of the total phosphoric acid (P_2O_5) content of bone is available by the neutral ammonium citrate method, while only from three to six per cent of the total phosphoric acid (P_2O_5) of rock phosphate is available by the same method.

Potash.—Potash, as the official label states, must be soluble in water, in which form it is considered directly available for plant use.

No difference in crop growth has been noted in American, French or German potash. Muriate of potash (KCl) being the cheapest has largely supplanted other potash salts for general crops.

AVERAGE COMPOSITION OF FERTILIZER MATERIALS

Table 1 gives the average composition of some of the more common fertilizer materials and their comparative values per ton.

TABLE 1. Average Composition and Comparative Evaluation of the Common Fertilizing Materials

Material	Nitrogen Per Cents							Phosphoric Acid Per Cents			Water Soluble Potash Per Cent	*Comparative Value Per Ton
	Total	Water Soluble Organic	Water Soluble Ammonia	Water Soluble Nitrate	Water Insoluble Organic	Active Insoluble Organic	Inactive Insoluble Organic	Total	Insoluble	Available		
Sodium Nitrate	15.5			15.5								$31.00
Calcium Nitrate	14.0			14.0								28.00
Ammonium Sulphate	20.5		20.5									41.00
Cyanamid	22.0	21.6			0.40							44.00
Garbage Tankage	3.3	0.63			2.70	0.66	**2.04**	4.5	2.5	2.0	0.75	10.10
Cattle Manure	2.50	0.52			1.98	0.72	**1.26**	1.6			1.6	7.72
Sheep Manure	2.50	0.57			1.93	0.62	**1.31**	1.8			2.2	8.46
Poultry Manure	4.3	1.90	0.60		1.80			3.1			1.7	12.47
Muck	2.0	0.13			1.90	0.34	**1.56**					4.00
Activated Sewage	6.0	0.84			5.11	3.54	**1.57**	2.2				13.54
Raw Bone	3.6	0.84			2.80	2.03	0.77	23.4	9.2	14.2		24.16
Steam Bone	2.2	0.42			1.79	1.41	0.38	27.5	10.4	17.1		24.62
Animal Tankage	6.0	1.50			4.50	2.98	1.52	12.0	4.0	8.0		21.20
Bone Black	1.3				1.30	0.09	**1.21**	30.3	23.4	6.9		16.52
Basic Slag								17.7	2.7	15.0		15.93
Raw Rock Phosphate								33.4	31.1	2.3		10.02
Superphosphate—												
0-40-0								41.0	1.0	40.0		40.00
0-24-0								25.0	1.0	24.0		24.00
0-20-0								21.0	1.0	20.0		20.00
0-16-0								17.0	1.0	16.0		16.00
Muriate of Potash											50.0	50.00
Sulphate of Potash											48.0	48.00
Manure Salts											20.0	20.00
Kainit											14.0	14.00
Tobacco Dust	1.50	0.31		0.39	0.80	0.17	**0.63**	0.50			5.4	8.75
Coal Ash								0.4			0.1	0.38
Corn Cob Ash								4.9			31.0	34.43
Hard Wood Ash								2.2			10.2	11.80
Soft Wood Ash								3.1			4.3	6.47

Values appearing in the Inactive Insoluble Organic column in heavy type indicate an inferior source of nitrogen.
*Comparative values per ton calculated from table of comparative values for 1934.

CLASSIFIED FERTILIZER SALES SINCE 1883

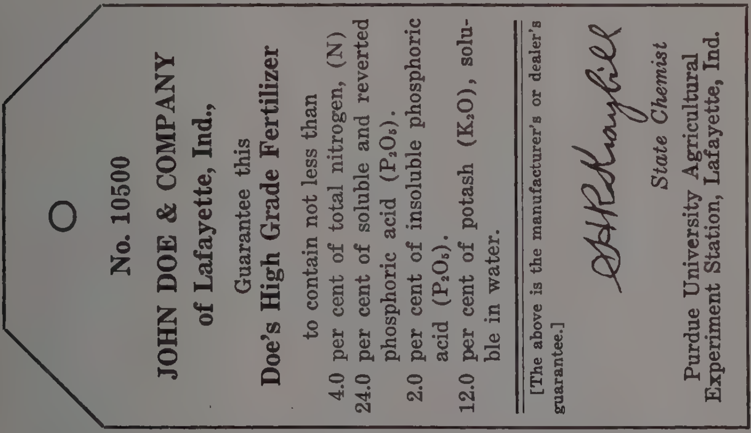
Table 2 illustrates the changes that have occurred in the types of fertilizers sold during the past fifty-two years.

TABLE 2. Classified Fertilizer Sales Since 1883

Year	Total Tons	Tons Nitrogen Salts	Tons Potash Salts	Tons Super-phosphate	Tons Bone	Tons Raw Phosphate Rock	Tons Phosphate Potash	Tons Ammoniated Super-phosphate	Tons Complete
1883........	8,000	....	....	....	8,000	....	....	....	....
1888........	10,000	....	....	‡	10,000	....	‡	‡	‡
1893........	38,000	....	....	1,000	14,000	....	1,000	4,000	18,000
1895........	45,000	....	....	1,000	15,000	....	2,800	3,800	20,300
1897........	49,400	....	....	7,200	13,950	50	1,550	5,200	21,450
1909........	134,064	268*	2,146	8,111	10,323	804	18,769	1,005	89,287
1914........	219,139	123*	3,586	12,878	7,748	2,400	40,451	1,184	144,126
1918........	244,446	82*	....	57,984	12,586	1,079	3,839	83,111	78,302
1923........	195,702	1,550†	3,251	49,501	8,356	....	35,394	4,309	91,220
1927........	240,498	3,530†	5,200	32,041	4,456	719	41,785	520	151,112
1928........	221,082	1,350†	1,700	26,997	1,907	968	40,451	....	145,709
1929........	291,193	3,140	1,800	21,655	2,650	844	45,000	62	214,010
1930........	219,684	2,950	1,900	12,208	1,976	1,500	34,657	....	163,136
1931........	170,777	4,325	2,100	12,790	3,437	1,313	25,262	....	119,841
1932........	79,400	1,750	950	7,605	1,093	93	9,188	....	57,626
1933........	99,755	1,550	1,100	11,314	757	63	9,750	188	73,895
1934........	152,824	2,400	2,200	18,201	3,647	437	17,906	406	106,501

*Largely Nitrate of Soda.
†Nitrate of Soda and Ammonium Sulphate.
‡Light Sales.

OFFICIAL STATE LABEL



No. 10500

JOHN DOE & COMPANY

of Lafayette, Ind.,

Guarantee this

Doe's High Grade Fertilizer

to contain not less than

4.0 per cent of total nitrogen, (N)

24.0 per cent of soluble and reverted phosphoric acid (P_2O_5).

2.0 per cent of insoluble phosphoric acid (P_2O_5).

12.0 per cent of potash (K_2O), soluble in water.

[The above is the manufacturer's or dealer's guarantee.]

H R Kraybill

State Chemist

Purdue University Agricultural Experiment Station, Lafayette, Ind.

The only label recognized under the law is that bearing the facsimile signature of the State Chemist. (See reproduction.) The label as issued is always printed and contains all the facts required by law; any alteration thereon constitutes a violation of the law.

Label No. 10500 guarantees that each 100 pounds of fertilizer will contain at least 4.0 pounds of total nitrogen (N), 24.0 pounds of soluble and reverted phosphoric acid (P_2O_5), and 2.0 pounds of insoluble phosphoric acid (P_2O_5), and 12.0 pounds of water soluble potash (K_2O).

We hope that it will not again be necessary to file affidavits against agents for distributing unlabeled fertilizer. There can be no excuse for shipping unlabeled fertilizer. Agents receiving same should protect themselves by refusing to accept the car. Wire the manufacturer for official labels and write the State Chemist fully concerning the unlabeled shipment.

MANY GRADES UNNECESSARY

Table 3 shows the tonnage of fertilizer sold under the different grades of analyses. In 1934 over 85 per cent of the tonnage is represented by 33 grades, while less than 15 per cent were distributed over 108 analyses. Considerable saving could be made by the manufacturer if the number of grades were reduced materially.

TABLE 3. Tons Sold Under 33 Analyses for Past Eight Years

ANALYSIS	Year* 1927	Year* 1928	Year* 1929	Year* 1930	Year* 1931	Year* 1932	Year* 1933	Year* 1934	Rept. by Mfrs. Year 1934
Nitrate of Soda	433	500	1,740	1,150	2,200	600	350	1,300	391
Ammonium Sulphate	3,090	900	1,400	1,800	2,100	950	950	950	905
0-16-0	12,665	8,053	6,241	3,937	5,780	2,625	3,719	5,607	4,835
0-20-0	16,281	13,000	12,826	6,781	5,753	4,875	7,188	11,031	11,846
0-40-0	2,905	3,689	1,563	750	838	313	188	750	513
Potash Salts	4,500	1,600	1,800	1,750	2,100	1,350	1,100	2,200	980
Raw Bone	1,750	813	869	750	1,249	625	538	2,369	2,736‡
Steamed Bone	2,706	1,094	1,781	1,250	2,188	531	219	1,278	
2-8-2	1,260	594	2,063	1,094	563	688	563	931	154
2-8-5	1,053	1,906	1,531	563	744	531	469	344	463
2-8-10	656	1,125	1,463	1,094	781	625	1,031	1,875	1,916
2-8-16	2,650	2,531	3,919	4,063	2,719	1,625	2,000	3,363	2,480
2-10-4	1,625	2,169	1,146	406	782	375	594	644	422
2-12-2	45,109	43,606	36,550	19,313	17,063	9,469	16,344	21,075	20 039
2-12-4	4,375	2,906	2,688	1,375	219	31	125	125	179
2-12-6	37,290	43,078	74,850	78,894	56,344	29,375	38,500	53,506	49,279
2-14-4	....	2,760	9,906	3,719	1,219	438	125	1,031	1,041
2-16-2	4,821	2,813	2,575	844	281	....	63	250	232
2-16-8	2,018	2,250	2,769	3,594	2,156	781	688	937	459
4-24-4	5,275	3,603	4,150	2,619	1,781	344	756	781	1,081
4-24-12	906	3,331	7,853	6,806	4,625	1,250	1,725	2,656	2,685
0-8-24	3,962	1,681	1,750	3,444	2,563	1,375	1,063	2,531	1,976
0-10-10	15,525	11,969	7,744	7,206	6,000	2,438	2,969	3,844	4,008
0-12-12	5,312	3,438	6,813	6,500	6,063	2,500	2,844	4,875	3,949
0-20-20	2,531	2,281	1,313	2,181	2,063	656	531	719	875
0-12-6	5,312	5,312	1,954	1,000	813	281	437	563	393
0-14-4	4,312	3,750	1,625	719	500	719	231	63	360
0-14-6	....	2,063	9,150	7,425	3,250	781	1,343	2,875	2,870
0-8-32	....	343	856	656	63	31	31	63	103
0-16-4	....	2,250	313	937	594	....	....	....	22
0-14-14	718	463	813	969	375	500	94	313	210
0-16-8	593	1,313	844	94	375	125	63	63	53
0-12-8	....	....	1,844	406	188	....	63	63	129
33 analyses	189.633	175,260	214,702	174,089	134,332	67,809	86,904	128,975	117,574
Other analyses	50,865	45.822	76,491	45,595	36.445	11.591	12.851	23.849	16,972
Total tonnage	240,498	221,082	291,193	219.684	170.777	79,400	99,755	152.824	†134.546
Total number of analyses from Mfrs. reports	....	....	157	163	167	153	143	141	....

*Tonnage calculated from tag sales.

†This does not include the 5,980 tons calculated from tag sales of companies that did not report their tonnage sale for 1934.

‡Manufacturers' reports did not all divide bone products.

Table 4 gives the total tonnage by grades as reported by the manufacturers for 1934.

TABLE 4. Fertilizer Tonnage Sold in Indiana in 1934 as Reported by Fertilizer Manufacturers

Raw Materials—

1. Nitrogen Salts		4. Superphosphates	
Ca Nitrate	25	0-46-0	26
Nitrate of Soda	391	0-45-0	138
Ammonium Sulphate	905	0-44-0	330
Cyanamid	14	0-40-0	19
2. Potash Salts		0-32-0	1
Muriate of Potash		0-24-0	95
0-0-60	6	0-20-0	11,846
0-0-50	968	0-18-0	12
Sulphate of Potash		0-16-0	4,835
0-0-48	6	0-14-0	582
3. Raw Rock Phosphate	420		

Phosphate and Potash Mixtures—

-32-8	1	0-20-20	875	0-14- 6	2,870	0-10-10	4,008
-28-14	20	0-16- 8	53	0-14- 4	360	0-10- 5	5
-28-12	52	0-16- 6	69	0-12-18	40	0- 8-32	103
-24-24	58	0-16- 4	22	0-12-12	3,949	0- 8-24	1,976
-24-12	6	0-14-14	210	0-12- 8	129		
-21- 9	87	0-14- 7	433	0-12- 6	393		

Complete Fertilizer Mixtures—

12- 6- 4	16	4- 8- 5	143	2-12- 8	27	1-11- 5	265
12- 3- 3	22	4- 8- 4	14	2-12- 6	49,279	1-11- 4	838
10- 8- 6	8	4- 7- 8	8	2-12- 4	179	1-11- 3	145
10- 6- 4	74	3-21- 6	41	2-12- 2	20,039	1-10- 5	245
9-27- 9	1	3-18- 9	739	2-10- 8	66	1-10- 4	6
8-16-16	4	3-18- 3	10	2-10- 6	31	1-10- 3	376
8- 6- 6	1	3-15-20	18	2-10- 4	422	1-10- 2	458
6-15- 9	35	3-15-12	334	2-10- 3	93	1-10- 1	25
6-12- 4	3	3-12-15	60	2-10- 2	8	1- 9- 3	32
6- 8- 6	46	3-12-12	448	2- 9- 5	98	1- 8- 8	20
5-15- 5	13	3-12-10	1	2- 8-16	2,483	1- 8- 4	666
5-10- 5	19	3-12- 4	91	2- 8-15	11	1- 8- 3	638
5- 8- 6	12	3-10- 7	3	2- 8-10	1,916	1- 8- 2	130
4-28- 8	4	3-10- 6	128	2- 8- 8	2	1- 6- 8	2
4-24-12	2,685	3-10- 4	2	2- 8- 6	52	3- 9A*-9I*-3	193
4-24- 4	1,081	3- 9-18	380	2- 8- 5	453	2-12A*-7I*-2	16
4-16-32	64	3- 8- 6	699	2- 8- 4	560	2- 8A*-8I*-2	45
4-16-20	8	3- 7- 7	261	2- 8- 2	154	2- 8A*-4I*-6	1,880
4-16- 4	268	2-20-10	50	1-14- 5	21	2- 8A*-4I*-2	321
4-12- 8	175	2-16- 8	459	1-14- 3	32	2- 6A*-6I*-6	8
4-12- 4	143	2-16- 6	10	1-14- 2	335	2- 6A*-6I*-3	449
4-10- 6	319	2-16- 4	23	1-12- 4	62	1- 8A*-4I*-2	6
4- 8- 8	22	2-16- 2	232	1-12- 3	569	1- 4A*-2I*-0	10
4- 8- 7	122	2-14- 7	2	1-12- 2	186		
4- 8- 6	740	2-14- 4	1,041	1-12- 1	25		

D. Bone Products (Steam and Raw Bone)—2,736

E. Miscellaneous—513

Summary—

1. Total tons reported—134,546
2. Tag sales from firms not reporting—5,980
3. Total tonnage based on reports (Items 1 and 2)—140,526
4. Total tonnage from tag sales—152,824

*A Available P_2O_5; I=Insoluble P_2O_5

Table 5 gives the total tonnage, retail price, cost per ton pounds of actual plant food per ton and the cost per pound o plant food for the past 14 years. It will be noted that the averag cost per pound of plant food is slightly higher in 1934 than fo any year since 1930.

TABLE 5. Tonnage, Retail Value and Pounds Per Ton of Plant Food

Year	Tons reported by manufacturer	Tonnage per year based on tag sales	Retail Value dollars	Cost per ton dollars	Pounds per ton actual plant food	Cost per pound plan food cents
1920	....	230,184	8,499,256	36.92	318	0.116
1921	....	186,041	5,907,990	31.76	330	0.096
1922	....	207,501	5,644,639	27.20	367	0.074
1923	....	195,702	6,126,759	31.31	402	0.078
1924	....	192,417	6,479,605	33.67	443	0.076
1925	....	226,148	8,253,670	36.50	459	0.080
1926	....	228,280	8,464,607	37.08	452	0.082
1927	....	240,498	8,998,412	37.42	444	0.084
1928	....	221,082	8,254,591	37.34	452	0.083
1929	*237,590	291,193	11,327,868	38.90	473	0.082
1930	*246,009	219,684	8,521,905	38.79	486	0.080
1931	*188,496	170,777	5,503,088	32.22	493	0.065
1932	*100,581	79,400	2,319,147	29.21	458	0.064
1933	*105,289	99,755	2,851,674	28.59	460	0.062
1934	*140,526	152,824	4,705,435	30.79	467	0.066

*Estimated from manufacturers' reports and tag sales of companies that did not report their tonnage sale

Table 6 shows the tonnages of low and high grade fertilizer estimated from the tag sales of the past 20 years.

TABLE 6. Tonnage of Low and High Grade Fertilizers

Year	Ammoniated Superphosphate			Superphosphate and Potash			Complete			Superphosphate		
	Low Grade	High Grade		Low Grade	High Grade		Low Grade	High Grade		Low Grade	High Grade	
	Less than 14 units	14 to 19 units	20 units and above	Less than 14 units	14 to 19 units	20 units and above	Less than 14 units	14 to 19 units	20 units and above	Less than 14 units	16 to 20 units	abov 20 un
1915	3,767*	....	......	13,255	1,074	....	88,946	22,589	....	8,407	6,960	......
1916	32,578*	....	......	2,034	....	....	58,698	16	....	6,369	20,157	......
1917	67,820*	....	......	3,556	....	....	67,123	....	....	7,088	35,521	......
1918	72,239	10,872	......	2,370	1,469	....	66,297	12,005	....	14,019	49,952	......
1919	44,283	11,294	......	7,613	7,697	....	68,139	24,138	....	7,003	52,010	......
1920	28,391	9,782	......	3,815	19,785	....	52,554	28,314	....	7,474	60,697	......
1921	13,080	6,041	......	2,060	20,425	....	40,747	33,338	....	951	53,167	60
1922	5,879	4,510	......	2,141	28,553	....	35,439	56,464	....	2,407	57,689	64
1923	2,082	2,227	......	656	34,738	....	22,995	68,225	....	469	45,875	3,15
1924	458	872	......	402	30,145	....	18,899	67,815	....	813	45,508	7,23
1925	494	750	......	125	32,663	....	17,370	94,515	....	1,032	44,095	12,00
1926	63	219	......	....	32,038	....	16,609	114,920	....	1,906	36,475	10,00
1927	219	301	......	94	13,750	27,941	13,409	111,395	26,308	906	29,166	1,96
1928	....	....	......	125	9,351	30,975	6,437	66,256	73,016	875	21,135	4,98
1929	62	....	......	....	3,919	41,081	10,444	70,291	133,275	750	19,067	1,83
1930	....	....	......	....	1,844	32,813	5,001	42,132	116,003	876	10,125	1,18
1931	....	....	......	....	1,556	23,706	2,956	33,535	83,350	719	11,233	83
1932	....	....	......	....	594	8,594	3,625	17,469	36,532	93	7,238	27
1933	....	188	......	....	656	9,094	3,281	23,501	47,113	219	10,907	18
1934	....	....	406	....	625	17,281	4,494	31,919	70,088	719	16,732	75

*Not divided into classes.

Table 7 gives the amount of plant food in tons sold for each of the past 15 years.

TABLE 7: Plant Food in Tons

Year	Nitrogen	Available phosphoric acid	Insoluble phosphoric acid	Total phosphoric acid (bone)	Total phosphoric acid (rock)	Potash
1920	1,685.52	24,529.78	3,345.19	3,109.27	776.68	3,462.33
1921	1,553.82	20,160.84	2,418.63	2,615.84	289.99	3,990.03
1922	1,832.40	24,970.10	2,791.37	2,778.99	9.28	6,032.44
1923	2,178.43	24,225.45	2,795.56	2,545.94	....	8,176.80
1924	2,159.38	25,375.26	2,291.36	2,740.71	....	10,064.16
1925	3,163.28	31,207.63	2,989.05	1,565.87	....	12,927.98
1926	3,167.68	31,816.71	3,201.93	1,529.18	37.13	11,831.11
1927	3,823.60	31,210.51	2,916.94	1,141.05	208.10	14,098.24
1928	3,142.32	30,575.33	2,641.39	708.58	302.02	12,577.45
1929	5,979.58	39,852.75	3,632.04	730.12	274.30	18,359.58
1930	4,337.27	29,775.30	2,690.06	556.76	524.40	15,546.71
1931	4,077.10	22,232.81	2,138.18	1,023.85	463.08	12,201.80
1932	1,849.31	10,186.35	689.05	312.46	38.06	5,127.09
1933	2,163.77	13,211.67	765.19	229.67	20.79	6,568.22
1934	3,181.80	19,955.19	1,266.06	985.73	147.27	10,128.27

Calculated from tag sales and inspection reports.

Table 8 gives a summary of inspection of samples for the last 33 years.

TABLE 8. Summary of Inspection for the Past Thirty-three Years

Year	Number of samples reported	Number equal to guarantee in every particular	Number equal in value of guarantee	Number within 10 per cent of value of guarantee	Number not within 10 per cent of value of guarantee
1902	679	335	564	93	22
1903	674	286	492	139	43
1904	643	248	451	148	44
1905	734	312	528	158	48
1906	879	374	642	176	61
1907	793	265	481	210	102
1908	901	391	683	171	47
1909	969	417	720	215	34
1910	1,118	441	834	242	42
1911	1,095	527	896	180	19
1912	1,220	636	1,034	175	11
1913	1,204	714	1,021	178	5
1914	1,396	727	1,152	239	5
1915	1,368	684	1,145	214	9
1916	1,367	870	1,183	168	16
1917	919	622	830	76	13
1918	1,285	888	1,142	121	22
1919	1,401	936	1,227	141	32
1920	1,491	944	1,267	188	27
1921	1,314	754	1,070	227	17
1922	1,216	812	1,071	132	13
1923	1,325	970	1,214	108	3
1924	1,439	1,072	1,340	94	5
1925	1,442	1,019	1,329	111	2
1926	1,225	798	1,033	183	9
1927	1,450	909	1,277	153	10
1928	1,437	865	1,283	144	9
1929	1,378	854	1,217	155	6
1930	1,421	1,090	1,320	89	10
1931	1,396	1,100	1,315	74	7
1932	1,138	835	1,053	80	5
1933	1,153	829	1,064	84	5
1934	1,425	1,097	1,311	109	5

PRICES USED IN SECURING COMPARATIVE VALUE OF FERTILIZERS

These values are not for the purpose of fixing the commercial value of mixed fertilizers, but are for comparative purposes only. They are for use in comparing the value of inspection samples with manufacturers' guarantees, and can be used advantageously by fertilizer purchasers in calculating the relative values of various brands offered for sale by different manufacturers.

For use in determining the comparative values of fertilizer inspected in 1935 the following prices have been adopted:

Table 9. Prices Used in Determining Comparative Values of Fertilizers

	Per pound cents	Per unit or per cent dollars
All fertilizers—		
Nitrogen (N)	10.0	2.00
Soluble and reverted phosphoric acid (P_2O_5)	5.0	1.00
Potash (K_2O) soluble in water	5.0	1.00
Mixed fertilizers containing nitrogen—		
Insoluble phosphoric acid (P_2O_5)	1.5	0.30
Precipitated bone—		
Available phosphoric acid (P_2O_5)	5.0	1.00
Insoluble phosphoric acid (P_2O_5)	1.5	0.30
Animal by-products, bone, tankage, etc.—		
Total phosphoric acid (P_2O_5)	3.5	0.70
Basic Slag—		
Total phosphoric acid (P_2O_5)	4.5	0.90
Rock Phosphate (floats) and low grade slag—		
Total phosphoric acid (P_2O_5)	1.5	0.30
Mixed fertilizer, acid phosphate, etc., containing no nitrogen—		
Insoluble phosphoric acid	0.0	0.00

TABLE 10. Fertilizer Tonnage and Estimated Retail Value, 1934

Class of Fertilizer	Spring 1934 Tons	Fall 1934 Tons	Total 1934 Tons	Estimated 1934 Retail Value
1. Acid phosphate, 14% and less	63	656	719	$ 17,256 00
2. Acid phosphate, 16%	794	4,813	5,607	115,504.20
3. Acid phosphate, 18-20%	1,656	9,469	11,125	266,110.00
4. Acid phosphate above 20%	531	219	750	37,200.00
7. Ammoniated superphosphate*	406		406	28,420 00
10. Acid phosphate and potash, 14-19 units	94	531	625	15,575.00
10a. Acid phosphate and potash above 20 units	12,531	4,750	17,281	524,651.16
11. Complete fertilizer (low)	500	1,250	1,750	41,212.50
12. Complete fertilizer (medium)	563	2,181	2,744	64,291.92
13. Complete fertilizer (high)	10,750	21,169	31,919	855,110.01
13a. Complete fertilizer above 20 units	40,432	29,656	70,088	2,386,496.40
14. Steamed bone	219	1,059	1,278	39,106 80
15. Raw bone	156	2,213	2,369	76,352.87
16. Tankage	188	31	219	3,723.00
21. Rock phosphate	281	156	437	8,740.00
22. Nitrogen salts†	2,350	50	2,400	101,736.00
‡Ammonium sulphate	950		950	
‡Nitrate of soda	1,250	50	1,300	
‡Cyanamid	150		150	
23. Potash salts†	2,050	150	2,200	99,770.00
‡Muriate of potash	2,050	150	2,200	
‡Sulphate of potash				
31. Miscellaneous (peat, dried manure, dried blood, garbage tankage, etc.)	844	63	907	24,180 62
Total	74,408	78,416	152,824	$4,705,436.48

*Retail values estimated from average analyses obtained from tag sales and the comparative values established for 1934.

†Tonnage in these classes estimated on the basis of 200-pound bags or 10 bags per ton. All other classes estimated on the basis of 125-pound bags or 16 bags per ton. Cyanamid estimated on the basis of 100-pound bags or 20 bags per ton.

‡Not included in totals.

Table 10 gives the fertilizer tonnage for the spring and fall seasons as well as the total tonnage and estimated retail value for the year 1934.

Table 11 gives a summary of inspection on the basis of guaranteed and found composition and retail values, while Table 12 gives the standing of the manufacturers as determined by the inspection of 1934.

TABLE 11. Summary of Inspection on the Basis of Composition, Guaranteed, Found, and Retail Values

Class of Fertilizer	Number of Samples	Nitrogen (N), average per cent		Available phosphoric acid (P_2O_5), average per cent		Insoluble phosphoric acid (P_2O_5), average per cent		Total phosphoric acid (P_2O_5), average per cent		Potash (K_2O), soluble in water average per cent		Comparative value per ton dollars		Retail price per ton, average, dollars	Comparison, retail price and found comparative value per ton, dollars	Range in retail price per ton, dollars
		Guaranteed	Found	Guaranteed	Found	Guaranteed	Found	Guaranteed	Found	Guaranteed	Found	Guaranteed	Found			
1. Acid phosphate, less than 16 per cent available phosphoric acid	1	......	......	14.0	13.9	......	1.1	......	......	......	......	14.00	13 90	24 00	+10.10	24 00*
2. Acid phosphate, 16 to 18 per cent available phosphoric acid	54	......	......	16.0	16 5	0 8	0 9	......	......	......	......	16 00	16 50	20 60	+ 4 10	20.05–23 95
3. Acid phosphate, 18 to 20 per cent available phosphoric acid	101	......	......	20.0	20.6	1 0	0.7	......	......	......	......	20.00	20 60	23 92	+ 3 32	23 40–24 90
4. Acid phosphate more than 20 per cent available phosphoric acid	17	......	......	43 7	43 6	1.0	0 4	......	......	......	......	43 70	43.60	49 60	+ 6 00	49 55–50 55
10. Acid phosphate and potash (High grade), 14 or more per cent available plant food	7	......	......	12.3	13.3	1.5	0 8	......	......	5 4	6 4	17.70	19 70	24 92	+ 5 22	24 50–25 70
10a. Acid phosphate and potash (High grade), 20 or more per cent available plant food	189	......	......	12.7	13 2	0.8	0.7	......	......	12 2	12.6	24.90	25 80	30 36	+ 4 56	27.30–51 00
11. Complete fertilizer (Low grade), less than 12 per cent available plant food	9	1.4	1.6	7.1	8.3	5.6	1.9	......	......	2.4	2.6	13.98	14.67	23.55	+ 8.88	20.75–27.00
12. Complete fertilizer (Medium grade), 12 to 14 per cent available plant food	44	1.3	1.4	8.3	8.8	1.7	1.1	......	......	2.9	3.1	14.31	14.53	23.43	+ 8.90	21.45–26 00
13. Complete fertilizer (High grade), 14 or more per cent available plant food	327	2.1	2.2	10.8	11.3	1 8	1.1	......	......	3.2	3.5	18.74	19.53	26.79	+ 7 26	21.30–35 20
13a. Complete fertilizer (High grade), 20 or more per cent available plant food	591	2.5	2.6	13.5	13.9	0 9	0 8	......	......	7.6	7.9	26.37	27.24	34.05	+ 6 81	29 50–54.90
14. Steamed Bone	17	1.7	2.4	......	......	......	......	27.2	26.8	......	......	22.44	23.56	30 60	+ 7.04	30 60*
15. Raw Bone	23	2.3	2.6	......	......	......	......	23.6	25.2	......	......	21.12	22.84	32 23	+ 9.39	30 00–36 10
16. Tankage	2	5.4	5 8	......	......	......	......	20.0	14.9	......	......	24.80	22.03	17.00	— 5 03	17.00*
21. Rock phosphate	2	......	......	......	......	......	......	33.0	33.7	......	......	9.90	10.11	20.00	+ 9.89	10 00–20 00
22. Nitrogen salts	18	17.6	17.6	......	......	......	......	......	......	......	......	35.20	35.20	42.39	+ 7.19	40 90–45 00
23. Potash salts	17	......	......	......	......	......	......	......	......	50.0	50.1	50.00	50.10	45.35	— 4.75	38.70–52.00
31. Miscellaneous (peat, peat and limestone, dried manure, dried blood, garbage tankage, etc.)	6	1.9	2.1	1.0	1.8	0.5	2.8	1.2	1.5	1.8	2.6	7.59	10.49	26.66	+15.17	15 00–40 00

*Only one retail value obtained.

TABLE 12. Standing of Manufacturers Determined by Inspection of 1934

Manufacturers	Number of samples reported	Number equal to guarantee in every particular	Number equal in value to guarantee	Number within 10 per cent of value of guarantee	Number not within 10 per cent of value of guarantee	Number with inferior nitrogen	Total number with nitrogen
American Agricultural Chemical Co., The, New York, N. Y.	63	47	60	3	....	....	53
American Reduction Corp., Chicago, Ill.	1	....	1	....	....	....	1
Armour Fertilizer Works, Chicago Heights, Ill.	107	93	103	4	....	....	87
Barrett Co., The, New York, N. Y.	2	1	1	1	....	....	2
Baugh & Sons Co. of Ohio, Canton, Ohio	3	2	3	....	....	....	2
Buhner Fertilizer Co., The, Seymour, Ind.	105	73	93	12	....	1*	87
Clendenin & Co., Richmond, Ind.	8	2	5	3	....	....	6
Consolidated Chemical Co., Louisville, Ky.	22	17	22	....	....	....	15
Darling & Co., Chicago, Ill.	33	28	30	2	1	....	25
Diamond Fertilizer Co., The, Sandusky, Ohio	9	7	8	1	....	....	4
Dockwiler & Kingsbury Co., Indianapolis, Ind.	2	....	2	....	....	....	2
Federal Chemical Co., Inc., Louisville, Ky.	65	47	61	4	....	....	57
Fox Chemical Co., Louisville, Ky.	3	2	2	....	1	....	....
Heil Co., The, Milwaukee, Wis.	1	....	1	....	....	1*	1
Heldt Co., The, Evansville, Ind.	1	1	1	....	....	....	1
Hopkins Fertilizer Co., New Albany, Ind.	80	61	78	2	....	....	70
Indiana Farm Bureau Cooperative Ass'n, Inc., Indianapolis, Ind.	284	238	262	22	....	....	172
Indiana Farm Bureau Purchasing Department, Inc., Indianapolis, Ind.	27	21	23	4	....	....	18
International Agricultural Corp., Cincinnati, Ohio	41	28	35	4	2	....	33
Jarecki Chemical Co., Cincinnati, Ohio	2	2	....	....	....	....	....
Joslin-Schmidt Corp., Cincinnati, Ohio	26	19	24	2	....	....	24
Kendallville Fertilizer Co., Kendallville, Ind.	1	....	1	....	....	....	1
Kentucky Fertilizer Co., Louisville, Ky.	1	1	1	....	....	....	....
Kingsbury & Co., Inc., Indianapolis, Ind.	75	51	65	10	....	....	46
Louisville Fertilizer Co., Cincinnati, Ohio	3	3	3	....	....	....	3
Louisville Fertilizer Co., Louisville, Ky.	1	1	1	....	....	....	....
McCarty Seed Co., J. A., Evansville, Ind.	20	16	19	1	....	....	12
Madison Glue Corp., Madison, Ind.	1	....	....	....	1	....	1
Miami Fertilizer Co., The, Dayton, Ohio	4	4	4	....	....	....	2
Morgan Packing Co., Austin, Ind.	20	6	14	6	....	....	11
Natural Products, Inc., Indianapolis, Ind.	4	3	4	....	....	4†	4
Norris Fertilizer Co., The, Rushville, Ind.	17	11	14	3	....	....	14
North American Fertilizer Co., Louisville, Ky.	11	7	8	3	....	....	10
Price Chemical Co., Louisville, Ky.	84	72	82	2	....	....	66
Pulverized Manure Co., Chicago, Ill.	1	1	1	....	....	1*	1
Rauh & Sons Fertilizer Co., E., Indianapolis, Ind.	65	39	56	9	....	....	44
Read Phosphate Co., New Albany, Ind.	12	11	12	....	....	....	3
Royster Guano Co., The F. S., Toledo, Ohio	16	13	16	....	....	....	9
Ruhm Phosphate & Chemical Co., Mount Pleasant, Tenn.	2	2	2	....	....	....	....

TABLE 12. Continued

Manufacturers	Number of samples reported	Number equal to guarantee in every particular	Number equal in value to guarantee	Number within 10 per cent of value of guarantee	Number not within 10 per cent of value of guarantee	Number with inferior nitrogen	Total number with nitrogen
Smith Agricultural Chemical Co., The, Indianapolis, Ind.	85	77	82	3			59
Steinkamp, Hugo, Holland, Ind.	10	8	10				9
Swift & Co., Fertilizer Works, Calumet City, Ill.	44	39	41	3			33
Sydenstricker, James L., Indianapolis, Ind.	1	1	1			1†	1
Synthetic Nitrogen Products Corp., New York, N. Y.	1			1			1
United States Guano Co., Baltimore, Md.	4	4	4				
Virginia-Carolina Chemical Corp., Cincinnati, Ohio	53	36	50	3			41
Welch Chemical Co., The, Columbus, Ohio	2	1	2				2
Wenning, A. E., New Salisbury, Ind.	2	1	1	1			1
Totals	1,425	1,097	1,311	109	5	8	1,034

*Dried Manure} Manufacturer not responsible for quality of nitrogen in these materials as they are inferior
†Muck } sources of nitrogen.

DEFINITION OF TERMS AND INTERPRETATION OF RESULTS ON FERTILIZERS AND LIMING MATERIALS ADOPTED BY THE ASSOCIATION OF OFFICIAL AGRICULTURAL CHEMISTS

NITROGEN

Acidulated fish tankage, acidulated fish scrap, is the rendered product derived from fish and treated with sulfuric acid.

Activated sewage products are made from sewage freed from grit and coarse solids and aerated after being inoculated with microorganisms. The resulting flocculated organic matter is withdrawn from the tanks, filtered with or without the aid of coagulants, dried, ground, and screened.

Charred peat is peat artificially dried at a temperature that causes partial decomposition.

Cyanamide and urea nitrogen is synthetic non-proteid organic nitrogen.

Crude, inert, or slow-acting nitrogenous materials are unprocessed organic substances relatively high in nitrogen but having a very low value as plant food and showing a low activity by both the alkaline and neutral permanganate methods (below fifty per cent [50%] and eighty per cent [80%] respectively).

Dried blood is the collected blood of slaughtered animals, dried and ground and containing not less than twelve per cent (12%) of nitrogen in organic forms.

Fish tankage, fish scrap, dry ground fish, fish meal fertilizer grade is the dried ground product derived from rendered or unrendered fish.

Garbage tankage is the rendered, dried and ground product derived from waste household food materials.

Hoof and horn meal is a product resulting from the processing, drying, and grinding of hoofs and horns.

Nitrate of soda is a commercial sodium nitrate containing not less than fifteen per cent (15%) of nitrogen, chiefly as sodium nitrate.

Peat is partly decayed vegetable matter of natural occurrence. It is composed chiefly of organic matter which contains some nitrogen of low activity.

Process tankages are products made under steam pressure from crude inert nitrogenous materials, with or without the use of acids, for the purpose of increasing the activity of the nitrogen. These products shall be called "Process Tankages" with or without further qualification. The water-insoluble nitrogen in these products shall test at least fifty per cent (50%) active by the alkaline, or eighty per cent (80%) by the neutral permanganate method.

Sheep manure-wool waste is the by-product from wool-carding establishments consisting chiefly of sheep manure, seeds, and wool fiber.

Sulfate of ammonia is a commercial product composed chiefly of ammonium sulphate. It shall contain not less than twenty and five-tenths per cent (20.5%) of nitrogen.

The term *tankage* (without qualification) shall be restricted to meat and bone tankage derived from the rendered, dried, and ground by-products from the slaughter of animals, or from carcasses of animals that have died otherwise than by slaughter.

PHOSPHORIC ACID

Ammoniated superphosphate is a product containing superphosphate and/or dissolved bone and nitrogenous compounds, but without the addition of potash.

Available phosphoric acid is the sum of the water-soluble and the citrate-soluble phosphoric acid.

"Basic" lime phosphate (lime based superphosphate) is a superphosphate to which liming materials have been added in a quantity at least six per cent (6%) calcium carbonate equivalents in excess of the quantity required to convert all water-soluble phosphate to the citrate-soluble form.

Basic phosphate slag is a by-product in the manufacture of steel from phosphatic iron ores. The product shall be finely ground and shall contain no admixture of materials other than what results in the original process of manufacture. It shall contain not less than twelve per cent (12%) of total phosphoric acid (P_2O_5), not less than eighty per cent (80%) of which shall be soluble in two per cent (2%) citric acid solution according to the Wagner method of analysis. Any other phosphate slag not conforming to this definition shall be designated low grade.

Citrate-soluble ("reverted") phosphoric acid is that part of the total phosphoric acid in a fertilizer that is insoluble in water but soluble in a solution of citrate of ammonia according to the method adopted by the A. O. A. C.

Definition of Products Secured by Heating Calcium Phosphate with Alkali Salts Containing Potash. These products are not potassium phosphate. They may be called non-acid phosphates with potash.

Dicalcium phosphate is a manufactured product consisting chiefly of a dicalcic salt of phosphoric acid.

Dissolved bone is defined as a ground bone or bone meal that has been treated with sulfuric acid.

Ground raw bone is a product resulting from drying and grinding animal bones that have not been previously steamed under pressure.

Ground steamed bone is a product resulting from grinding animal bones that have been previously steamed under pressure.

Mono-ammonium phosphate (fertilizer grade) is a commercial salt made by combining phosphoric acid with ammonia. It shall contain not less than ten per cent (10%) of nitrogen and not less than forty-six per cent (46%) of available phosphoric acid.

Phosphate rock is a natural rock containing one or more calcium phosphate minerals of sufficient purity and quantity as to permit its use, either directly or after concentration, in the manufacture of commercial products.

The term *phosphoric acid* designates (P_2O_5).

Precipitated bone phosphate is a by-product from the manufacture of glue from bones and is obtained by neutralizing the hydrochloric acid solution of processed bone with calcium hydroxide. The phosphoric acid is chiefly present as dicalcium phosphate.

Precipitated phosphate is a product consisting mainly of dicalcium phosphate obtained by neutralizing with calcium hydroxide the acid solution of either phosphate rock or processed bone.

Soft phosphate with colloidal clay is a very finely divided low-analysis by-product from mining Florida rock phosphate by a hydraulic process in which the colloidal materials settle at points in artificial ponds and basins farthest from the washer, and is later removed after the natural evaporation of the water.

Superphosphate is the product resulting from mixing rock phosphate and sulfuric acid and/or phosphoric acid. The grade should always be used as a prefix to the name. Example: 16% Superphosphate.

It is recommended that the use of the term "Acid Phosphate" be discontinued.

Uniformity in Use of Terms "Phosphoric Acid" and "Potash." As the terms phosphoric acid and potash are used universally in guaranteeing and in reporting the analyses of fertilizers, it is recommended that the same terms also be used in reporting and discussing the results of analyses of related materials.

POTASH

Kainit is a potash salt containing potassium and sodium chlorides and sometimes sulfate of magnesia with not less than twelve per cent (12%) of potash (K_2O).

Leached wood ashes are defined as ashes resulting from burning unleached wood, but as having had part of their plant food removed by artificial means or by exposure to rains, snows, or other solvent.

Manure salts shall be understood to mean potash salts containing high percentages of chloride and from twenty per cent (20%) to thirty per cent (30%) of potash (K_2O). The term double manure salts should be discontinued.

Muriate of potash is a potash salt containing not less than forty-eight per cent (48%) of potash (K_2O) chiefly as chlorides.

Nitrate of potash is a salt containing not less than twelve per cent (12%) of nitrogen and forty-four per cent (44%) of potash (K_2O).

The term *potash* designates potassium oxide (K_2O).

Sulfate of potash-magnesia is a potash salt containing not less than twenty-five per cent (25%) of potash (K_2O), nor less than twenty-five per cent (25%) of sulfate of magnesia, and not more than two and five-tenths per cent (2.5%) of chlorine.

Sulfate of potash is a potash salt containing not less than forty-eight per cent (48%) of potash (K_2O) chiefly as sulfate, and not more than two and one-half per cent (2.5%) of chlorine.

Unleached wood ashes are ashes that result from burning unleached wood, that have had no part of their plant food removed, and that contain four per cent (4%) or more of water-soluble potash (K_2O).

Ashes from leached wood are defined as unleached ashes resulting from burning wood that has been exposed to or digested in water or other liquid solvent, as in the extraction of dyes, so that a part of the plant food has been dissolved and removed.

LIMING MATERIALS

Agricultural liming material is any substance that contains calcium and magnesium in condition and quantity suitable for use in neutralizing soil acidity.

Air-slaked lime is the product obtained by exposing quicklime or hydrated lime to the atmosphere until partially carbonated.

Ground limestone is the product obtained by grinding either calcareous or dolomitic limestone. Not less than seventy-five per cent (75%) shall pass a 100-mesh sieve. It shall contain calcium and magnesium carbonate equivalent to not less than ninety per cent (90%) of calcium carbonate.

Ground shell marl is the product obtained by grinding natural deposits of shell marl. Not less than seventy-five per cent (75%) shall pass a 100-mesh sieve. It shall contain calcium and magnesium carbonates equivalent to not less than eighty per cent (80%) of calcium carbonate.

Hydrated or slaked lime is the product obtained by treating quicklime with sufficient water or steam to combine with its oxides.

Interpretation of the Word "Lime" as applied to Fertilizers. The term "lime" shall not be used in the registration, labeling, or guaranteeing of fertilizers or fertilizer materials unless the lime is in a form to neutralize soil acidity such as the oxide, hydroxide or carbonate, or equivalent magnesia compounds.

The word *lime* when applied to liming materials means either calcium oxide or calcium and magnesium oxides.

Quicklime, burned lime, caustic lime, lump lime, unslaked lime, are liming materials that have a high content of calcium oxide (with magnesium oxide) produced by heating suitable carbonates until substantially all of the carbon dioxide has been eliminated.

Waste lime, by-product lime, is any industrial waste or by-product containing calcium or calcium and magnesium in forms that will neutralize acids. It may be designated by the prefixation of the name of the industry or process by which it is produced, i. e., gas-house lime, tanners' lime, acetylene lime-waste, lime-kiln ashes, calcium silicate, etc.

FORMULA, GRADE, ANALYSIS, ETC.

The word *analysis*, as applied to fertilizers, shall designate the percentage composition of the product expressed in terms of nitrogen or ammonia, phosphoric acid, and potash in their various forms.

The term *fertilizer formula* shall be interpreted as expressing the quantity and grade of the crude stock materials used in making a fertilizer mixture. For example: 800 pounds of 16 per cent superphosphate, 800 pounds of 9-20 tankage, and 400 pounds of sulfate of potash-magnesia.

The grade of a fertilizer shall represent the minimum guarantee of its plant food expressed in terms of nitrogen, available phosphoric acid, and water-soluble potash.

The statement of guarantees of mixed fertilizers shall be given in whole numbers.

The *order of terms* in mixed fertilizers shall be nitrogen first, phosphoric acid second, and potash third.

BRAND AND BRAND NAME

A brand is a term, design, or trade mark used in connection with one or several grades of fertilizers.

A brand name is a specific designation applied to an individual fertilizer.

Interpretation of Brand Name to include the analysis or grade of fertilizer. The committee recommends and urges the practice of including the analysis or grade of fertilizer with the brand name, both by the manufacturer on sacks and in printed literature and by the control official in his reports and publications.

Significance of the Name of a Material used as the brand name or part of the brand name of a mixed fertilizer. When the name of a material is used as a part of the brand name of a mixed fertilizer, as for example blood, bone or fish, the nitrogen or phosphoric acid shall be derived from or supplied entirely by the material named. When the name of a material is used as a brand or as part of a brand and the nitrogen and phosphoric acid is not supplied by the material named, the word "brand" shall follow the name of the material. Example: "Fish Brand Fertilizer."

MISCELLANEOUS

Maximum Amount of Chlorine Permissible in Fertilizers in Which the Potash is Claimed as Sulfate. The chlorine in mixed fertilizers in which the potash is claimed as sulfate shall not exceed five-tenths of one per cent (0.5%) more than what is called for in the minimum potash content based on the definition for sulfate of potash as formulated by the committee. Calculate as follows: 0.05 times the percentage of potash found plus 0.5.

Dried pulverized or shredded manures shall be only what the name indicates, and not mixtures of manures and other materials.

The term *finely ground* in the definition of basic phosphate slag shall refer to actual size of particles as determined by the use of standard sieves, as follows: Seventy per cent (70%) or more should pass a 100-mesh sieve, and ninety per cent (90%), or more should pass a 50-mesh sieve.

Gypsum, land plaster, or crude calcium sulfate, are products consisting chiefly of calcium sulfate. They may contain twenty per cent (20%) of combined water. (They do not neutralize acid soils.)

Net Weights. The weights appearing on packages of fertilizer, agricultural lime, and liming material shall always mean net weights.

A unit of plant food is twenty (20) pounds, or one per cent (1%) of a ton.

Table 13 gives a detailed analysis of the individual official inspections for the year 1934.

TABLE 13. Report of Inspection of Fertilizer Collected in 1934

Labels and names of persons from whom samples were secured	Official No.	Inspection No. H. H. and No. L.	Samples taken at		Nitrogen (N)				Phosphoric acid (P_2O_5)			Potash (K_2O), soluble in water, per cent
					Water soluble as nitrates, ammonia salts and organic, per cent	Active water insoluble organic, per cent	Inactive water insoluble organic, per cent	Total per cent	Soluble and reverted (available), per cent	Insoluble, per cent	Total per cent	
American-Agricultural Chemical Company, The, New York, N. Y.												
A. A. 20% Superphosphate	9406			guaranteed					20.0	0.5		
G. M. Norman & Roberts	9406	9835	Heltonville	found					20.2	0.8		
Paoli Hardware Co.	9406	682	Paoli	found					20.0	1.0		
Farmers Feed & Coal Co.	9406	706	Bloomington	found					19.6	0.5		
A. A. 16% Superphosphate	9407			found					16.0	0.5		
Paoli Hardware Co.[1]	9407	9832	Paoli	guarateed					16.0	0.9		
Brownstown Feed Exchange	9407	448	Brownstown	found					16.4	1.3		
Paoli Hardware Co.	9407	684	Paoli	found					16.5	1.1		
Agrico for Grain	256a			guaranteed				2.0	12.0	0.5		4.0
J. D. Best	256a	1036	Floyds Knobs	found	1.82			2.1	12.0	2.3		4.4
Agrico for Potatoes 4-8-6	257a			guaranteed				4.0	8.0	0.5		6.0
Martin Feed Store	257a	9808	Elkhart	found	3.91			4.0	8.2	0.6		6.2
Chas. Ragsdale & Co.	257a	9814	Bedford	found	4.09			4.2	8.7	0.4		6.3
G. M. Norman & Roberts	257a	9834	Heltonville	found	4.02			4.1	8.4	0.4		6.3
Fohl & Fohl	257a	199	Cedar Grove	found	3.86			4.0	8.7	0.4		6.4
R. A. Sawdon	257a	207	Aurora	found	3.83			4.0	9.5	0.3		6.0
C. L. Graf	257a	425	New Albany	found	3.95			4.0	8.9	0.5		6.4
Agrico for Truck	258a			guaranteed				5.0	10.0	0.5		5.0
Martin Feed Store	258a	9807	Elkhart	found	5.00			5.0	10.1	0.4		5.2
Agrico for Corn 3-10-6	259a			guaranteed				3.0	10.0	0.5		6.0
Fohl & Fohl	259a	197	Cedar Grove	found	2.90			3.0	10.4	0.9		6.1
Brownstown Feed Exchange	259a	361	Brownstown	found	3.06			3.2	10.7	0.6		6.0
Agrico for Tobacco 4-10-6	260a			guaranteed				4.0	10.0	0.5		6.0
Ben Struewing	260a	21	Oldenburg	found	3.68			3.8	10.6	0.3		6.1
A. A. Sure Crop Fertilizer	261a			guaranteed				1.0	8.0	0.5		4.0
Paoli Hardware Co.[2]	261a	9838	Paoli	found	1.02			1.1	7.9	0.7		4.1
John Schmocker	261a	25	Batesville	found	1.02			1.1	7.9	1.0		4.1
Fohl & Fohl	261a	184	Cedar Grove	found	0.89			1.0	8.0	1.0		4.0
Paoli Hardware Co.	261a	691	Paoli	found	0.98			1.1	8.0	0.8		4.2
J. D. Best	261a	1037	Floyds Knobs	found	0.95			1.1	8.7	0.9		4.2
A. A. Special Tobacco Fertilizer 3-8-6	263a			guaranteed				3.0	8.0	0.5		6.1
Ben Strueing	263a	22	Oldenburg	found	2.79			2.9	8.6	0.7		5.7
John Schmocker	263a	24	Batesville	found	2.76			2.8	8.3	0.6		6.0
Clyde Culbertson	263a	208	Vevay	found	2.85			3.0	9.0	0.6		6.0

A. A. Antler Fertilizer	271a			guaranteed				2.0	12.0	0.5		6.0
Chas. Ragsdale & Co.	271a	9818	Bedford	found	1.92			2.0	12.5	0.7		5.8
G. M. Norman & Roberts	271a	9837	Heltonville	found	1.95			2.0	11.9	0.9		6.0
John Schmocker[3]	271a	20	Batesville	found	1.89			2.0	12.0	0.7		6.0
Ben Struewing	271a	26	Oldenburg	found	1.92			2.0	12.3	0.8		6.0
Fohl & Fohl	271a	192	Cedar Grove	found	1.96			2.1	12.7	0.5		6.2
Farmers Feed & Coal Co.	271a	288	Bloomington	found	1.83			2.0	12.0	0.8		6.2
Santa Fe Elevator Co.	271a	365	Santa Fe, P. O., Peru	found	2.02			2.1	12.6	0.8		6.1
E. A. Behlmer[4]	271a	1078	Napoleon	found	1.89			2.0	12.6	0.1		6.1
John Schmocker	271a	1186	Batesville	found	1.90			2.1	12.1	0.9		6.0
A. A. Tomato Special Fertilizer 2-12-6	272a			guaranteed				2.0	12.0	0.5		6.0
W. E. Jenner & Son	272a	235	Marengo	found	1.86			2.0	12.6	0.7		6.1
C. L. Graf	272a	426	New Albany	found	2.02			2.1	12.0	1.0		6.2
J. D. Best	272a	434	Floyds Knobs	found	2.02			2.1	12.3	0.8		6.2
Agrico for Tomatoes (2-12-6)	751a			guaranteed				2.0	12.0	0.5		6.0
Fohl & Fohl	751a	191	Cedar Grove	found	1.84			2.0	13.3	0.6		5.8
A. A. Hi-Test Fertilizer 4-24-12	752a			guaranteed				4.0	24.0	0.5		12.0
Fohl & Fohl	752a	189	Cedar Grove	found	3.86			4.0	25.0	0.8		12.0
A. A. Basic Lime Phosphate	905a			guaranteed					14.0			
Farmers Co-operative Elevator	905a	924	Centerville	found					13.9	1.1		
Agrico for Wheat 2-12-6	1037a			guaranteed				2.0	12.0	0.5		6.0
Farmers Feed & Coal Co	1037a	707	Bloomington	found	1.89			2.0	12.0	0.9		6.0
A. A. Homestead Bone Black Fertilizer	1189a			guaranteed				2.0	12.0	0.5		2.0
Chas. Ragsdale & Co,	1189a	9816	Bedford	found	1.86			2.0	11.8	1.0		2.0
Paoli Hardware Co.	1189a	9830	Paoli	found	1.89			2.0	12.3	0.5		2.0
Fohl & Fohl	1189a	198	Cedar Grove	found	1.89			2.0	12.5	0.6		2.0
R. A. Sawdon	1189a	209	Aurora	found	1.83			2.0	12.9	0.6		2.0
A. A. Homestead Garden and Vegetable Fertilizer	1190a			guaranteed				2.0	8.0	0.5		5.0
Chas. Ragsdale & Co.	1190a	9817	Bedford	found	1.89			2.0	8.3	0.8		5.0
John Schmocker[5]	1190a	23	Batesville	found	1.82			1.9	8.5	0.8		4.7
Ben Struewing	1190a	27	Oldenburg	found	1.92			2.0	7.7	1.2		5.1
Gaudin Hardware	1190a	159	Vevay	found	1.85			2.0	9.4	0.9		5.0
Clyde Culbertson	1190a	160	Vevay	found	1.81			2.0	9.0	1.2		5.1
Fohl & Fohl	1190a	182	Cedar Grove	found	1.80			2.0	8.5	0.7		5.0
Uhl-Snider Milling Co.	1190a	183	Connersville	found	1.85			2.0	9.4	0.8		5.2
C. L. Graf	1190a	419	New Albany	found	1.92			2.0	8.4	1.0		5.1
Bornwasser & Gwin Implement Co.	1190a	420	New Albany	found	2.00			2.1	9.2	0.3		6.0
Brownstown Feed Exchange	1190a	452	Brownstown	found	1.92			2.0	8.1	1.0		6.0
John Schmocker	1190a	1118	Batesville	found	1.99			2.1	8.1	0.8		5.0
E. A. Behlmer[6]	1190a	1138	Napoleon	found	1.95			2.0	8.4	0.2		5.2
A. A. Chieftain Mixture	1262a			guaranteed					14.0	0.5		7.0
Chas. Ragsdale & Co.	1262a	9819	Bedford	found					14.4	0.4		7.2
Fohl & Fohl	1262a	201	Cedar Grove	found					14.4	0.5		7.8
Farmers Feed & Coal Co.	1262a	702	Bloomington	found					13.8	0.6		7.5
A. A. Homestead Bone Black Brand Fertilizer	1282a			guaranteed				2.0	12.0	0.5		2.0
Chas. Ragsdale & Co.	1282a	692	Bedford	found	1.83			2.0	12.4	1.0		2.0
Paoli Hardware Co.	1282a	698	Paoli	found	1.83			2.0	12.0	0.4		2.1
Farmers Feed & Coal Co.	1282a	709	Bloomington	found	1.83			2.0	11.4	0.9		2.1

Where 60.0 per cent or more of the total nitrogen guaranteed was found to be water soluble, the active and inactive insoluble organic nitrogen was not determined.

Percentages appearing in bold type in the "Inactive water insoluble organic" column denote inferior nitrogen.

[1] Sample received in the spring.

[2] Sample received in the spring.

[3] Sample received in the spring.

[4] Sample drawn at Osgood, Ind.

[5] Sample received in the spring.

[6] Sample drawn at Osgood, Ind.

TABLE 13. Report of Inspection of Fertilizer Collected in 1934—Continued

Labels and names of persons from whom samples were secured	Official No.	Inspection No. H. H. and No. L.	Samples taken at		Nitrogen (N)				Phosphoric acid (P_2O_5)			Potash (K_2O), soluble in water, per cent
					Water soluble as nitrates, ammonia salts and organic, per cent	Active water insoluble organic, per cent	Inactive water insoluble organic, per cent	Total per cent	Soluble and reverted (available), per cent	Insoluble, per cent	Total per cent	
American Reduction Corp., Chicago, Ill.												
Soil Aid No. Two	1183a			guaranteed				2.0	1.0	0.5		2.0
Sommerfield & Swanson	1183a	9812	LaPorte	found	1.20			2.2	1.8	2.8		2.8
Armour Fertilizer Works, Chicago Heights, Ill.												
Nitrate of Soda	3478			guaranteed				15.6				
Luther McDonald[7]	3478	9777	Vincennes	found				15.9				
Standard Hatcheries[8]	3478	9996	Terre Haute	found				15.5				
Prof. R. C. Wallace[9]	3478	510	Lafayette, R. R. 6	found				15.6				
Armour's "Big Crop" 16% Superphosphate	7629			guaranteed					16.0	0.5		
Geo. P. Wagner	7629	270	Jasper	found					16.4	0.5		
Vincennes Packing Corp.	7629	300	Montgomery	found					16.3	0.7		
Big Crop 0-10-10 Fertilizer	7713			guaranteed					10.0	0.5		10.0
Lawrence Killner[10]	7713	500	Pleasant Ridge	found					10.7	0.5		10.1
Armours Big Crop 0-12-12 Fertilizer	8665			guaranteed					12.0	0.5		12.0
Walton Elevator Co.	8665	371	Walton	found					13.3	0.5		12.0
Etna Green Lumber and Elevator Co.	8665	396	Etna Green	found					12.6	0.4		12.3
John Brown & Son[11]	8665	498	Shelby	found					12.7	0.7		12.6
Joseph Altman[12]	8665	836	Reynolds, R. R. 1	found					13.0	0.3		10.6
Armour's Big Crop 0-8-24 Fertilizer	8666			guaranteed					8.0	0.5		24.0
Etna Green Lumber & Elevator Co.	8666	393	Etna Green	found					8.8	0.4		23.8
Armour's Big Crop 20% Supersphosphate	9210			guaranteed					20.0	0.5		
Etna Green Lumber & Mill Co.	9210	889	Etna Green	found					21.1	0.4		
Armour's Big Crop 0-14-14 Fertilizer	9368			guaranteed					14.0	0.5		14.0
Raff & Lawler Ranch[13]	9368	497	Pogue Ranch	found					14.7	0.3		14.8
Wilbur Dunn[14]	9368	499	Pleasant Ridge	found					14.8	0.4		14.5
Wm. Raff[15]	9368	503	Lake Village, R.R. 8	found					14.8	0.5		14.9
Truman Ware[16]	9368	504	Rensselaer	found					14.9	0.5		14.0
Roy Wood[17]	9368	505	Fair Oaks	found					14.7	0.6		14.6
Fleenor Todd[18]	9368	506	Fair Oaks, R. R. 8	found					14.8	0.4		14.7
Wilbur Dunn[19]	9368	507	Pleasant Ridge	found					14.6	0.4		14.4
J. J. Lawler Estate	9368	508	Rose Lawn	found					14.3	0.8		14.7
Armour's Big Crop 0-20-20 Fertilizer	21a			guaranteed					20.0	0.5		20.0
Tebbie Christenson[20]	21a	332	Tipton	found					20.4	0.8		20.1
Walton Elevator Co.[21]	21a	375	Walton	found					22.7	0.3		19.1

Armour's Big Crop 2-12-2 Fertilizer	319a			guaranteed				2.0	12.0			2.0
Fred W. Kampe	319a	122	Elberfeld	found	2.0			2.2	12.7	0.3		2.0
W. F. Kaiser	319a	185	Harrison, P. O. Ohio	found	1.79			2.0	12.6	0.6		2.1
Graves Implement Store	319a	244	Tell City	found	1.93			2.1	12.8	0.2		2.0
Geo. P. Wagner	319a	266	Jasper	found	2.00			2.2	12.8	0.2		2.0
Farmers Feed & Coal Co.	319a	289	Bloomington	found	1.88			2.1	12.4	0.2		2.1
Mexico Elevator & Live Stock Co.	319a	376	Mexico	found	2.09			2.2	12.9	0.5		2.3
George Bollinger	319a	433	Henryville	found	2.10			2.2	12.6	0.4		2.4
L. N. Jobe & Son	319a	656	English	found	1.47			2.0	12.0	0.6		2.0
Peru Grain & Coal Co.	319a	842	Peru	found	1.96			2.1	12.7	0.5		2.3
Etna Lumber & Mill Co.	319a	894	Etna Green	found	1.92			2.0	12.8	0.3		2.8
J. A. Bertch & Son	319a	1015	Liberty	found	1.45			2.0	11.6	1.0		2.1
Farmers Produce Co.	319a	1074	Salem	found	1.53			2.0	12.5	0.3		2.0
Armour's Big Crop 2-12-6 Fertilizer	320a			guaranteed					2.0	12.0		6.0
Fred W. Sheffler	320a	86	Carlisle	found	1.73			1.9	12.0	0.2		6.3
Ohio Valley Seed Co.	320a	105	Evansville	found	1.89			2.0	12.0	0.2		6.2
J. R. Erwin	320a	123	Daylight, P. O., Inglefield	found	1.86			2.0	12.6	0.1		6.3
Fred W. Kampe	320a	125	Elberfeld	found	1.83			2.0	12.7	0.1		6.0
Main Feed Store	320a	143	Madison	found	1.90			2.1	13.7	0.1		6.0
W. F. Kaiser	320a	190	Harrison, P. O., Ohio	found	1.86			2.0	12.8	0.3		6.2
Reutepohler Hardware Co.	320a	268	Huntingburg	found	1.86			2.0	12.8	0.2		6.1
Vincennes Packing Corp.	320a	299	Montgomery	found	1.96			2.1	12.7	0.2		6.0
Rock Springs Canning Co.	320a	320	Knightstown	found	1.83			2.0	12.6	0.4		6.2
Paul Schulenburg[22]	320a	326	Tipton, R. R. 5	found	1.96			2.0	13.2	0.2		6.3
Wm. Smock Elevator	320a	366	Burrows	found	2.13			2.2	13.1	0.4		6.0
Mexico Elevator & Live Stock Co.	320a	367	Mexico	found	1.96			2.1	12.8	0.4		6.3
George Bollinger	320a	429	Henryville	found	1.96			2.1	12.4	0.7		6.2
J. Gienger & Co.	320a	430	Jeffersonville	found	1.96			2.2	12.5	0.5		6.0
Vincennes Packing Corp.	320a	431	Crothersville	found	1.96			2.1	12.6	0.3		6.1
Vincennes Packing Corp.	320a	453	Seymour	found	1.89			2.0	12.3	0.3		6.1
L. N. Jobe & Son	320a	654	English	found	1.52			2.0	11.3	0.8		6.1
Geo. P. Wagner	320a	699	Jasper	found	1.64			2.1	11.5	0.7		6.2
Fair Ground Elevator	320a	826	Frankfort	found	1.97			2.1	12.4	0.6		6.1
Joseph Altman[23]	320a	833	Reynolds, R.R. 1	found	2.13			2.3	12.5	0.6		6.0
Peru Grain & Coal Co.	320a	843	Peru	found	1.96			2.1	12.7	0.6		6.3
Etna Lumber & Mill Co.	320a	881	Etna Green	found	1.96			2.1	12.8	0.3		6.0
Talmage Martin	320a	886	Elkhart	found	2.02			2.1	12.6	0.4		6.2
Bickel Feed Store	320a	1035	Corydon	found	1.50			2.0	11.9	0.8		6.2

Where 60.0 per cent or more of the total nitrogen guaranteed was found to be water soluble, the active and inactive insoluble organic nitrogen was not determined.

Percentages appearing in bold type in the "Inactive water insoluble organic" column denote inferior nitrogen.

[7] Distributed by Army Base, Norfolk, Va. Sample to manufacturer.

[8] Distributed by J. A. McCarty Seed Co., Evansville, Ind. Not tagged. Labels furnished.

[9] Purchased from Crabbs Reynolds Taylor Co., Lafayette, Ind.

[10] Purchased from J. J. Lawler Estate, Chicago, Ill.

[11] Not tagged. Labels furnished.

[12] Purchased from Crabbs Reynolds Taylor Co., Reynolds, Ind. Refund $5.60. Sample to manufacturer.

[13] Not tagged. Labels furnished.

[14] Purchased from J. J. Lawler Estate, Chicago, Ill.

[15] Not tagged. Labels furnished.

[16] Purchased from J. J. Lawler Estate, Chicago, Ill.

[17] Not tagged. Labels furnished. Purchased from J. J. Lawler Estate, Chicago, Ill.

[18] Not tagged. Labels furnished. Purchased from J. J. Lawler Estate, Chicago, Ill.

[19] Purchased from J. J. Lawler Estate, Chicago, Ill.

[20] Purchased from Stokely Bros. & Co., Tipton, Ind.

[21] Sample to manufacturer.

[22] Purchased from Stokely Bros. & Co., Tipton, Ind.

[23] Purchased from Crabbs Reynolds Taylor Co., Reynolds, Ind.

TABLE 13. Report of Inspection of Fertilizer Collected in 1934—Continued

Labels and names of persons from whom samples were secured	Official No.	Inspection No. H. H. and No. L.	Samples taken at		Nitrogen (N)				Phosphoric acid (P_2O_5)			Potash (K_2O), soluble in water, per cent
					Water soluble as nitrates, ammonia salts and organic, per cent	Active water insoluble organic, per cent	Inactive water insoluble organic, per cent	Total per cent	Soluble and reverted (available), per cent	Insoluble, per cent	Total per cent	
Maxwell Implement Co.	320a	1156	Martinsville	found	1.64			2.0	12.0	0.9		6.2
Bussey Hardware Co.	320a	1193	Marysville	found	1.53			2.0	12.0	0.8		6.3
Armour's Big Crop Burley Tobacco Grower	322a			guaranteed				3.0	8.0			6.0
Main Feed Store	322a	145	Madison	found	2.27			3.0	9.0	0.3		6.4
Armour's Big Crop Plant Bed Special	323a			guaranteed				4.0	8.0			3.0
Vincennes Packing Corp.	323a	98	Washington	found	3.69			3.9	8.3	0.1		3.1
Geo. B. Gibson's Sons Co.	323a	130	Rising Sun	found	3.11			3.9	9.0	0.6		5.0
Main Feed Store	323a	146	Madison	found	3.12			4.0	8.6	0.4		3.0
Vincennes Packing Corp.	323a	301	Montgomery	found	3.33			3.5	10.1	0.1		4.5
Armour's Big Crop 2-16-8 Fertilizer	324a			guaranteed				2.0	16.0			8.0
Sartor & Clark	324a	81	Oaktown	found	1.90			2.1	16.4	0.3		8.9
Vincennes Packing Corp.	324a	101	Washington	found	1.85			2.0	16.2	0.4		8.3
Vincennes Packing Corp.	324a	308	Montgomery	found	1.96			2.1	16.9	0.2		9.6
Vincennes Packing Corp.	324a	449	Seymour	found	1.89			2.0	16.7	0.3		8.2
Armour's Big Crop 4-12-8 Fertilizer	328a			guaranteed				4.0	12.0			8.0
Ohio Valley Seed Co.	328a	112	Evansville	found	3.24			4.0	12.1	0.2		8.0
Vincennes Packing Corp.	328a	447	Seymour	found	3.92			4.0	12.4	0.2		8.1
Armour's Big Crop 3-18-9 Fertilizer	361a			guaranteed				3.0	18.0			9.0
Etna Green Lumber & Elevator Co.	361a	387	Etna Green	found	2.99			3.1	19.3	0.6		9.2
Fair Ground Elevator	361a	829	Frankfort	found	3.22			3.3	18.8	0.4		9.6
Etna Lumber & Mill Co.	361a	879	Etna Green	found	2.98			3.1	18.5	0.4		9.0
Armour's Big Crop 3-9-18 Fertilizer	543a			guaranteed				3.0	9.0			18.0
Etna Green Lumber & Coal Co.	543a	391	Etna Green	found	3.16			3.2	9.7	0.4		18.6
Armour's Big Crop 4-8-6 Fertilizer	545a			guaranteed				4.0	8.0			6.0
Wm. Smock Elevator	545a	378	Burrows	found	3.83			4.0	9.0	0.2		6.3
Etna Green Lumber & Elevator Co.	545a	394	Etna Green	found	4.02			4.1	9.0	0.2		6.4
Armour's Big Crop 4-24-12 Fertilizer	547a			guaranteed				4.0	24.0			12.0
Mexico Elevator & Live Stock Co.	547a	373	Mexico	found	3.89			4.0	26.2	0.3		12.4
Armour's Big Crop 2-8-16 Fertilizer	621a			guaranteed				2.0	8.0			16.0
Sartor & Clark	621a	80	Oaktown	found	1.92			2.0	8.4	0.4		16.0
Etna Green Lumber & Elevator Co.	621a	388	Etna Green	found	2.14			2.2	8.8	0.3		16.2
Armour's Big Crop 3-12-12 Fertilizer	660a			guaranteed				3.0	12.0			12.0
Paul Schulenburg[24]	660a	304	Tipton, R. R. 5	found	3.06			3.2	13.0	0.2		12.2
Stokeley Bros. & Co.	660a	346	Greenwood	found	3.09			3.2	13.2	0.1		13.2
Wm. Smock Elevator	660a	377	Burrows	found	3.01			3.1	13.0	0.2		12.5
Vincennes Packing Corp.	660a	441	Crothersville	found	3.03			3.1	12.5	0.4		12.5
	681a			guaranteed				2.0			24.0	

J. R. Erwin	681a	575	Daylight, P. O., Inglefield	found	0.22	1.19	0.59	2.0			27.5	
Fred W. Kampe	681a	578	Elberfeld	found	0.56	1.28	0.56	2.4			26.3	
C. Eckerty & Son	681a	669	Eckerty	found	0.18	0.96	0.56	1.7			27.0	
C. F. Collier	681a	678	Mitchell	found	0.37	1.36	0.57	2.3			25.5	
Farmers Feed & Coal Co	681a	708	Bloomington	found	0.23	1.42	0.65	2.3			26.2	
Graves Implement Store	681a	711	Tell City	found	0.52	1.60	0.38	2.5			25 7	
Geo. P. Wagner	681a	738	Jasper	found	0.28	1.25	0.47	2.0			26.8	
Johnson & Chenoweth	681a	743	Shoals	found	0.48	1.31	0.51	2.3			26.0	
Reutepohler Hardware Co	681a	748	Huntingburg	found	0.40	1.12	0.68	2.2			26.3	
Etna Lumber & Mill Co	681a	882	Etna Green	found	0.60	1.44	0.56	2.6			27.2	
Farmers Co-operative Elevator Co	681a	971	Clay City	found	0.36	1.13	0.51	2.0			26.8	
Sunshine Feed Store	681a	1073	Scottsburg	found	0.32	1.53	0.45	2.3			25.1	
O. L. Cauble	681a	1097	Pekin	found	0.21	2.01	0.28	2.5			26.8	
Bussey Hardware Co	681a	1098	Marysville	found	0.61	1.28	0.51	2.4			26.3	
Bolles Hardware Co	681a	1171	Ewing	found	0.42	1.05	0.63	2.1			26.7	
Armour's Big Crop 4-24-4 Fertilizer	709a			guaranteed				4.0	24.0			4.0
Mexico Elevator & Live Stock Co	709a	368	Mexico	found	3.52			3.7	24.2	0.5		4.0
Armour's Big Crop Indiana Tomato Grower 2-16-8	903a			guaranteed				2.0	16.0			8.0
Fred W. Kampe	903a	124	Elberfeld	found	1.93			2.1	16.6	0.2		8.4
Armour's Big Crop 0-14-6 Fertilizer	959a			guaranteed					14.0			6.0
Farmers Feed & Coal Co	959a	290	Bloomington	found					14.9	0.2		6.6
Armour's Big Crop Potato Grower 3-8-6	1209a			guaranteed				3.0	8.0			6.0
W. F. Kaiser	1209a	202	Harrison, P. O., Ohio	found	2.93			3.1	8.6	0.5		6.1
Graves Implement Store	1209a	246	Tell City	found	2 85			3.0	9.8	0.2		6.1
W. S. Miller[25]	1209a	903	Richmond, R. R. 1	found	2.59			3.0	8.2	0.6		6.2
Armour's Big Crop 2-12-16 Fertilizer	1327a			guaranteed				2.0	12.0			16.0
Vincennes Packing Corp	1327a	444	Crothersville	found	1.97			2.0	12 8	0.3		16.3
Barrett Company, The, New York, N. Y.												
Arcadian Nitrate of Soda	73a			guaranteed				16.2				
Madison State Hospital[26]	73a	144	North Madison	found				16.2				
Arcadian Nitrate of Soda	863a			guaranteed				16 0				
Indiana State Prison[27]	863a	9870	Michigan City	found				15.9				
Baugh & Sons Company of Ohio, Canton, Ohio.												
Baugh's Double Eagle Phosphate	1152a			guaranteed				2 0	12.0	1 0		6.0
Monroeville Equity Exchange	1152a	41	Monroeville	found	1.88			2.1	12 1	1.4		6 0
Baughphos The Ideal 20% Superphosphate	1155a			guaranteed					20.0	1.0		
Monroeville Equity Exchange	1155a	43	Monroeville	found					21.3	0.8		
Baugh's Vegetable Grower 2-8-10	1318a			guaranteed				2.0	8.0	1.0		10.0
Monroeville Equity Exchange	1318a	42	Monroeville	found	1.75			2.0	7.8	1.1		10.8

Where 60.0 per cent or more of the total nitrogen guaranteed was found to be water soluble, the active and inactive insoluble organic nitrogen was not determined.

Percentages appearing in bold type in the "Inactive water insoluble organic" column denote inferior nitrogen.

[24] Purchased from Stokely Bros. & Co., Tipton, Ind.

[25] Purchased from Perry Bennett, R. R. 1, Richmond, Ind.

[26] Purchased from Kingsbury & Co., Inc., Indianapolis, Ind.

[27] Purchased from United States Guano Co., Baltimore, Md. Not tagged. Labels furnished.

TABLE 13. Report of Inspection of Fertilizer Collected in 1934—Continued

Labels and names of persons from whom samples were secured	Official No.	Inspection No. H. H. and No. L.	Samples taken at		Nitrogen (N)				Phosphoric acid (P_2O_5)			Potash (K_2O), soluble in water, per cent
					Water soluble as nitrates, ammonia salts and organic, per cent	Active water insoluble organic, per cent	Inactive water insoluble organic, per cent	Total per cent	Soluble and reverted (available), per cent	Insoluble, per cent	Total per cent	
Buhner Fertilizer Company, The, Seymour, Ind.												
16% Superphosphate	6696			guaranteed					16.0			
V. W. Morris & Son	6696	217	Rushville	found					16.7	0.4		
C. Eckerty & Son[28]	6696	281	Eckerty	found					16.5	0.4		
C. Eckerty & Son	6696	665	Eckerty	found					15.2	0.5		
The Buhner Fertilizer Co.[29]	6696	1057	Seymour	found					14.9	0.1		
Beck Grain & Feed Co.[30]	6696	1173	Shelbyville	found					15.0	0.4		
Ground Bone	6742			guaranteed				2.0			24.0	
A. J. Batman	6742	662	Marengo	found	0.38	1.47	0.65	2.5			25.7	
Frank Heidet & Son	6742	663	Ferdinand	found	0.47	1.47	0.56	2.5			25.9	
Victoria Mill & Elevator Co	6742	746	Jasper	found	0.91	0.99	0.40	2.3			25.2	
Buhner's 20% Superphosphate	9195			guaranteed					20.0			
C. Eckerty & Son[31]	9195	274	Eckerty	found					21.0	0.6		
The Buhner Fertilizer Co.[32]	9195	364	Seymour	found					20.3	0.4		
Prof. R. C. Wallace[33]	9195	509	Lafayette, R. R. 6	found					20.7	0.8		
C. Eckerty & Son	9195	661	Eckerty	found					20.2	0.5		
The Buhner Fertilizer Co	9195	1061	Seymour	found					20.0	0.6		
Beck Grain & Feed Co	9195	1187	Shelbyville	found					22.7	1.0		
Buhner's Sulphate of Ammonia	9808			guaranteed				20.5				
Indiana State Prison	9808	9805	Michigan City	found				20.9				
Buhner's 0-14-6	9928			guaranteed					14.0			6.0
V. W. Norris & Son[34]	9928	225	Rushville	found					14.2	0.5		6.0
Crabbs Reynolds Taylor Co	9928	457	Lafayette	found					14.8	0.3		6.0
V. W. Norris & Son	9928	960	Rushville	found					14.6	0.7		6.3
Buhner's 0-10-10	9931			guaranteed					10.0			10.0
Beck Grain & Feed Co	9931	9998	Shelbyville	found					10.2	0.9		9.5
George Bersch	9931	136	Madison	found					11.4	0.5		10.2
V. W. Norris & Son	9931	955	Rushville	found					10.5	0.3		10.1
The Buhner Fertilizer Co	9931	1067	Seymour	found					10.0	0.5		9.3
Buhner's 2-12-6	287a			guaranteed				2.0	12.0			6.0
Johnson & Chenoweth	287a	9824	Shoals	found	2.36			2.5	12.0	1.6		5.6
Frazier Packing Corp	287a	9928	Elwood	found	1.99			2.2	12.4	0.7		6.0
Frazier Packing Corp	287a	9932	Elwood	found	1.88			2.1	12.2	0.8		5.5
George Bersch	287a	138	Madison	found	1.85			2.1	13.9	0.6		6.2
Geo. B. Gibsons Sons Hardware Co	287a	204	Rising Sun	found	1.98			2.2	12.4	0.6		5.5
V. W. Norris & Son[35]	287a	219	Rushville	found	1.99			2.2	13.0	0.5		5.0
A. J. Batman[36]	287a	255	Marengo	found	1.88			2.1	12.2	0.6		6.0

Victoria Mill & Elevator Co.[37]	287a	258	Jasper	found	2.09			2.3	12.2	0.5		6.1
C. Eckerty & Son	287a	259	Eckerty	found	2.03			2.2	12.4	0.5		6.1
Morgan Packing Co.	287a	337	Columbus	found	2.01			2.2	12.3	0.5		6.0
Morgan Packing Co.	287a	347	Edinburg	found	2.04			2.2	12.5	0.6		6.4
Morgan Packing Co.	287a	348	Franklin	found	1.96			2.1	12.4	0.6		6.1
The Buhner Fertilizer Co.[38]	287a	357	Seymour	found	2.00			2.2	12.6	0.8		6.2
Campbellsburg Milling Co.	287a	407	Salem	found	1.99			2.2	12.2	1.2		6.0
Morgan Packing Co.	287a	437	Scottsburg	found	2.04			2.2	12.0	0.8		6.3
Crabbs Reynolds Taylor Co.	287a	454	Lafayette	found	2.04			2.2	12.5	0.7		6.4
Prof. R. C. Wallace[39]	287a	514	Lafayette, R. R. 6	found	2.00			2.2	13.0	0.6		**5.6**
Chas. Ragsdale & Co.	287a	680	Bedford	found	1.71			2.1	**11.6**	0.6		6.1
Victoria Mill & Elevator Co.	287a	690	Jasper	found	1.68			2.1	12.1	0.6		5.8
A. J. Batman	287a	728	Marengo	found	1.79			2.1	11.9	0.5		6.0
V. W. Norris & Son	287a	957	Rushville	found	1.75			2.0	12.0	0.3		6.0
The Buhner Fertilizer Co.	287a	1060	Seymour	found	1.37			2.0	**11.7**	0.5		6.4
D. R. Dunlevy & Son	287a	1088	Henryville	found	1.82			2.1	12.0	0.4		6.0
Beck Grain & Feed Co.	287a	1177	Shelbyville	found	1.72			2.0	**11.9**	0.6		**5.5**
Buhner's 2-14-4	288a			guaranteed				2.0	14.0			4.0
C. Eckerty & Son[40]	288a	667	Eckerty	found	1.69			2.0	**12.8**	0.8		4.2
The Buhner Fertilizer Co.	288a	1058	Seymour	found	1.68			2.1	**13.1**	0.9		4.7
Buhner's 2-8-4	289a			guaranteed				2.0	8.0			4.0
Geo. B. Gibsons Sons Hardware Co.[41]	289a	203	Rising Sun	found	1.85			2.1	8.5	0.7		3.8
V. W. Norris & Son[42]	289a	220	Rushville	found	1.69			2.0	8.7	0.3		4.0
C. Eckerty & Son[43]	289a	277	Eckerty	found	1.72			2.0	8.2	0.4		4.2
The Buhner Fertilizer Co.	289a	369	Seymour	found	1.75			2.0	9.0	0.5		4.1
Frank Heidet & Son	289a	732	Ferdinand	found	1.85			2.2	9.4	0.6		4.0
V. W. Norris & Son	289a	959	Rushville	found	1.79			2.0	9.1	0.4		4.0
The Buhner Fertilizer Co.	289a	1063	Seymour	found	1.88			2.1	9.6	0.2		4.7
Buhner's 4-10-6	291a			guaranteed				4.0	10.0			6.0
Chas. Ragsdale & Co.	291a	284	Bedford	found	3.40			4.1	12.2	0.3		6.2
The Buhner Fertilizer Co.	291a	450	Seymour	found	3.31			3.9	11.5	0.6		6.1
Buhner's 4-24-12	292a			guaranteed				4.0	24.0			12.0
Madison State Hospital	292a	141	North Madison	found	3.78			4.2	26.3	0.5		**11.7**
The Buhner Fertilizer Co.	292a	1059	Seymour	found	3.74			4.1	**23.3**	0.4		13.3
Buhner's Special Crop Grower	293a			guaranteed				2.0	8.0	4.0		6.0
George Bersch	293a	133	Madison	found	1.28			1.9	11.2	3.6		**5.7**
C. Eckerty & Son	293a	666	Eckerty	found	1.34			2.0	8.6	3.3		6.0
Keys Implement Co.	293a	785	Winchester	found	1.68			2.4	8.6	3.2		6.0
Arthur Keith	293a	973	Washington, R.R. 3	found	1.20			2.0	9.0	3.0		6.0
The Buhner Fertilizer Co.	293a	1065	Seymour	found	1.26			2.1	9.3	3.8		6.4
D. R. Dunlevy & Son	293a	1096	Henryville	found	1.34			2.2	8.1	4.0		6.1
Beck Grain & Feed Co.	293a	1165	Shelbyville	found	1.28			2.0	9.2	3.4		6.0
Swaim & Breeding	293a	1190	Edinburg	found	1.37			2.1	9.3	2.9		**5.5**

Where 60.0 per cent or more of the total nitrogen guaranteed was found to be water soluble, the active and inactive insoluble organic nitrogen was not determined.

Percentages appearing in bold type in the "Inactive water insoluble organic" column denote inferior nitrogen.

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[28] Sample received in the spring.

[29] Refund $2.76.

[30] Refund $2.50.

[31] Sample received in the spring.

[32] Sample received in the spring.

[33] Purchased from Crabbs, Reynolds, Taylor Co., Lafayette, Ind.

[34] Sample received in the spring.

[35] Sample received in the spring. Refund $10.00.

[36] Sample received in the spring.

[37] Sample received in the spring. Not tagged. Labels furnished.

[38] Sample received in the spring.

[39] Purchased from Crabbs, Reynolds, Taylor Co., Lafayette, Ind.

[40] Refund $2.40.

[41] Not tagged. Labels furnished.

[42] Sample received in the spring.

[43] Sample drawn at Seymour, Ind.

TABLE 13. Report of Inspection of Fertilizer Collected in 1934—Continued

Labels and names of persons from whom samples were secured	Official No.	Inspection No. H. H. and No. I.	Samples taken at		Nitrogen (N)				Phosphoric acid (P_2O_5)			Potash (K_2O), soluble in water, per cent
					Water soluble as nitrates, ammonia salts and organic, per cent	Active water insoluble organic, per cent	Inactive water insoluble organic, per cent	Total per cent	Soluble and reverted (available), per cent	Insoluble, per cent	Total per cent	
Buhner's 3-8-6	389a			guaranteed				3.0	8.0			6.0
Frazier Packing Corp	389a	9936	Elwood	found	3.46			4.2	8.1	0.8		6.0
The Buhner Fertilizer Co	389a	362	Seymour	found	1.91			3.0	8.7	0.6		6.2
Buhner's 2-8-2	390a			guaranteed				2.0	8.0			2.0
Beck Grain & Feed Co.[44]	390a	6	Shelbyville	found	1.38			2.0	8.3	0.6		1.3
The Buhner Fertilizer Co	390a	359	Seymour	found	1.71			2.1	8.8	0.4		2.2
Beck Grain & Feed Co	390a	1176	Shelbyville	found	1.69			2.0	9.9	0.5		2.9
Buhner's Crop Grower	391a			guaranteed				2.0	8.0	4.0		2.0
V. W. Norris & Son	391a	953	Rushville	found	1.33			2.0	8.9	1.9		2.0
The Buhner Fertilizer Co	391a	1066	Seymour	found	1.35			2.0	8.8	2.5		2.0
Campbellsburg Milling Co	391a	1071	Salem	found	1.33			2.0	8.3	2.3		2.0
Swaim & Breeding	391a	1188	Edinburg	found	1.16			1.7	9.3	2.0		2.1
Buhner's 2-12-2	392a			guaranteed				2.0	12.0			2.0
Bloomfield Mill & Elevator	392a	9785	Bloomfield	found	2.01			2.2	12.0	0.6		3.0
Beck Grain & Feed Co[45]	392a	4	Shelbyville	found	1.58			2.0	12.0	0.4		2.6
V. W. Norris & Son[46]	392a	221	Rushville	found	1.91			2.1	12.7	0.5		1.8
A.J. Batman[47]	392a	237	Marengo	found	1.88			2.1	12.9	0.6		2.7
Reutepohler Hardware Co	392a	257	Huntingburg	found	2.02			2.2	12.4	0.5		2.0
The Buhner Fertilizer Co.[48]	392a	355	Seymour	found	2.10			2.3	12.5	0.7		2.0
D. R. Dunlevy & Son	392a	432	Henryville	found	2.00			2.2	12.0	0.9		2.2
Frank Heidet & Son	392a	668	Ferdinand	found	1.82			2.1	12.1	0.4		2.0
A. J. Batman	392a	730	Marengo	found	1.90			2.2	12.1	0.7		2.3
C. Eckerty & Son	392a	733	Eckerty	found	1.89			2.1	12.4	0.3		2.1
V. W. Norris & Sons	392a	956	Rushville	found	1.75			2.0	12.0	0.5		2.3
J. H. Becker & Son	392a	1032	Corydon	found	1.47			2.0	12.0	0.9		2.3
The Buhner Fertilizer Co	392a	1062	Seymour	found	1.95			2.2	12.9	0.6		2.5
Campbellsburg Milling Co	392a	1075	Salem	found	1.82			2.0	12.1	0.1		2.1
Beck Grain & Feed Co	392a	1178	Shelbyville	found	1.82			2.1	13.1	0.5		2.0
Buhner's 1-10-3	733a			guaranteed				1.0	10.0			3.0
Beck Grain & Feed Co	733a	5	Shelbyville	found	0.75			1.1	10.1	0.8		2.8
V. W. Norris & Son[49]	733a	222	Rushville	found	0.95			1.2	10.9	0.4		3.4
A. J. Batman [50]	733a	231	Marengo	found	0.89			1.2	11.0	0.4		3.0
Victoria Mill & Elevator Co	733a	273	Jasper	found	0.79			1.1	10.6	0.5		2.9
The Buhner Fertilizer Co.[51]	733a	363	Seymour	found	0.98			1.2	10.7	0.5		3.1
A. J. Batman	733a	735	Marengo	found	0.95			1.1	10.0	0.2		3.2
V. W. Norris & Son	733a	954	Rushville	found	0.99			1.3	10.1	0.4		3.0
The Buhner Fertilizer Co	733a	1064	Seymour	found	1.19			1.4	13.2	0.4		3.1

Butylizer 5-10-5	775a			guaranteed				5.0	10.0			5.0
Beck Grain & Feed Co.	775a	7	Shelbyville	found	3.86			**4.6**	**9.1**	0.9		6.8
Buhner's 2-16-8	858a			guaranteed				2 0	16.0			8.0
V. W. Norris & Son	858a	218	Rushville	found	1.89			2.1	16.6	0.6		8.0
Buhner's Tomato Grower 3-10-7	922a			guaranteed				3.0	10.0			7.0
The Buhner Fertilizer Co.	922a	356	Seymour	found	2.00			3.0	11.1	0.6		7.1
Buhner's Bone Mixture	1050a			guaranteed				1.0	8.0	4.0		2.0
V. W. Norris & Son	1050a	958	Rushville	found	0.64			1.2	7.8	1.7		2.0
Buhner's Pulverized Sheep Manure	1084a			guaranteed				1.2			1.0	1 2
Ohio Valley Seed Co.	1084a	107	Evansville	fouud	0.36	0.43	0.91	1 7			0.6	1.5
Buhner's 3-9-18	1313a			guaranteed				3.0	9.0			18 0
The Buhner Fertilizer Co.[52]	1313a	358	Seymour	found	2.59			2.9	9.9	0.2		**17.0**
Clendenin & Company, Richmond, Ind.												
Truck and Tobacco Grower (1-6-8)	4652			guaranteed				0 8	6.0			8 0
Clendenin & Co.	4652	168	Richmond	found	0 52			1.4	7.7	1.0		9.1
Fourteen-Four	9259			guaranteed					14.0			4.0
Clendenin & Co[53]	9259	938	Richmond	found					**13.1**	**0.7**		**3.6**
Flowers, Garden and Lawn Fertilizer	644a			guaranteed				4.0	7 0			8.0
Clendenin & Co.	644a	162	Richmond	found	3.63			3.9	8.0	0.7		8.5
Two-Twelve-Two	662a			guaranteed				2 0	12 0			2.0
Clendenin & Co.[54]	662a	905	Richmond	found	1.22			**1.5**	13.3	0.8		2.0
J. W. Myers[55]	662a	906	Centerville, R.R. 1	found	1.22			**1.5**	12.8	1.0		2.0
Two-Twelve-Six	663a			guaranteed				2 0	12.0			6.0
Clendenin & Co.	663a	169	Richmond	found	1.05			1.8	13.8	1.3		6.6
Clendenin & Co.[56]	663a	929	Richmond	found	1.44			**1.7**	**11.4**	**0.7**		**4.6**
Complete Grain Grower	664a			guaranteed				1 0	9.0			3.0
Clendenin & Co.	664a	926	Richmond	found	0.75			1.0	9.1	0.8		**2.3**
Consolidated Chemical Company, Louisville, Ky.												
Camel Brand 16% Superphosphate	7851			guaranteed					16 0			
Roy Hillis	7851	819	Greencastle	found					16.9	0.8		
Camel Brand Ten and Ten Percent Potash	8822			guaranteed					10.0			10 0
Northern Indiana Co-operative Association	8822	9875	Mentone	found					10.0	1.5		10 8
Camel Brand Phosphate and Tobacco	9590			guaranteed					16 0			
Geo. J. Wettschurack	9590	525	Montmorenci	found					17.2	1.0		
Camel Brand Eight-Twenty-four Fertilizer	9901			guaranteed					8 0			24 0
Kiest Milling Co.	9901	9872	Knox	found					7.9	1.1		24 8
Northern Indiana Co-operative Association	9901	9880	Mentone	found					8.3	1.0		25.0
Camel Brand One-Eight-Three Fertilizer	169a			guaranteed				1.0	8.0			3.0
Wm. H. P. Wiseman & Son	169a	414	Corydon	found	0.98			1.2	8.5	1 1		3 4

Where 60.0 per cent or more of the total nitrogen guaranteed was found to be water soluble, the active and inactive insoluble organic nitrogen was not determined.
Percentages appearing in bold type in the "Inactive water insoluble organic" column denote inferior nitrogen.

[44] Sample received in the spring.
[45] Sample received in the spring.
[46] Sample received in the spring.
[47] Sample received in the spring.
[48] Sample received in the spring.
[49] Sample received in the spring.
[50] Sample received in the spring.
[51] Sample received in the spring.
[52] Refund $1.00.
[53] Refund $0.98.
[54] Refund $2.25.
[55] Refund $2.00.
[56] Refund $5.98.

TABLE 13. Report of Inspection of Fertilizer Collected in 1934—Continued

Labels and names of persons from whom samples were secured	Official No.	Inspection No. H. H. and No. L.	Samples taken at		Nitrogen (N)				Phosphoric acid (P₂O₅)			
					Water soluble as nitrates, ammonia salts and organic, per cent	Active water insoluble organic, per cent	Inactive water insoluble organic, per cent	Total per cent	Soluble and reverted (available), per cent	Insoluble, per cent	Total per cent	Potash (K_2O), soluble in water, per cent
Camel Brand Indiana Special	171a			guaranteed				2.0	12.0			2.0
Northern Indiana Co-operative Association	171a	9904	Mentone	found	1.81			2.3	12.3	0.7		2.5
Roy Hillis	171a	818	Greencastle	found	1.74			2.5	12.1	1.4		2.2
Camel Brand A-1 Grain Grower	173a			guaranteed				2.0	12.0			6.0
Northern Indiana Co-operative Association	173a	9878	Mentone	found	2.06			2.4	12.0	0.9		7.1
Wm. H. P. Wiseman & Son[57]	173a	423	Corydon	found	1.83			2.1	13.0	0.8		7.5
Roy Hillis	173a	814	Greencastle	found	1.62			2.2	12.3	1.2		6.4
Wm. H. P. Wiseman & Son	173a	1031	Corydon	found	1.71			2.3	11.8	1.2		6.4
Salem Co-operative Association	173a	1077	Salem	found	1.85			2.3	12.2	0.6		6.3
Camel Brand Three-Eight-Six Tobacco Fertilizer	174a			guaranteed				3.0	8.0			6.0
Kiest Milling Co.	174a	9869	Knox	found	2.81			3.2	8.3	0.7		7.5
Camel Brand Old Time Grain Fertilizer	596a			guaranteed				2.0	8.0			2.0
Wm. H. P. Wiseman & Son[58]	596a	415	Corydon	found	1.92			2.2	9.2	0.5		2.3
Wm. H. P. Wiseman & Son	596a	1028	Corydon	found	1.61			2.1	7.8	0.9		2.2
Camel Brand Onion and Truck Special (2-8-16)	722a			guaranteed				2.0	8.0			16.0
Kiest Milling Co.	722a	9852	Knox	found	1.61			2.1	8.2	1.3		17.6
Wolf & Son	722a	586	North Judson	found	1.74			2.1	8.5	0.9		15.7
Camel Brand Twelve-Twelve Fertilizer	931a			guaranteed					12.0			12.0
Kiest Milling Co.	931a	9854	Knox	found					12.2	1.9		12.4
Wolf & Son	931a	603	North Judson	found					12.1	0.4		12.0
Camel Brand Bone Grain Grower	1338a			guaranteed				2.0	8.0	4.0		6.0
Geo. J. Wettschurack	1338a	524	Montmorenci	found	1.39			2.1	8.4	4.5		5.3
Roy Hillis	1338a	838	Greencastle	found	1.50			2.2	8.5	3.4		6.2
Darling & Company, Chicago, Ill.												
Darling's Muriate of Potash	8024			guaranteed								50.0
Irwin Feed Store & Hatchery[59]	8024	132	Madison	found								47.4
Darling's Nitrate of Soda	8891			guaranteed				15.5				
Irwin Feed Store & Hatchery	8891	142	Madison	found				15.7				
Darling's 20% Superphosphate	9017			guaranteed					20.0			
Lowell Grain & Hay Co.	9017	9976	Lowell	found					20.6	0.5		
C. M. Kerlin	9017	552	Delphi	found					20.5	0.5		
Reed Elevator Co.	9017	764	Decatur	found					20.5	0.6		
Darling's Twelve-Twelve	9157			guaranteed					12.0	0.5		12.0
Burket Elevator Co.	9157	9874	Burket	found					12.7	0.2		12.0
Lowell Grain & Hay Co.	9157	9973	Lowell	found					12.1	0.3		12.0

Darling's Ten-Ten	9462			guaranteed					10.0	0.5		10.0
Hobbs Grain Co.	9462	324	Hobbs	found					10.8	0.2		10.8
Darling's Farmers' Favorite	375a			guaranteed				3.0	8.0	0.5		6.0
Irwin Feed Store & Hatchery	375a	137	Madison	found	2.79			3.0	9.7	0.1		6.1
Darling's Big Harvest	376a			guaranteed				2.0	12.0	0.5		2.0
McElhinney Feed Store	376a	9779	Bloomington	found	1.93			2.1	12.2	0.5		2.3
Nelson Feed Co.	376a	94	Princeton	found	1.93			2.1	12.4	0.6		2.2
Irwin Feed Store & Hatchery	376a	139	Madison	found	1.85			2.1	13.5	0.4		3.1
C. M. Kerlin	376a	550	Delphi	found	1.86			2.0	12.6	0.5		2.3
Reed Elevator Co.	376a	762	Decatur	found	1.96			2.1	12.1	0.9		2.3
Finch & Weisel	376a	780	Portland	found	2.06			2.2	12.2	0.7		2.0
Wolcottville Elevator Co.	376a	874	Wolcottville	found	2.02			2.1	12.0	0.3		2.7
Geo. Steckley	376a	875	Kendallville	found	2.10			2.2	13.1	0.6		2.3
Penman Bros.	376a	969	Brazil	found	1.90			2.1	12.2	0.7		2.2
Darling's Special Crop	377a			guaranteed				2.0	8.0	0.5		16.0
Burket Elevator Co.[60]	377a	9909	Burket	found	2.03			2.1	7.3	0.4		16.0
Darling's Crop King	379a			guaranteed				2.0	12.0	0.5		6.0
Burket Elevator Co.	379a	9881	Burket	found	2.06			2.1	12.0	0.3		6.6
Nelson Feed Co.[61]	379a	87	Princeton	found	2.01			2.2	12.1	0.9		**1.9**
Irwin Feed Store & Hatchery	379a	131	Madison	found	1.83			2.0	13.9	0.4		6.1
Home Mill & Elevator Co.	379a	551	Columbia City	found	1.86			2.0	12.6	0.2		6.7
C. M. Kerlin	379a	554	Delphi	found	2.09			2.3	13.0	0.2		6.5
Reed Elevator Co.	379a	855	Decatur	found	2.08			2.2	12.1	0.4		6.3
Wolcottville Elevator Co.	379a	872	Wolcottville	found	2.19			2.3	12.8	0.2		6.5
Farmers Co-operative Co.	379a	968	Clay City	found	1.89			2.0	12.0	0.1		6.2
Darling's Tomato Grower 2-12-6	382a			guaranteed				2.0	12.0	0.5		6.0
McElhinney Feed Store	382a	9778	Bloomington	found	1.89			2.0	12.4	0.3		6.0
Lowell Grain & Hay Co.	382a	9981	Lowell	found	2.06			2.1	12.3	0.4		6.6
Hobbs Grain Co.	382a	309	Hobbs	found	2.14			2.2	12.6	0.3		6.0
Carroon Canning Co.	382a	501	Fowler	found	2.09			2.2	12.6	0.6		7.2
Darling's Potato Special 4-8-7	384a			guaranteed				4.0	8.0	0.5		7.0
Lowell Grain & Hay Co.	384a	9984	Lowell	found	3.81			3.9	8.0	0.3		7.8
Darling's Twenty-Twenty	772a			guaranteed					20.0	0.5		20.0
Carroon Canning Co.	772a	502	Fowler	found					20.1	0.6		21.5
Diamond Fertilizer Company, The, Sandusky, Ohio.												
Diamond Potash Mixture	8465			guaranteed					10.0	1.0		10.0
Rensselaer Lumber Co.	8465	9963	Rensselaer	found					10.1	0.4		9.6
Ed Russell[62]	8465	523	Idaville, R. R. 2	found					10.0	0.4		10.5
Mishawaka Grain & Coal Co.	8465	892	Mishawaka	found					10.5	0.2		10.0
Diamond 20% Superphosphate	8515			guaranteed					20.0	1.0		
Mishawaka Grain & Coal Co.	8515	887	Mishawaka	found					20.3	0.3		
Diamond Two-Twelve-Six	495a			guaranteed				2.0	12.0			6.0
John C. Stephenson	495a	390	Argos	found	1.25			2.0	12.1	0.4		6.1
Mishawaka Grain & Coal Co.	495a	888	Mishawaka	found	1.80			2.0	12.0	0.3		6.1
Diamond Two-Twelve-Two	496a			guaranteed				2.0	12.0			2.0
John Stephenson	496a	386	Argos	found	1.83			2.0	12.0	0.4		2.4

Where 60.0 per cent or more of the total nitrogen guaranteed was found to be water soluble, the active and inactive insoluble organic nitrogen was not determined. Percentages appearing in bold type in the "Inactive water insoluble organic" column denote inferior nitrogen.

[57] Sample received in the spring.

[58] Sample received in the spring.

[59] Refund $0.26.

[60] Sample to manufacturer.

[61] Refund $16.91. Balance of shipment returned to factory.

[62] Purchased from Mr. Lutz, Rensselaer, Ind.

TABLE 13. Report of Inspection of Fertilizer Collected in 1934—Continued

Labels and names of persons from whom samples were secured	Official No.	Inspection No. H. H. and No. L.	Samples taken at		Nitrogen (N)				Phosphoric acid (P_2O_5)			Potash (K_2O), soluble in water, per cent
					Water soluble as nitrates, ammonia salts and organic, per cent	Active water insoluble organic, per cent	Inactive water insoluble organic, per cent	Total per cent	Soluble and reverted (available), per cent	Insoluble, per cent	Total per cent	
Diamond Two-Eight-Sixteen	497a			guaranteed				2.0	8.0			16.0
John Stephenson	497a	385	Argos	found	1 72			2 0	8 6	0.3		16 2
Diamond Eight-Twenty-four (0-8-24)	818a			guaranteed					8 0			24.0
John Stephenson	818a	395	Argos	found					8.4	0.2		24.0
Dockwiler & Kingsbury Company, Indianapolis, Ind.												
D. & K. 2¼-28 Bone Meal	9188			guaranteed				1 8			28 0	
Long Cliff State Hospital[63]	9188	962	Logansport	found	0 33	2 17	0 60	3 1			25 3	
D. & K. 4-8-6	611a			guaranteed				4.0	8.0			6.0
Al Konovsky	611a	9975	DeMotte	found	3.20			3.6	9.1	1.0		8.9
Federal Chemical Company, Inc., Louisville, Ky.												
Pure Bone	5657			guaranteed				1.0			30 0	
Lanesville Milling Co.[64]	5657	1042	Lanesville	found	0.48	1.01	0 61	2 1			27 0	
1st Prize Raw Bone	6449			guaranteed				3 7			22 0	
Dubois County Farm Bureau Cooperative Assn., Inc.[65]	6449	689	Huntingburg	found	0.32	3.15	0 63	4.1			21.1	
Ten-Ten Potash Fertilizer	7904			guaranteed					10.0			10.0
R. C. Fretz	7904	58	Waterloo	found					10.2	0.5		10.1
Geo. P. Wagner	7904	267	Jasper	found					10.7	0 4		10.3
V. H. Bulleit & Sons[66]	7904	422	Corydon	found					11.5	0.3		8.4
20% Superphosphate	8608			guaranteed					20 0			
R. C. Fretz	8608	47	Waterloo	found					20.2	0.9		
Farmers Exchange, Inc.	8608	531	Warren	found					20.7	0.5		
Andry Bros.	8608	659	Birdseye	found					20.4	0.8		
Noragon & Son	8608	867	Butler	found					21.2	0.8		
Official Formula 0-12-6	8773			guaranteed					12.0			6 0
Bryant Elevator	8773	9952	Bryant	found					12.0	0.8		9.6
Official Formula 3-8-6	395a			guaranteed				3.0	8.0			6.0
Pierceville Mill & Elevator Co.	395a	34	Pierceville	found	3.13			3.3	8.0	0.5		6.0
Official Formula 2-8-16	396a			guaranteed				2.0	8.0			16.0
R. C. Fretz[67]	396a	55	Waterloo	found	1.88			2.1	9.6	0.2		15.6
Official Formula 2-14-4	401a			guaranteed				2 0	14.0			4.0
Fred Jacobi	401a	825	Mulberry, R. R. 1	found	2 00			2 2	13 8	2.0		4.1
Standard Crop Grower	411a			guaranteed				1.0	8.0			4.0
Geo. P. Wagner	411a	269	Jasper	found	1 08			1.3	8.8	0.6		4.5
Wm. Nading Grain Co.	411a	1127	Greensburg	found	1.18			1 4	9.0	1 0		4 0

Reimann-McCammon	411a	1172	Sandusky	found	0.80			1.3	8.4	1.0		4.2
Wm. Nading Grain Co.	411a	1175	Adams	found	0.95			1.2	9.2	1.0		4.1
Loam Land Fertilizer	412a			guaranteed				2.0	12.0			2.0
Wm. Nading Grain Co.[68]	412a	10	Greensburg	found	1.78			2.0	**10.3**	1.3		2.8
Pierceville Mill & Elevator Co.[69]	412a	37	Pierceville	found	1.85			2.1	12.0	1.7		2.6
R. C. Fretz[70]	412a	56	Waterloo	found	1.96			2.2	12.0	1.0		2.3
Geo. P. Wagner	412a	271	Jasper	found	1.74			2.1	13.0	1.4		2.8
Johnson & Burton	412a	282	Orleans	found	2.16			2.4	12.2	1.1		2.6
V. H. Bulleit & Sons[71]	412a	416	Corydon	found	1.89			2.1	12.3	1.5		2.9
Farmers Exchange, Inc	412a	529	Warren	found	1.75			2.0	13.4	1.0		2.4
Andry Bros.	412a	660	Birdseye	found	1.79			2.1	**11.4**	1.1		2.3
R. C. Fretz	412a	866	Waterloo	found	1.73			2.0	12.0	1.5		2.2
Cambridge Feed Mills	412a	928	Cambridge City	found	1.69			2.0	12.0	1.4		2.5
Blann Hardware	412a	994	Monroe City	found	1.98			2.2	13.3	1.3		2.0
V. H. Bulleit & Sons	412a	1025	Corydon	found	1.66			2.0	**11.4**	1.4		2.3
Pierceville Mill & Elevator Co.	412a	1079	Pierceville	found	1.93			2.1	12.4	0.5		2.4
Reimann-McCammon	412a	1161	Sandusky	found	1.78			2.0	12.5	1.3		2.6
Official Formula 2-12-6	414a			guaranteed				2.0	12.0			6.0
Bryant Elevator	414a	9943	Bryant	found	1.99			2.2	12.2	1.6		6.3
Columbus Foods Corp.	414a	3	Shelbyville	found	1.78			2.0	12.3	1.4		6.3
Wm. Nading Grain Co.	414a	12	Greensburg	found	2.23			2.3	12.7	1.4		5.9
Pierceville Mill & Elevator Co.[72]	414a	35	Pierceville	found	1.92			2.2	11.9	1.7		6.3
R. C. Fretz[73]	414a	49	Waterloo	found	2.12			2.4	12.6	0.9		6.1
Ira Smithson & Cowan Elevator[74]	414a	171	Farmland	found	1.69			2.0	14.0	0.9		6.5
Joe Dauby & Sons	414a	251	Tell City	found	1.96			2.2	12.9	1.2		6.8
Johnson & Burton	414a	286	Orleans	found	2.12			2.4	12.0	1.3		6.4
V. H. Bulleit & Sons[75]	414a	424	Corydon	found	2.02			2.2	12.9	1.3		6.6
Columbus Foods Corp.	414a	495	Shelbyville	found	1.96			2.2	12.7	1.6		6.1
Adams & Morrow, Inc.	414a	579	Princeton	found	1.74			2.1	**11.7**	1.3		6.3
Andry Bros.	414a	736	Birdseye	found	1.79			2.1	**11.7**	1.4		5.8
Fred Jacobi	414a	827	Mulberry, R. R. 1	found	1.69			2.0	12.0	1.5		6.2
Noragon & Son	414a	868	Butler	found	1.84			2.2	12.0	1.2		6.2
Cambridge Feed Mills	414a	932	Cambridge City	found	1.74			2.1	**11.5**	1.1		6.8
Blann Hardware	414a	995	Monroe City	found	1.76			2.1	12.0	1.2		6.1
V. H. Bulleit & Sons	414a	1024	Corydon	found	1.78			2.1	**11.7**	1.2		**5.6**
Lanesville Milling Co.	414a	1043	Lanesville	found	1.79			2.1	12.0	1.0		6.4
Lutz-Boyd Hardware Co.	414a	1100	Charlestown	found	1.79			2.1	12.3	1.2		6.3
Pierceville Mill & Elevator Co.	414a	1140	Pierceville	found	1.89			2.2	12.3	0.8		6.2
Indiana Special	572a			guaranteed				1.0	11.0			5.0
Wm. Nading Grain Co.[76]	572a	16	Greensburg	found	0.99			1.2	10.9	1.0		5.0
Albertson Hardware Co.[77]	572a	821	Clayton	found	1.03			1.2	11.6	1.1		4.8
Cambridge Feed Mills	572a	998	Cambridge City	found	1.09			1.3	11.0	1.8		5.4

Where 60.0 per cent or more of the total nitrogen guaranteed was found to be water soluble, the active and inactive insoluble organic nitrogen was not determined.

Percentages appearing in bold type in the "Inactive water insoluble organic" column denote inferior nitrogen.

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[63] Refund $1.89.

[64] Refund $5.25.

[65] Not tagged. Labels furnished. Distributed by Hugo Steinkamp, Holland, Ind.

[66] Refund $4.80.

[67] Distributed by Ezra Rohm, Waterloo, Ind.

[68] Refund $6.80.

[69] Sample received in the spring.

[70] Sample received in the spring.

[71] Sample received in the spring.

[72] Sample received in the spring.

[73] Distributed by Ezra Rohm, Waterloo, Ind.

[74] Purchased from Rainbolt Blackman, Farmland, Ind. Not tagged. Labels furnished.

[75] Sample received in the spring.

[76] Sample received in the spring.

[77] Distributed by Globe Fertilizer Co., Louisville, Ky.

TABLE 13. Report of Inspection of Fertilizer Collected in 1934—Continued

Labels and names of persons from whom samples were secured	Official No.	Inspection No. H. H. and No. L.	Samples taken at		Nitrogen (N): Water soluble as nitrates, ammonia salts and organic, per cent	Nitrogen (N): Active water insoluble organic, per cent	Nitrogen (N): Inactive water insoluble organic, per cent	Nitrogen (N): Total per cent	Phosphoric acid (P_2O_5): Soluble and reverted (available), per cent	Phosphoric acid (P_2O_5): Insoluble, per cent	Phosphoric acid (P_2O_5): Total per cent	Potash (K_2O), soluble in water, per cent
Wm. Nading Grain Co.	572a	1124	Greensburg	found	1.08	......	......	1.3	11.0	1.0	......	5.0
Wm. Nading Grain Co.	572a	1163	Adams	found	1.01	......	......	1.2	11.8	0.7	......	5.1
Official Formula 3-9-18	597a	......	......	guaranteed	......	......	......	3.0	9.0	......	......	18.0
W. R. Wedrick	597a	64	Silver Lake	found	3.08	......	......	3.2	10.1	0.3	......	17.7
Double Duty	716a	......	......	guaranteed	......	......	......	4.0	12.0	......	......	4.0
W. R. Wedrick	716a	54	Silver Lake	found	3.71	......	......	4.1	12.9	0.7	......	6.0
Globe Formula 1-12-3	727a	......	......	guaranteed	......	......	......	1.0	12.0	......	......	3.0
W. W. Tractor & Implement Co.	727a	323	Richmond	found	1.09	......	......	1.3	13.0	0.8	......	3.2
V. H. Bulleit & Sons[78]	727a	417	Corydon	found	1.03	......	......	1.2	12.7	0.8	......	3.2
Albertson Hardware Co.	727a	839	Clayton	found	1.03	......	......	1.2	12.6	0.7	......	3.3
V. H. Bulleit & Sons	727a	1023	Corydon	found	0.81	......	......	1.1	12.0	1.0	......	3.6
Fox Formula 1-12-3	728a	......	......	guaranteed	......	......	......	1.0	12.0	......	......	3.0
Cambridge Feed Mills[79]	728a	933	Cambridge City	found	1.02	......	......	1.3	12.2	1.2	......	3.7
O. K. Formula 1-12-3	730a	......	......	guaranteed	......	......	......	1.0	12.0	......	......	3.0
Home Lumber & Coal Co.	730a	1182	Waldron	found	0.82	......	......	1.0	12.1	1.0	......	3.5
Official Formula 3-12-12	1325a	......	......	guaranteed	......	......	......	3.0	12.0	......	......	12.0
Columbus Foods Corp.	1325a	494	Shelbyville	found	2.87	......	......	3.0	13.2	0.5	......	12.5
Fox Chemical Company, Louisville, Ky.												
Muriate of Potash	3544	......	......	guaranteed	......	......	......	......	......	......	......	50.0
R. C. Fretz[80]	3544	44	Waterloo	found	......	......	......	......	......	......	......	45.6
Fox 16% Superphosphate	3607	......	......	guaranteed	......	......	......	......	16.0	......	......	......
Wm. Nading Grain Co.[81]	3607	13	Greensburg	found	......	......	......	......	16.7	1.0	......	......
Blann Hardware	3607	974	Monroe City	found	......	......	......	......	17.4	0.6	......	......
Heil Company, The, Milwaukee, Wis.												
Heil Quality Dehydrated Weedless Sheep Manure	1197a	......	......	guaranteed	......	......	......	2.0	......	......	1.5	2.0
Charter & Brown[82]	1197a	384	Peru	found	0.56	0.42	1.12	2.1	......	......	1.3	2.2
Heldt Company, The, Evansville, Ind.												
Thelco Brand 2-12-6	1162a	......	......	guaranteed	......	......	......	2.0	12.0	......	......	6.0
Heldt & Voelker Co.	1162a	117	Evansville	found	2.01	......	......	2.6	12.5	1.5	......	6.3

Hopkins Fertilizer Company,												
New Albany, Ind.												
Muriate of Potash	3330			guaranteed								50.0
Hamlet Cooperative Farm Shipping Association	3330	9850	Hamlet	found								53.9
Syler & Syler	3330	383	Plymouth	found								50.0
Hopkins Old Time Ten-Ten	9492			guaranteed					10.0	1.0		10.0
Evans & Hedworth	9492	9887	Remington	found					10.4	0.4		10.2
Schuyler Doane	9492	9937	Elwood, R. R. 5	found					10.5	0.4		10.0
Old Time Mix with Bone Tankage	447a			guaranteed				2.0	6.0	6.0		3.0
V. T. Reid[83]	447a	410	Salem	found	1.02	0.88	0.30	2.2	8.1	4.6		3.0
Hoosier Hardware Co.	447a	685	Paoli	found	1.12	0.73	0.55	2.4	8.6	3.5		3.2
V. T. Reid	447a	1072	Salem	found	0.99	0.67	0.34	2.0	7.6	2.3		3.2
Castner Hardware Co.	447a	1144	Holton	found	1.13	0.54	0.33	2.0	10.5	2.0		3.4
Potato Grower (3-7-7)	449a			guaranteed				3.0	7.0	1.0		7.0
Math Gayer	449a	254	Troy	found	2.61			3.0	7.4	0.5		7.2
Burley Grower	450a			guaranteed				3.0	8.0	1.0		6.0
A. J. Graves	450a	247	Tell City	found	2.57			3.0	8.7	0.5		6.4
Tomato Grower 2-12-6	451a			guaranteed				2.0	12.0	1.0		6.0
Math Gayer	451a	241	Troy	found	1.82			2.2	12.8	0.7		6.0
A. M. Bohnert & Son	451a	262	Jasper	found	1.82			2.1	12.5	0.7		6.8
Ladoga Canning Co.	451a	479	Lebanon	found	1.76			2.1	12.9	0.6		6.3
Ladoga Canning Co.[84]	451a	489	Ladoga	found	1.89			2.2	12.1	0.7		6.7
Ladoga Canning Co.[85]	451a	493	Ladoga	found	1.85			2.1	12.3	0.6		6.9
Two-Twelve-Six	452a			guaranteed				2.0	12.0	1.0		6.0
Gilbert Combs	452a	9781	Bloomfield	found	1.85			2.1	12.5	0.6		6.9
Farmers Cooperative Elevator	452a	9873	Wolcott	found	1.72			2.0	12.6	0.5		6.4
Evans & Hedworth	452a	9885	Remington	found	1.92			2.2	12.2	0.7		6.8
Schuyler Doane	452a	9933	Elwood, R. R. 5	found	1.51			2.1	12.6	0.5		6.6
Baker Motor Sales Co.	452a	9940	Franklin	found	1.92			2.2	12.1	1.3		6.2
Adams & Morrow, Inc.	452a	90	Princeton	found	1.85			2.2	12.8	0.4		6.6
Heldt & Voelker Co.	452a	115	Evansville	found	1.77			2.1	12.1	0.8		6.0
Math Gayer	452a	240	Troy	found	1.98			2.4	12.0	0.7		6.1
Hoosier Hardware Co.	452a	291	Paoli	found	1.79			2.2	12.3	0.7		6.5
Ladoga Canning Co.	452a	462	Brookston	found	1.71			2.1	12.2	0.9		6.0
Ladoga Canning Co.	452a	478	Lebanon	found	1.82			2.2	12.0	0.9		6.3
S. W. Perigo & Son	452a	671	Chandler	found	1.94			2.3	12.1	0.9		6.1
Dutscke Milling Co.	452a	672	Cannelton	found	1.71			2.1	12.0	0.7		6.2
The Heldt Co.	452a	722	Evansville	found	1.58			2.0	12.3	0.9		6.0
C. W. Wedeking & Co.	452a	727	Dale	found	1.72			2.1	12.1	0.7		6.6
G. A. Hillemeyer	452a	747	Huntingburg	found	1.79			2.2	**11.5**	0.5		6.3
Grays Hatchery	452a	832	Mulberry	found	1.79			2.2	12.2	0.5		6.6
O. L. Cauble	452a	1089	Pekin	found	1.71			2.1	12.1	0.6		6.4
Scott Bolton	452a	1090	Hanover	found	1.77			2.1	12.1	0.8		6.4
Geo. McKinley & Son	452a	1091	Borden	found	1.84			2.2	11.9	0.7		6.2
North Madison Coal Co.	452a	1105	North Madison	found	1.77			2.1	12.0	0.4		6.3
Castner Hardware Co.	452a	1114	Holton	found	1.76			2.2	12.0	0.7		6.0
Charlestown Milling Co.	452a	1197	Charlestown	found	1.76			2.1	12.9	0.6		6.3

Where 60.0 per cent or more of the total nitrogen guaranteed was found to be water soluble, the active and inactive insoluble organic nitrogen was not determined.
Percentages appearing in bold type in the "Inactive water insoluble organic" column denote inferior nitrogen.

[78] Sample received in the spring.

[79] Refund $1.80.

[80] Refund $4.40. Relabeled with 4125.

[81] Distributed by Federal Chemical Co., Inc., Louisville, Ky.

[82] Not tagged. Labels furnished.

[83] Sample received in the spring.

[84] Sample drawn at Lizton, Ind.

[85] Sample drawn at Jamestown, Ind.

TABLE 13. Report of Inspection of Fertilizer Collected in 1934—Continued

Labels and names of persons from whom samples were secured	Official No.	Inspection No. H. H. and No. L.	Samples taken at		Nitrogen (N) Water soluble as nitrates, ammonia salts and organic, per cent	Nitrogen (N) Active water insoluble organic, per cent	Nitrogen (N) Inactive water insoluble organic, per cent	Nitrogen (N) Total per cent	Phosphoric acid (P₂O₅) Soluble and reverted (available), per cent	Phosphoric acid (P₂O₅) Insoluble, per cent	Phosphoric acid (P₂O₅) Total per cent	Potash (K₂O), soluble in water, per cent
General Crop Grower	454a			guaranteed				2.0	12 0	1 0		2.0
Gilbert Combs[86]	454a	9780	Bloomfield	found	1.85			2.2	12 6	0.7		2 4
Baker Motor Sales Co.	454a	9941	Franklin	found	1.83			2.1	12.4	1 2		2 4
Graves Implement Store	454a	238	Tell City	found	1 89			2 2	12 6	0 5		2 9
Heldt & Voelker Co.[87]	454a	576	Evansville	found	1.61			2 2	12 1	0 6		3 0
Tower & Merryman	454a	729	Marengo	found	1 68			2 2	12 0	0 6		2 1
A. M. Bohnert & Son	454a	739	Jasper	found	1 72			2 2	11 6	1.0		2 2
Grays Hatchery	454a	823	Mulberry	found	1.73			2.2	12 1	0 7		2.3
Gilbert Combs	454a	967	Bloomfield	found	1 82			2 1	12 0	0.4		2 0
Charlestown Milling Co.	454a	1104	Charlestown	found	1.82			2.2	12 3	0 3		2 3
Castner Hardware Co.	454a	1115	Holton	found	1.74			2 1	12 5	0.4		2 8
Royal Grain Grower	455a			guaranteed				2.0	10 0	1 0		3 0
C. W. Wedeking & Co.	455a	655	Dale	found	1 85			2 2	10 0	0.5		3.2
Red Banner Special	456a			guaranteed				1.0	8 0	1 0		3 0
Gilbert Combs[88]	456a	9782	Bloomfield	found	0 78			1 2	8.4	0 4		3 3
Math Gayer	456a	253	Troy	found	0 81			1 1	8 4	0 7		3 0
Hoosier Hardware Co.	456a	679	Paoli	found	0 65			1 1	7.9	0.7		3 0
G. A. Hillemeyer	456a	694	Huntingburg	found	0.70			1 1	8 9	0 4		3 0
C. W. Wedeking & Co.	456a	734	Dale	found	0.74			1 1	8.4	0.3		3.0
A. M. Bohnert & Son	456a	742	Jasper	found	0 78			1.2	7 5	0.5		4.0
Gilbert Combs	456a	1021	Bloomfield	found	0.40	0.30	0.30	1 0	8 1	0 5		3.0
Indiana Special	457a			guaranteed				1.0	14.0	1.0		2.0
V. T. Reid[89]	457a	412	Salem	found	0.92			1.2	14.7	1.3		2.1
V. T. Reid	457a	1070	Salem	found	0.82			1 1	14.4	0.4		2.2
Wheat and Corn Grower 1-10-2	458a			guaranteed				1.0	10.0	1.0		2 0
W. E. Price	458a	96	Montgomery	found	0.84			1.2	10.8	1.0		2.0
Tower & Merryman[90]	458a	233	Marengo	found	0 81			1.2	10.7	0.7		2.1
Tower & Merryman	458a	658	Marengo	found	0.68			1.1	12.1	0.4		2.0
S. W. Perigo & Son	458a	670	Chandler	found	0.71			1.1	10.1	0 5		2.0
George Bollinger	458a	1106	Henryville	found	0 70			1.1	10 2	0.5		2.2
Castner Hardware Co.	458a	1122	Holton	found	1 09			1.5	10.2	0.7		3.1
20% Superphosphate	485a			guaranteed					20.0	1.0		
Hamlet Cooperative Farm Shipping Association	485a	9856	Hamlet	found					20.1	0.9		
V. T. Reid	485a	411	Salem	found					20.4	0.3		
Climax Superphosphate	486a			guaranteed					16 0	1 0		
Heldt & Voelker Co.[91]	486a	116	Evansville	found					16.3	0 8		
Heldt & Voelker Co.[92]	486a	577	Evansville	found					16 3	0.1		

Half Raw Bone and Half Two-Twelve-Six	1042a	......		guaranteed	......	......	......	3.0	9.0	9.0	......	3.0
G. A. Hillemeyer	1042a	695	Huntingburg	found	1 09	1 44	0.77	3.3	11.3	5.7	......	3.3
A. M. Bohnert & Son	1042a	696	Jasper	found	1.01	1 54	0.65	3.2	10.8	6.1	......	3.3
North Madison Coal Co.	1042a	1002	North Madison	found	0.88	1.74	0.48	3.1	10 6	6.6	......	3.1
George Bollinger[93]	1042a	1101	Henryville	found	0.98	1.67	0.55	3.2	7.9	9.1	......	3.3
Hopkins Old Time Mint and Onion Grower 2-8-16	1268a			guaranteed	......	......	......	2.0	8.0	1.0		16.0
Hamlet Cooperative Farm Shipping Association	1268a	9843	Hamlet	found	1.34	......	......	2.0	8.1	0.3	......	17.8
John Kruger[94]	1268a	1198	Monon	found	1.27	......	......	1.9	9.2	0.3	......	17.6
Hopkins Old Time Three-Twelve-Twelve	1269a	......		guaranteed	......	......	......	3.0	12.0	1.0	......	12.0
Ladoga Canning Co.	1269a	477	Lebanon	found	2.95	......	......	3.2	12.6	0.2	......	13.1
Ladoga Canning Co.[95]	1269a	492	Ladoga	found	2.98	......	......	3.2	12.7	0.4	......	12.7
Hopkins Old Time Potash Mixture	1270a	......		guaranteed	......	......	......	......	14.0	1.0	......	7.0
Baker Motor Sales Co.	1270a	9938	Franklin	found	......	......	......	......	14.4	0.7	......	7.0
Lake & Reagan	1270a	459	Colfax	found		......	......	......	14 5	0.5	......	7.8
Hopkins Pure Bone Meal	1346a	......		guaranteed	......	......	......	3.2	......	......	22.0	......
C. W. Wedeking & Co.	1346a	731	Dale	found	0.46	2.66	0.58	3.7	......	......	21.7	......
Three-Eighteen-Nine	1378a	......		guaranteed	......	......	......	3.0	18.0	1.0	......	9.0
Carl & John Gangwer[96]	1378a	1052	Cutler, R. R. 2	found	2.46	......	......	2 9	19.0	0.5	......	9 7
Indiana Farm Bureau Cooperative Association, Inc., Indianapolis, Ind.												
Muriate of Potash	805a	......		guaranteed	......	......	......	......	......	......	......	50.0
Decatur County Cooperative Co.[97]	805a	17	Greensburg	found	......	......	......	......	......	......	......	46.5
Knox County Farm Bureau Cooperative Assn., Inc.[98]	805a	88	Vincennes	found	......	......	......	......	......	......	......	47.7
Marshall County Farm Bureau Cooperative Assn., Inc.	805a	382	Plymouth	found	......	......	......	......	......	......	......	49.3
Farm Bureau 20-6-0-0 Sulphate of Ammonia	806a	......		guaranteed	......	......	......	20 6	......	......	......	......
St. Joseph County Farm Bureau Cooperative Assn., Inc.	806a	9801	South Bend	found	......	......	......	20.6	......	......	......	......
Decatur County Cooperative Co.[99]	806a	9	Greensburg	found	......	......	......	19.7	......	......	......	......
Perry County Farm Bureau Cooperative Assn., Inc.[100]	806a	250	Tell City	found	......	......	......	19 7	......	......	......	......
Farm Bureau 0-44-0 (44% Superphosphate)	807a	......		guaranteed	......	......	......	......	44 0	......	......	......
Knox County Farm Bureau Cooperative Assn., Inc.[101]	807a	83	Vincennes	found	......	......	......	......	42.5	0.1	......	......
Gibson County Shipping Association	807a	89	Princeton	found	......	......	......	......	43.4	0.2	......	......
Dubois County Farm Bureau Cooperative Assn., Inc.	807a	260	Jasper	found	......	......	......	......	44.0	......	......	......
Knox County Farm Bureau Cooperative Assn., Inc.	807a	580	Vincennes	found	......	......	......	......	43.8	......	......	......
Tri-County Farm Bureau Cooperative Assn., Inc.[102]	807a	723	Evansville	found	......	......	......	......	45.0	0.1	......	......
Allen County Farm Bureau Co-op. Ass'n, Inc.	807a	851	Fort Wayne	found	......	......	......	......	45.2	0.2	......	......
Wayne County Farm Bureau Co-op. Ass'n, Inc.	807a	904	Richmond	found	......	......	......	......	44.7	0.6	......	......
Fayette County Farm Bureau Co-op. Ass'n, Inc.	807a	947	Connersville	found	......	......	......	......	44.3	0.3	......	......
Vigo County Farm Bureau Co-op. Ass'n, Inc.[103]	807a	991	Terre Haute	found	......	......	......	......	44.1	0.2	......	......

Where 60.0 per cent or more of the total nitrogen guaranteed was found to be water soluble, the active and inactive insoluble organic nitrogen was not determined.

Percentages appearing in bold type in the "Inactive water insoluble organic" column denote inferior nitrogen.

[86] Sample received in the spring.

[87] Distributed by The Heldt Co., Evansville, Ind.

[88] Sample received in the spring.

[89] Sample received in the spring.

[90] Sample received in the spring.

[91] Sample received in the spring.

[92] Distributed by The Heldt Co., Evansville, Ind.

[93] Refund $2.75.

[94] Sample drawn at Francesville, Ind. Purchased from Charles Kruger, Francesville, Ind. Not tagged. Labels furnished.

[95] Sample drawn at Lizton, Ind.

[96] Purchased from J. A. Mummert, Frankfort, Ind. Sold as 3-18-9 but tagged as 2-12-6. Reregistered under 3-18-9.

[97] Refund $0.70.

[98] Refund $3.45.

[99] Refund $3.15.

[100] Refund $1.44.

[101] Refund $1.50. Sample received in the spring.

[102] Distributed by Calumet Fertilizer Corp., New Albany, Ind.

[103] Distributed by Calumet Fertilizer Corp., New Albany, Ind.

TABLE 13. Report of Inspection of Fertilizer Collected in 1934—Continued

Labels and names of persons from whom samples were secured	Official No.	Inspection No. H. H. and No. L.	Samples taken at		Nitrogen (N)				Phosphoric acid (P_2O_5)			Potash (K_2O), soluble in water, per cent
					Water soluble as nitrates, ammonia salts and organic, per cent	Active water insoluble organic, per cent	Inactive water insoluble organic, per cent	Total per cent	Soluble and reverted (available), per cent	Insoluble, per cent	Total per cent	
Farm Bureau 0-20-0	808a			guaranteed					20.0			
Noble County Farm Bureau Co-op. Ass'n, Inc.[104]	808a	9788	Albion	found					20.8	0.4		
St. Joseph County Farm Bureau Co-op. Ass'n, Inc	808a	9800	South Bend	found					21.5	0.2		
LaPorte County Farm Bureau Co-op. Ass'n, Inc.[105]	808a	9861	LaPorte	found					20.1	0.4		
Grant County Farm Bureau Co-op. Ass'n, Inc.[106]	808a	9892	Marion	found					20.4	0.3		
Johnson County Farm Bureau Co-op. Ass'n, Inc	808a	9911	Franklin	found					20.9	0.2		
Porter County Farm Bureau Co-op. Ass'n, Inc.[107]	808a	9914	Valparaiso	found					20.0	0.4		
Morgan County Farm Bureau Co-op. Ass'n, Inc	808a	9923	Martinsville	found					21.7	0.1		
Lake County Farm Bureau Co-op. Ass'n, Inc	808a	9979	Crown Point	found					20.3	0.5		
Shelby County Farm Bureau Co-op. Ass'n, Inc.[108]	808a	9997	Shelbyville	found					20.4	0.4		
Gibson County Shipping Association	808a	92	Princeton	found					21.2			
Jefferson County Farm Bureau Co-op. Ass'n, Inc	808a	135	Madison	found					23.3	0.1		
Rush County Farm Bureau Co-op. Ass'n, Inc.[109]	808a	226	Rushville	found					21.7	0.1		
Lawrence County Farm Bureau Co-op. Ass'n, Inc.[110]	808a	283	Bedford	found					21.2	0.3		
Monroe County Farm Bureau Co-op. Ass'n, Inc.[111]	808a	297	Bloomington	found					21.9	0.2		
Tri-County Farm Bureau Co-op. Ass'n, Inc.[112]	808a	307	Evansville	found					22.0	0.1		
Parke County Farm Bureau Co-op. Ass'n, Inc	808a	519	Rockville	found					21.7	0.4		
Lawrence County Farm Bureau Co-op. Ass'n, Inc.[113]	808a	536	Bedford	found					20.5	0.8		
Sullivan County Farm Bureau Co-op. Ass'n, Inc.[114]	808a	540	Sullivan	found					21.0	0.8		
Tipton County Farm Bureau Co-op. Ass'n, Inc	808a	562	Tipton	found					20.8	0.1		
Tipton County Farm Bureau Co-op. Ass'n, Inc	808a	563	Tipton	found					20.7	0.2		
LaPorte County Farm Bureau Co-op. Ass'n, Inc	808a	596	LaPorte	found					20.0	0.7		
Porter County Farm Bureau Co-op. Ass'n, Inc	808a	600	Valparaiso	found					19.4	0.2		
Boone County Farm Bureau Co-op. Ass'n, Inc	808a	650	Lebanon	found					20.5	0.3		
Lawrence County Farm Bureau Co-op. Ass'n, Inc.[115]	808a	681	Bedford	found					20.2	0.5		
Monroe County Farm Bureau Co-op. Ass'n, Inc	808a	701	Bloomington	found					20.1	0.6		
Tri-County Farm Bureau Co-op. Ass'n, Inc	808a	726	Evansville	found					20.5	0.6		
Grant County Farm Bureau Co-op. Ass'n, Inc	808a	750	Marion	found					20.3	0.7		
Hamilton County Farm Bureau Co-op. Ass'n, Inc	808a	811	Noblesville	found					20.8	0.3		
Allen County Farm Bureau Co-op. Ass'n, Inc	808a	849	Fort Wayne	found					21.0	0.1		
Noble County Farm Bureau Co-op. Ass'n, Inc	808a	869	Albion	found					21.4	0.2		
Rush County Farm Bureau Co-op. Ass'n, Inc	808a	948	Rushville	found					20.6	0.5		
Tri-County Farm Bureau Co-op. Ass'n, Inc	808a	979	Mount Vernon	found					20.0	1.0		
Tri-County Farm Bureau Co-op. Ass'n, Inc.[116]	808a	986	Poseyville	found					20.4	0.7		
Scott County Farm Bureau Co-op. Ass'n, Inc	808a	1053	Scottsburg	found					20.5	0.6		
Washington County Farm Bureau Co-op. Ass'n, Inc	808a	1054	Salem	found					20.4	0.3		
Farm Bureau 4-24-12	809a			guaranteed				4.0	24.0			12.0
	809a	9775	Terre Haute	found	3.89			4.0	23.6	0.2		12.8

Lawrence County Farm Bureau Co-op. Ass'n, Inc.	809a	9820	Bedford	found	3.96	......	......	4.1	24.4	0.1	......	12.8
LaPorte County Farm Bureau Co-op. Ass'n, Inc.[117]	809a	9871	LaPorte	found	4.06	......	......	4.2	24.2	0.1	......	12.3
Johnson County Farm Bureau Co-op. Ass'n, Inc.[118]	809a	9882	Franklin	found	3.93	......	......	4.1	24.0	0.1	......	13.3
Grant County Farm Bureau Co-op. Ass'n, Inc.[119]	809a	9888	Marion	found	4.07	......	......	4.1	24.6	......	......	12.1
Morgan County Farm Bureau Co-op. Ass'n, Inc.[120]	809a	9934	Martinsville	found	3.88	......	......	4.0	24.5	0.3	......	12.4
Howard County Farm Bureau, Co-op. Ass'n, Inc.	809a	9992	Kokomo	found	4.11	......	......	4.3	24.4	0.3	......	12.4
Ripley County Farm Bureau Co-op. Ass'n, Inc.	809a	29	Osgood	found	4.03	......	......	4.2	24.4	0.2	......	12.4
Wabash County Farm Bureau Co-op. Ass'n, Inc.	809a	59	Wabash	found	3.80	......	......	4.0	24.5	0.2	......	12.5
Gibson County Shipping Association	809a	91	Princeton	found	3.93	......	......	4.1	24.2	0.1	......	12.0
Farm Bureau Elevator & Supply Co.	809a	102	Crawfordsville	found	3.80	......	......	4.0	24.3	0.4	......	12.1
Jefferson County Farm Bureau Co-op. Ass'n, Inc.	809a	134	Madison	found	3.82	......	......	4.0	26.8	0.2	......	12.5
Fayette County Farm Bureau Co-op. Ass'n, Inc.[121]	809a	211	Connersville	found	4.29	......	......	4.5	25.1	......	......	12.6
Perry County Farm Bureau Co-op. Ass'n, Inc.	809a	236	Tell City	found	4.06	......	......	4.2	24.6	0.2	......	12.9
Monroe County Farm Bureau Co-op. Ass'n, Inc.	809a	296	Bloomington	found	3.83	......	......	4.0	24.6	0.2	......	12.0
Spencer County Farm Bureau Co-op. Ass'n, Inc.	809a	303	Chrisney	found	3.83	......	......	4.0	24.7	0.4	......	11.6
Hancock County Farm Bureau Co-op. Ass'n, Inc.[122]	809a	310	Greenfield	found	4.03	......	......	4.2	24.6	0.2	......	12.6
Clinton County Farm Bureau Co-op. Ass'n, Inc.[123]	809a	314	Frankfort	found	4.12	......	......	4.3	24.8	0.2	......	13.0
Parke County Farm Bureau Co-op. Ass'n, Inc.	809a	521	Rockville	found	4.02	......	......	4.1	24.4	0.2	......	13.4
Sullivan County Farm Bureau Co-op. Ass'n, Inc.[124]	809a	545	Sullivan	found	3.76	......	......	4.0	**23.7**	0.2	......	12.1
Tipton County Farm Bureau Co-op. Ass'n, Inc.	809a	560	Tipton	found	3.95	......	......	4.2	**23.6**	0.4	......	12.4
Knox County Farm Bureau Co-op. Ass'n, Inc.	809a	582	Vincennes	found	3.75	......	......	4.0	**23.7**	0.2	......	13.2
LaPorte County Farm Bureau Co-op. Ass'n, Inc.	809a	599	LaPorte	found	3.75	......	......	4.0	25.1	0.1	......	12.9
Boone County Farm Bureau Co-op. Ass'n, Inc.	809a	649	Lebanon	found	3.80	......	......	4.0	24.0	0.4	......	12.4
Grant County Farm Bureau Co-op. Ass'n, Inc.[125]	809a	751	Marion	found	3.63	......	......	3.8	**23.4**	0.5	......	12.1
Wells County Farm Bureau Co-op. Ass'n, Inc.	809a	767	Bluffton	found	3.73	......	......	4.0	24.3	0.2	......	12.2
Steuben County Farm Bureau Co-op. Ass'n, Inc.	809a	862	Angola	found	3.85	......	......	4.1	25.0	0.6	......	12.5
Clinton County Farm Bureau Co-op. Ass'n, Inc.	809a	909	Frankfort	found	3.92	......	......	4.1	24.2	0.6	......	12.1
Hancock County Farm Bureau Co-op. Ass'n, Inc.	809a	922	Greenfield	found	3.82	......	......	4.1	24.7	0.5	......	12.6
Rush County Farm Bureau Co-op. Ass'n, Inc.	809a	961	Rushville	found	3.92	......	......	4.2	24.8	0.4	......	12.4
Tri-County Farm Bureau Co-op. Ass'n, Inc.	809a	983	Poseyville	found	3.81	......	......	4.0	**23.4**	0.5	......	12.5
Tri-County Farm Bureau Co-op. Ass'n, Inc.[126]	809a	985	Poseyville	found	3.74	......	......	4.0	24.3	0.6	......	12.3
Greene County Farm Bureau Co-op. Ass'n, Inc.	809a	999	Linton	found	3.80	......	......	4.0	**23.4**	0.5	......	12.1
Fayette County Farm Bureau Co-op. Ass'n, Inc.	809a	1047	Connersville	found	4.09	......	......	4.3	24.5	0.3	......	12.6
Morgan County Farm Bureau Co-op. Ass'n, Inc.	809a	1102	Martinsville	found	3.88	......	......	4.1	25.0	0.4	......	12.6
Decatur County Cooperative Company	809a	1134	New Point	found	3.70	......	......	3.9	**23.3**	0.6	......	12.6
Shelby County Farm Bureau Co-op. Ass'n, Inc.	809a	1179	Shelbyville	found	3.91	......	......	4.1	24.6	0.3	......	12.0
Johnson County Farm Bureau Co-op. Ass'n, Inc.	809a	1180	Franklin	found	3.88	......	......	4.1	25.3	0.4	......	12.2
Farm Bureau 0-14-6	810a	......		guaranteed	......	......	......	......	14.0	......	......	6.0
St. Joseph County Farm Bureau Co-op. Ass'n, Inc.	810a	9803	South Bend	found	......	......	......	......	14.4	0.5	......	6.1

Where 60.0 per cent or more of the total nitrogen guaranteed was found to be water soluble, the active and inactive insoluble organic nitrogen was not determined.

Percentages appearing in bold type in the "Inactive water insoluble organic" column denote inferior nitrogen.

[104] Sample received in the spring.
[105] Not tagged. Labels furnished.
[106] Sample received in the spring.
[107] Sample received in the spring.
[108] Not tagged. Labels furnished.
[109] Sample received in the spring.
[110] Sample received in the spring.
[111] Sample received in the spring.
[112] Sample received in the spring.
[113] Distributed by Calumet Fertilizer Corp., New Albany, Ind.
[114] Distributed by Tennessee Corp., Lockland, Ohio.
[115] Distributed by Calumet Fertilizer Corp., New Albany, Ind.
[116] Sample drawn at Wadesville, Ind.
[117] Sample received in the spring.
[118] Sample received in the spring.
[119] Sample received in the spring.
[120] Sample received in the spring.
[121] Sample received in the spring.
[122] Sample received in the spring.
[123] Sample received in the spring.
[124] Distributed by Tennessee Corp., Lockland, Ohio.
[125] Refund $5.00.
[126] Sample drawn at Wadesville, Ind.

TABLE 13. Report of Inspection of Fertilizer Collected in 1934—Continued

Labels and names of persons from whom samples were secured	Official No.	Inspection No. H. H. and No. L.	Samples taken at		Nitrogen (N)				Phosphoric acid (P_2O_5)			Potash (K_2O), soluble in water, per cent
					Water soluble as nitrates, ammonia salts and organic, per cent	Active water insoluble organic, per cent	Inactive water insoluble organic, per cent	Total per cent	Soluble and reverted (available), per cent	Insoluble, per cent	Total per cent	
Clay County Farm Bureau Co-op. Ass'n, Inc	810a	9841	Brazil	found					14.3	0.4		6.4
LaPorte County Farm Bureau Co-op. Ass'n, Inc	810a	9848	LaPorte	found					14.5	1.2		6.0
Johnson County Farm Bureau Co-op. Ass'n, Inc	810a	9883	Franklin	found					14.3	0.4		6.2
Grant County Farm Bureau Co-op. Ass'n, Inc	810a	9894	Marion	found					14.5	1.2		6.2
Porter County Farm Bureau Co-op. Ass'n, Inc	810a	9912	Valparaiso	found					14.8	1.2		6.0
Morgan County Farm Bureau Co-op. Ass'n, Inc	810a	9935	Martinsville	found					14.8	0.5		6.2
Lake County Farm Bureau Co-op. Ass'n, Inc	810a	9977	Crown Point	found					15.0	0.8		6.3
Howard County Farm Bureau Co-op. Ass'n, Inc	810a	9990	Kokomo	found					14.7	1.0		6.3
Wabash County Farm Bureau Co-op. Ass'n, Inc	810a	61	Wabash	found					14.6	0.9		6.4
Miami County Farm Bureau Co-op. Ass'n, Inc	810a	74	Peru	found					14.7	1.1		6.0
Farm Bureau Elevator & Supply Co	810a	100	Crawfordsville	found					14.8	1.3		6.4
Tri-County Farm Bureau Co-op. Ass'n, Inc.[127]	810a	110	Evansville	found					14.4	0.6		6.0
Randolph County Farm Bureau Co-op. Ass'n, Inc.[128]	810a	175	Winchester	found					16.6	0.7		6.4
Fayette County Farm Bureau Co-op. Ass'n, Inc.[129]	810a	212	Connersville	found					13.7	1.0		6.3
Farm Bureau Service	810a	344	Columbus	found					14.8	0.4		7.2
Fayette County Farm Bureau Co-op. Ass'n, Inc	810a	542	Connersville	found					15.2	0.3		6.9
Randolph County Farm Bureau Co-op. Ass'n, Inc	810a	776	Winchester	found					14.2	0.4		6.8
Hamilton County Farm Bureau Co-op. Ass'n, Inc	810a	810	Noblesville	found					14.6	0.8		6.2
Noble County Farm Bureau Co-op. Ass'n, Inc	810a	871	Albion	found					15.3	0.3		6.3
Hancock County Farm Bureau Co-op. Ass'n, Inc	810a	920	Greenfield	found					14.6	0.9		5.8
Rush County Farm Bureau Co-op. Ass'n, Inc	810a	949	Rushville	found					14.8	0.4		6.0
Tri-County Farm Bureau Co-op. Ass'n, Inc	810a	982	Mount Vernon	found					14.0	1.1		6.2
Farm Bureau 2-12-6	811a			guaranteed				2.0	12.0			6.0
Vigo County Farm Bureau Co-op. Ass'n, Inc.[130]	811a	9773	Terre Haute	found	1.86			2.0	12.5	1.0		6.5
Daviess County Farm Bureau Co-op. Ass'n, Inc.[131]	811a	9825	Washington	found	1.61			2.0	12.6	1.0		6.1
Clay County Farm Bureau Co-op. Ass'n, Inc.[132]	811a	9828	Brazil	found	1.83			2.0	12.6	1.0		6.0
Owen County Farm Bureau Co-op. Ass'n, Inc	811a	9829	Spencer	found	1.96			2.1	13.2	0.9		6.1
LaPorte County Farm Bureau Co-op. Ass'n, Inc	811a	9855	LaPorte	found	1.96			2.1	12.0	1.8		6.3
Grant County Farm Bureau Co-op. Ass'n, Inc	811a	9890	Marion	found	2.03			2.2	11.9	1.7		6.0
Johnson County Farm Bureau Co-op. Ass'n, Inc.[133]	811a	9906	Franklin	found	1.80			2.0	12.3	1.0		7.0
Lake County Farm Bureau Co-op. Ass'n. Inc	811a	9978	Crown Point	found	2.16			2.3	12.0	1.4		6.2
Howard County Farm Bureau Co-op. Ass'n, Inc	811a	9988	Kokomo	found	2.17			2.3	12.0	1.4		6.0
Shelby County Farm Bureau Co-op. Ass'n, Inc.[134]	811a	9999	Shelbyville	found	1.93			2.1	12.0	1.7		6.2
Decatur County Co-operative Company[135]	811a	14	Greensburg	found	1.86			2.0	12.2	1.3		6.0
Ripley County Farm Bureau Co-op. Ass'n, Inc.[136]	811a	31	Osgood	found	2.07			2.2	12.0	1.4		6.3
Lagrange County Farm Bureau Co-op. Ass'n, Inc	811a	65	Lagrange	found	1.93			2.1	12.1	1.8		6.8
Pike County Farm Bureau Co-op. Ass'n, Inc.[137]	811a	95	Petersburg	found	1.82			2.0	12.4	1.0		6.9
Elevator & Supply Co.	811a	97	Crawfordsville	found	1.97			2.2	12.0	1.8		6.2

Tri-County Farm Bureau Co-op. Ass'n, Inc.[138]	811a	104	Evansville	found	1.85	......	......	2.0	12.0	1.3	......	6.2
Sullivan County Farm Bureau Co-op. Ass'n, Inc.[139]	811a	127	Sullivan	found	1.88	......	......	2.1	13.8	1.5	......	6.0
Union County Farm Bureau Co-op. Ass'n, Inc	811a	214	Liberty	found	2.03	......	......	2.2	14.4	1.3	......	5.6
Rush County Farm Bureau Co-op. Ass'n, Inc.[140]	811a	224	Rushville	found	2.14	......	......	2.3	12.8	1.3	......	6.0
Clinton County Farm Bureau Co-op. Ass'n, Inc	811a	315	Frankfort	found	2.19	......	......	2.3	12.2	1.6	......	6.9
Hancock County Farm Bureau Co-op. Ass'n, Inc	811a	316	Greenfield	found	1.93	......	......	2.1	12.4	1.4	......	6.2
Farm Bureau Service[141]	811a	339	Columbus	found	1.99	......	......	2.1	12.8	1.0	......	6.6
Clark County Farm Bureau Co-op. Ass'n, Inc.[142]	811a	418	Jeffersonville	found	1.86	......	......	2.0	13.1	1.0	......	6.4
Parke County Farm Bureau Co-op. Ass'n, Inc	811a	522	Rockville	found	1.86	......	......	2.0	13.3	0.9	......	6.4
Lawrence County Farm Bureau Co-op. Ass'n, Inc.[143]	811a	534	Bedford	found	1.82	......	......	2.0	12.0	1.2	......	6.1
Jefferson County Farm Bureau Co-op. Ass'n, Inc	811a	537	Madison	found	1.82	......	......	2.0	12.2	1.2	......	6.5
Franklin County Farm Bureau Co-op. Ass'n, Inc	811a	541	Brookville	found	1.83	......	......	2.0	12.5	1.0	......	6.1
Sullivan County Farm Bureau Co-op. Ass'n, Inc.[144]	811a	543	Sullivan	found	1.82	......	......	2.0	12.4	1.2	......	6.2
Tipton County Farm Bureau Co-op. Ass'n, Inc	811a	559	Tipton	found	1.91	......	......	2.1	12.3	0.8	......	6.5
Tipton County Farm Bureau Co-op. Ass'n, Inc	811a	567	Tipton	found	1.95	......	......	2.2	12.3	0.9	......	6.2
Knox County Farm Bureau Co-op. Ass'n, Inc.[145]	811a	573	Vincennes	found	1.90	......	......	2.1	13.7	1.5	......	6.4
Pike County Farm Bureau Co-op. Ass'n, Inc.[146]	811a	574	Petersburg	found	1.90	......	......	2.1	12.0	1.2	......	6.9
Porter County Farm Bureau Co-op. Ass'n, Inc	811a	590	Valparaiso	found	1.88	......	......	2.1	13.1	1.0	......	6.7
Warren Carter[147]	811a	651	Whitestown	found	1.76	......	......	2.0	12.0	1.2	......	6.3
Monroe County Farm Bureau Co-op. Ass'n, Inc	811a	693	Bloomington	found	1.93	......	......	2.1	12.7	0.8	......	6.3
Tri-County Farm Bureau Co-op. Ass'n, Inc.[148]	811a	724	Evansville	found	1.89	......	......	2.0	12.0	0.8	......	6.3
Hendricks County Farm Bureau Co-op. Ass'n, Inc	811a	837	Danville	found	1.87	......	......	2.0	12.1	1.2	......	6.3
Miami County Farm Bureau Co-op. Ass'n, Inc	811a	847	Peru	found	1.93	......	......	2.1	13.2	0.5	......	6.7
Allen County Farm Bureau Co-op. Ass'n, Inc	811a	852	Fort Wayne	found	2.09	......	......	2.2	12.7	0.9	......	6.3
Dekalb County Farm Bureau Co-op. Ass'n, Inc	811a	857	Auburn	found	2.07	......	......	2.2	12.4	1.0	......	6.3
Steuben County Farm Bureau Co-op. Ass'n, Inc	811a	865	Pleasant Lake	found	1.96	......	......	2.1	12.9	0.6	......	6.1
Noble County Farm Bureau Co-op. Ass'n, Inc	811a	876	Albion	found	2.00	......	......	2.2	12.9	1.0	......	6.3
Kosciusko County Farm Bureau Co-op. Ass'n, Inc	811a	891	Warsaw	found	2.06	......	......	2.2	13.2	0.4	......	6.2
St. Joseph County Farm Bureau Co-op. Ass'n, Inc	811a	893	South Bend	found	1.93	......	......	2.1	12.6	0.9	......	6.5
Clay County Farm Bureau Co-op. Ass'n, Inc.[149]	811a	963	Brazil	found	1.77	......	......	2.0	12.1	1.2	......	6.1
Tri-County Farm Bureau Co-op. Ass'n, Inc	811a	978	Poseyville	found	1.72	......	......	2.0	12.3	0.9	......	6.1
Tri-County Farm Bureau Co-op. Ass'n, Inc.[150]	811a	981	Poseyville	found	1.83	......	......	2.0	12.0	1.2	......	6.3
Vigo County Farm Bureau Co-op. Ass'n, Inc.[151]	811a	990	Terre Haute	found	1.86	......	......	2.0	12.3	1.0	......	6.3
Daviess County Farm Bureau Co-op. Ass'n, Inc	811a	992	Washington	found	1.89	......	......	2.0	12.0	1.3	......	6.1
John H. Gesell[152]	811a	1004	Brookville	found	1.95	......	......	2.2	12.3	0.6	......	6.1

Where 60.0 per cent or more of the total nitrogen guaranteed was found to be water soluble, the active and inactive insoluble organic nitrogen was not determined.
Percentages appearing in bold type in the "Inactive water insoluble organic" column denote inferior nitrogen.

[127] Sample received in the spring. Distributed by Calumet Fertilizer Corp., New Albany, Ind.

[128] Sample received in the spring.

[129] Sample received in the spring.

[130] Sample received in the spring.

[131] Sample received in the spring.

[132] Sample received in the spring.

[133] Sample received in the spring.

[134] Sample received in the spring.

[135] Sample received in the spring.

[136] Sample received in the spring.

[137] Sample received in the spring.

[138] Sample received in the spring. Distributed by Calumet Fertilizer Corp., New Albany, Ind.

[139] Sample received in the spring. Distributed by Calumet Fertilizer Corp., New Albany, Ind.

[140] Sample received in the spring.

[141] Sample received in the spring.

[142] Sample received in the spring. Distributed by Calumet Fertilizer Corp., New Albany, Ind.

[143] Distributed by Calumet Fertilizer Corp., New Albany, Ind.

[144] Distributed by Tennessee Corp., Lockland, Ohio.

[145] Distributed by Calumet Fertilizer Corp., New Albany, Ind.

[146] Distributed by Tennessee Corp., Lockland, Ohio.

[147] Purchased from Boone County Farm Bureau Cooperative Association, Inc., Lebanon, Ind. Sample drawn at Lebanon, Ind.

[148] Distributed by Calumet Fertilizer Corp., New Albany, Ind.

[149] Distributed by Tennessee Corp., Lockland, Ohio.

[150] Sample drawn at Wadesville, Ind.

[151] Distributed by Calumet Fertilizer Corp., New Albany, Ind.

[152] Distributed by Franklin County Farm Bureau Cooperative Association, Inc., Brookville, Ind.

TABLE 13. Report of Inspection of Fertilizer Collected in 1934—Continued

Labels and names of persons from whom samples were secured	Official No.	Inspection No. H. H. and No. L.	Samples taken at		Nitrogen (N)				Phosphoric acid (P$_2$O$_5$)			Potash (K$_2$O), soluble in water, per cent
					Water soluble as nitrates, ammonia salts and organic, per cent	Active water insoluble organic, per cent	Inactive water insoluble organic, per cent	Total per cent	Soluble and reverted (available), per cent	Insoluble, per cent	Total per cent	
Franklin County Farm Bureau Co-op. Ass'n, Inc.	811a	1012	Brookville	found	1.88	.....	.....	2.1	12.5	1.0	.....	6.0
Fayette County Farm Bureau Co-op. Ass'n, Inc.	811a	1039	Connersville	found	1.93	.....	.....	2.1	12.8	0.7	.....	6.3
Rush County Farm Bureau Co-op. Ass'n, Inc.	811a	1040	Rushville	found	1.88	.....	.....	2.1	12.3	1.1	.....	6.2
Scott County Farm Bureau Co-op. Ass'n, Inc.	811a	1069	Scottsburg	found	1.79	.....	.....	2.2	12.5	1.2	.....	6.5
Ripley County Farm Bureau Co-op. Ass'n, Inc.	811a	1082	Osgood	found	1.90	.....	.....	2.1	13.0	0.6	.....	6.2
Washington County Farm Bureau Co-op. Ass'n, Inc.	811a	1093	Pekin	found	1.86	.....	.....	2.0	12.3	1.3	.....	6.5
Clark County Farm Bureau Co-op. Ass'n, Inc.[153]	811a	1107	Jeffersonville	found	1.96	.....	.....	2.1	12.1	1.3	.....	6.3
Farm Bureau Feed Store	811a	1109	Milan	found	2.06	.....	.....	2.2	12.3	0.8	.....	6.3
Decatur County Co-operative Co.	811a	1117	Greensburg	found	1.94	.....	.....	2.3	12.5	0.9	.....	6.5
Farmers Feed & Produce Co.	811a	1119	Batesville	found	1.88	.....	.....	2.1	12.3	0.7	.....	6.3
Decatur County Co-operative Co.	811a	1121	New Point	found	1.96	.....	.....	2.1	12.3	1.2	.....	6.1
Farm Bureau Service	811a	1143	Columbus	found	1.88	.....	.....	2.3	13.1	1.1	.....	6.3
Johnson County Farm Bureau Co-op. Ass'n, Inc.	811a	1145	Franklin	found	1.81	.....	.....	2.3	12.8	0.9	.....	6.5
Shelby County Farm Bureau Co-op. Ass'n, Inc.	811a	1147	Shelbyville	found	1.83	.....	.....	2.0	12.8	0.3	.....	6.6
Jennings County Farm Bureau Co-op. Ass'n, Inc.	811a	1151	North Vernon	found	1.93	.....	.....	2.1	12.9	0.8	.....	6.4
Farm Bureau 0-12-12	812a	.....	.....	guaranteed	.....	.....	.....	.....	12.0	.....	.....	12.0
Noble County Farm Bureau Co-op. Ass'n, Inc.	812a	9792	Albion	found	.....	.....	.....	.....	12.2	0.8	.....	12.8
LaPorte County Farm Bureau Co-op. Ass'n, Inc.[154]	812a	9860	LaPorte	found	.....	.....	.....	.....	12.2	0.8	.....	12.5
Lake County Farm Bureau Co-op. Ass'n, Inc.	812a	9983	Crown Point	found	.....	.....	.....	.....	12.5	0.9	.....	12.6
Wabash County Farm Bureau Co-op. Ass'n, Inc.	812a	69	Wabash	found	.....	.....	.....	.....	13.1	0.8	.....	12.9
Tri-County Farm Bureau Co-op. Ass'n, Inc.[155]	812a	109	Evansville	found	.....	.....	.....	.....	12.4	0.2	.....	12.8
LaPorte County Farm Bureau Co-op. Ass'n, Inc.	812a	594	LaPorte	found	.....	.....	.....	.....	12.4	0.6	.....	12.2
Hamilton County Farm Bureau Co-op. Ass'n, Inc.	812a	817	Noblesville	found	.....	.....	.....	.....	12.5	0.8	.....	12.2
White County Farm Bureau Co-op. Ass'n, Inc.	812a	834	Monticello	found	.....	.....	.....	.....	13.2	0.4	.....	12.1
Farm Bureau 2-16-8	813a	.....	.....	guaranteed	.....	.....	.....	2.0	16.0	.....	.....	8.0
Rush County Farm Bureau Co-op. Ass'n, Inc.	813a	223	Rushville	found	2.53	.....	.....	2.7	16.9	0.4	.....	8.0
Farm Bureau 4-10-6	817a	.....	.....	guaranteed	.....	.....	.....	4.0	10.0	.....	.....	6.0
Morgan County Farm Bureau Co-op. Ass'n, Inc.	817a	496	Martinsville	found	3.92	.....	.....	4.0	11.2	0.8	.....	6.1
Farm Bureau 2-8-16	820a	.....	.....	guaranteed	.....	.....	.....	2.0	8.0	.....	.....	16.0
Noble County Farm Bureau Co-op. Ass'n, Inc.	820a	9795	Albion	found	2.38	.....	.....	2.5	8.3	0.7	.....	16.1
Lagrange County Farm Bureau Co-op. Ass'n, Inc.	820a	70	Lagrange	found	2.23	.....	.....	2.4	8.3	0.7	.....	16.7
Gibson County Shipping Association	820a	84	Princeton	found	2.03	.....	.....	2.2	9.1	0.4	.....	16.2
Knox County Farm Bureau Co-op. Ass'n, Inc.	820a	93	Vincennes	found	1.86	.....	.....	2.0	8.8	0.4	.....	16.4
Farm Bureau 4-24-4	824a	.....	.....	guaranteed	.....	.....	.....	4.0	24.0	.....	.....	4.0
Rush County Farm Bureau Co-op. Ass'n, Inc.	824a	216	Rushville	found	3.59	.....	.....	3.7	23.0	0.4	.....	4.9
Boone County Farm Bureau Co-op. Ass'n, Inc.	824a	652	Lebanon	found	3.82	.....	.....	4.0	23.3	0.6	.....	4.0
Wells County Farm Bureau Co-op. Ass'n, Inc.[156]	824a	765	Bluffton	found	3.73	.....	.....	4.0	23.8	0.7	.....	4.7
Delaware County Farm Bureau Co-op. Ass'n, Inc.	824a	799	Muncie	found	3.93	.....	.....	4.1	24.0	0.5	.....	4.6

Steuben County Farm Bureau Co-op. Ass'n, Inc.	824a	859	Angola	found	3.99	......	......	3.2	24.0	1.0	......	4.5
Hancock County Farm Bureau Co-op. Ass'n, Inc.	824a	916	Greenfield	found	4.00	......	......	4.2	25.4	0.8	......	4.3
Rush County Farm Bureau Co-op. Ass'n, Inc.	824a	950	Rushville	found	4.09	......	......	4.3	24.3	0.7	......	4.6
Decatur County Co-operative Co.	824a	1120	New Point	found	3.99	......	......	**4.2**	24.1	0.4	......	4.5
Shelby County Farm Bureau Co-op. Ass'n, Inc.	824a	1159	Shelbyville	found	3.99	......	......	4.2	24.0	0.9	......	4.6
Morgan County Farm Bureau Co-op. Ass'n, Inc.	824a	1174	Martinsville	found	3.96	......	......	4.1	24.0	0.1	......	4.5
Farm Bureau 3-9-18	832a	......	......	guaranteed	......	......	......	3.0	9.0	......	......	18.0
St. Joseph County Farm Bureau Co-op. Ass'n, Inc.	832a	9813	South Bend	found	2.80	......	......	2.9	9.1	0.4	......	19.5
Knox County Farm Bureau Co-op. Ass'n, Inc.	832a	126	Vincennes	found	2.86	......	......	3.0	9.4	0.5	......	20.1
Clinton County Farm Bureau Co-op. Ass'n, Inc.	832a	915	Frankfort	found	2.82	......	......	3.0	10.3	0.7	......	18.6
Farm Bureau 0-12-8	835a	......	......	guaranteed	......	......	......	......	12.0	......	......	8.0
Wayne County Farm Bureau Co-op. Ass'n	835a	325	Richmond	found	......	......	......	......	13.1	1.2	......	8.4
Tri-County Farm Bureau Co-op. Ass'n, Inc.[157]	835a	988	Poseyville	found	......	......	......	......	12.5	0.9	......	7.4
Farm Bureau 0-8-32	836a	......	......	guaranteed	......	......	......	......	8.0	......	......	32.0
Vigo County Farm Bureau Co-op. Ass'n, Inc.	836a	9774	Terre Haute	found	......	......	......	......	7.5	0.1	......	32.8
Lagrange County Farm Bureau Co-op. Ass'n, Inc.	836a	72	Lagrange	found	......	......	......	......	7.7	0.2	......	34.7
Clinton County Farm Bureau Co-op. Ass'n, Inc.	836a	305	Frankfort	found	......	......	......	......	9.0	0.2	......	32.2
Farm Bureau 2-14-4	837a	......	......	guaranteed	......	......	......	2.0	14.0	......	......	4.0
Rush County Farm Bureau Co-op. Ass'n, Inc.	837a	229	Rushville	found	1.90	......	......	2.1	14.0	2.8	......	4.1
Hamilton County Farm Bureau Co-op. Ass'n, Inc.	837a	809	Noblesville	found	2.13	......	......	2.3	14.7	0.9	......	4.5
Rush County Farm Bureau Co-op. Ass'n, Inc.	837a	952	Rushville	found	1.74	......	......	2.0	15.9	0.3	......	4.0
Farm Bureau 10-6-4	839a	......	......	guaranteed	......	......	......	10.0	6.0	......	......	4.0
St. Joseph County Farm Bureau Co-op. Ass'n, Inc.[158]	839a	885	South Bend	found	9.25	......	......	9.5	7.7	0.6	......	4.4
Farm Bureau 0-10-10	840a	......	......	guaranteed	......	......	......	......	10.0	......	......	10.0
Porter County Farm Bureau Co-op. Ass'n, Inc.	840a	9916	Valparaiso	found	......	......	......	......	10.0	0.7	......	10.0
Jasper County Farm Bureau Co-op. Ass'n, Inc.[159]	840a	9965	Rensselaer	found	......	......	......	......	10.1	0.4	......	10.2
Shelby County Farm Bureau Co-op. Ass'n, Inc.	840a	1	Shelbyville	found	......	......	......	......	10.5	0.8	......	10.4
Jefferson County Farm Bureau Co-op. Ass'n, Inc.	840a	128	Madison	found	......	......	......	......	11.9	0.4	......	10.0
Perry County Farm Bureau Co-op. Ass'n, Inc.	840a	232	Tell City	found	......	......	......	......	10.9	0.3	......	10.0
Hancock County Farm Bureau Co-op. Ass'n, Inc.	840a	331	Greenfield	found	......	......	......	......	11.4	0.3	......	10.7
LaPorte County Farm Bureau Co-op. Ass'n, Inc.	840a	593	LaPorte	found	......	......	......	......	9.9	0.5	......	10.0
Farm Bureau 0-8-24	841a	......	......	guaranteed	......	......	......	......	8.0	......	......	24.0
Jasper County Farm Bureau Co-op. Ass'n, Inc.[160]	841a	9970	Rensselaer	found	......	......	......	......	9.2	0.2	......	23.7
Lagrange County Farm Bureau Co-op. Ass'n, Inc.	841a	53	Lagrange	found	......	......	......	......	8.7	0.6	......	24.0
Knox County Farm Bureau Co-op. Ass'n, Inc.	841a	85	Vincennes	found	......	......	......	......	9.4	0.2	......	24.0
Noble County Farm Bureau Co-op. Ass'n, Inc.[161]	841a	877	Albion	found	......	......	......	......	10.1	0.5	......	22.2
Farm Bureau 14.8-0-0 Nitrate of Soda	842a	......	......	guaranteed	......	......	......	14.8	......	......	......	......
St. Joseph County Farm Bureau Co-op. Ass'n, Inc.	842a	9802	South Bend	found	......	......	......	15.3	......	......	......	......
Johnson County Farm Bureau Co-op. Ass'n, Inc.	842a	9879	Franklin	found	......	......	......	15.3	......	......	......	......
Farm Bureau 0-16-0	845a	......	......	guaranteed	......	......	......	......	16.0	......	......	......
Paoli Hardware Co.	845a	9831	Paoli	found	......	......	......	......	16.9	0.2	......	......
Decatur County Co-operative Co.	845a	11	Greensburg	found	......	......	......	......	15.6	0.6	......	......
Tri-County Farm Bureau Co-op. Ass'n, Inc.[162]	845a	111	Evansville	found	......	......	......	......	16.5	0.3	......	......
Dubois County Farm Bureau Co-op. Ass'n, Inc.	845a	261	Jasper	found	......	......	......	......	16.6	0.3	......	......
Monroe County Farm Bureau Co-op. Ass'n, Inc.	845a	294	Bloomington	found	......	......	......	......	18.1	0.2	......	......
Lawrence County Farm Bureau Co-op. Ass'n, Inc.	845a	688	Bedford	found	......	......	......	......	16.0	0.9	......	......

Where 60.0 per cent or more of the total nitrogen guaranteed was found to be water soluble, the active and inactive insoluble organic nitrogen was not determined.

Percentages appearing in bold type in the "Inactive water insoluble organic" column denote inferior nitrogen.

[153] Distributed by Calumet Fertilizer Corp., New Albany, Ind.

[154] Sample received in the spring.

[155] Distributed by Calumet Fertilizer Corp., New Albany, Ind.

[156] Distributed by Tennessee Corp., Lockland, Ohio.

[157] Sample drawn at Wadesville, Ind.

[158] Refund $0.75.

[159] Distributed by Calumet Fertilizer Corp., New Albany, Ind.

[160] Distributed by Calumet Fertilizer Corp., New Albany, Ind.

[161] Refund $3.60.

[162] Distributed by Calumet Fertilizer Corp., New Albany, Ind.

TABLE 13. Report of Inspection of Fertilizer Collected in 1934—Continued

Labels and names of persons from whom samples were secured	Official No.	Inspection No. H. H. and No. L.	Samples taken at		Nitrogen (N)				Phosphoric acid (P_2O_5)			Potash (K_2O), soluble in water, per cent
					Water soluble as nitrates, ammonia salts and organic, per cent	Active water insoluble organic, per cent	Inactive water insoluble organic, per cent	Total per cent	Soluble and reverted (available), per cent	Insoluble, per cent	Total per cent	
Greene County Farm Bureau Co-op. Ass'n, Inc.	845a	970	Linton	found					15.7	0.8		
Washington County Farm Bureau Co-op. Ass'n, Inc.	845a	1081	Salem	found					16.3	0.4		
Decatur County Co-operative Co.	845a	1108	Greensburg	found					16.2	0.6		
Decatur County Co-operative Co.	845a	1129	Greensburg	found					16.1	0.8		
Farm Bureau 0-20-20	846a			guaranteed					20.0			20.0
Marshall County Farm Bureau Co-op. Ass'n, Inc.	846a	381	Plymouth	found					21.1	0.3		20.0
Knox County Farm Bureau Co-op. Ass'n, Inc.	846a	583	Vincennes	found					19.1	0.3		22.8
Farm Bureau 2-12-2	856a			guaranteed				2.0	12.0			2.0
Clay County Farm Bureau Co-op. Ass'n, Inc.[163]	856a	9840	Brazil	found	1.92			2.0	12.8	1.0		2.1
Grant County Farm Bureau Co-op. Ass'n, Inc.	856a	9889	Marion	found	1.90			2.1	12.0	1.2		2.2
Shelby County Farm Bureau Co-op. Ass'n, Inc.[164]	856a	2	Shelbyville	found	1.99			2.2	12.9	1.0		2.0
Decatur County Co-operative Co.[165]	856a	15	Greensburg	found	1.89			2.0	12.3	1.1		2.0
Ripley County Farm Bureau Co-op. Ass'n, Inc.	856a	28	Osgood	found	2.14			2.3	12.7	0.9		2.0
Tri-County Farm Bureau Co-op. Ass'n, Inc.[166]	856a	113	Evansville	found	1.99			2.2	12.0	0.9		3.4
Rush County Farm Bureau Co-op. Ass'n, Inc.[167]	856a	230	Rushville	found	2.04			2.2	13.4	0.8		2.0
Perry County Farm Bureau Co-op. Ass'n, Inc.	856a	252	Tell City	found	1.83			2.0	14.0	1.0		2.1
Washington County Farm Bureau Co-op. Ass'n, Inc.	856a	413	Salem	found	1.86			2.0	12.6	1.2		2.3
Tipton County Farm Bureau Co-op. Ass'n, Inc.	856a	555	Tipton	found	2.38			2.6	13.3	0.7		2.6
Victor Conrad[168]	856a	653	Zionsville	found	1.88			2.1	12.1	1.4		2.1
Monroe County Farm Bureau Co-op. Ass'n, Inc.	856a	705	Bloomington	found	1.89			2.0	12.3	1.2		2.1
Miami County Farm Bureau Co-op. Ass'n, Inc.	856a	845	Peru	found	1.91			2.1	12.4	1.3		2.3
Allen County Farm Bureau Co-op. Ass'n, Inc.	856a	850	Fort Wayne	found	1.90			2.1	12.9	0.8		2.3
Dekalb County Farm Bureau Co-op. Ass'n, Inc.	856a	861	Auburn	found	1.90			2.1	12.0	1.6		2.1
Steuben County Farm Bureau Co-op. Ass'n, Inc.	856a	863	Pleasant Lake	found	2.00			2.2	12.6	1.1		2.4
Rush County Farm Bureau Co-op. Ass'n, Inc.	856a	945	Rushville	found	2.00			2.2	12.0	1.4		2.9
Clay County Farm Bureau Co-op. Ass'n, Inc.	856a	1000	Brazil	found	1.78			2.0	12.4	1.2		2.5
Greene County, Farm Bureau Co-op. Ass'n, Inc.[169]	856a	1020	Linton	found	1.80			2.0	12.6	1.0		2.4
Fayette County Farm Bureau Co-op. Ass'n, Inc.	856a	1045	Connersville	found	1.90			2.1	12.1	1.2		2.3
Scott County Farm Bureau Co-op. Ass'n, Inc.	856a	1068	Scottsburg	found	1.79			2.2	12.0	1.0		2.6
Washington County Farm Bureau Co-op. Ass'n, Inc.[170]	856a	1099	Pekin	found	1.83			2.0	12.4	1.3		2.1
Decatur County Co-operative Co.	856a	1125	Greensburg	found	1.86			2.0	12.4	1.1		2.3
Decatur County Co-operative Co.	856a	1128	Greensburg	found	1.89			2.0	12.7	1.1		2.3
Farm Bureau Service	856a	1130	Columbus	found	1.88			2.3	12.3	1.3		2.2
Decatur County Co-operative Co.	856a	1133	New Point	found	1.86			2.0	12.4	1.3		2.8
Shelby County Farm Bureau Co-op. Ass'n, Inc.	856a	1137	Shelbyville	found	1.62			1.9	12.8	0.4		2.2
Decatur County Co-operative Co.	856a	1139	Greensburg	found	1.83			2.0	13.3	0.6		2.8

				guaranteed				1.6			27.0	
Knox County Farm Bureau Co-op. Ass'n, Inc	875a	581	Vincennes	found	0.49	0.92	0.69	2.1			27.1	
Washington County Farm Bureau Co-op. Ass'n, Inc.[171]	875a	1055	Salem	found	0.46	1.50	0.44	2.4			**26.4**	
Farm Bureau 0-24-24	880a			guaranteed					24.0			24.0
Tri-County Farm Bureau Co-op. Ass'n, Inc	880a	306	Evansville	found					**23.2**	0.2		25.0
Tri-County Farm Bureau Co-op. Ass'n, Inc.[172]	880a	984	Mount Vernon	found					**22.6**	0.3		**23.2**
Farm Bureau "Corn King" 1-14-5	963a			guaranteed				1.0	**14.0**	1.0		5.0
Rush County Farm Bureau Co-op. Ass'n, Inc	963a	951	Rushville	found	1.06			1.2	14.4	0.9		4.9
Farm Bureau 3-18-9	980a			guaranteed				3.0	18.0			9.0
Howard County Farm Bureau Co-op. Ass'n, Inc	980a	9993	Kokomo	found	2.74			2.9	18.1	0.2		8.8
Wabash County Farm Bureau Co-op. Ass'n, Inc	980a	73	Wabash	found	3.02			3.2	18.6	0.7		9.2
Tri-County Farm Bureau Co-op. Ass'n, Inc.[173]	980a	108	Evansville	found	2.83			3.0	18.0	0.2		9.3
Randolph County Farm Bureau Co-op. Ass'n, Inc	980a	166	Winchester	found	2.98			3.2	20.6	0.3		9.0
Melvin Miller[174]	980a	595	Mill Creek	found	2.69			2.9	**17.3**	0.2		9.8
Hamilton County Farm Bureau Co-op. Ass'n, Inc	980a	820	Noblesville	found	3.03			3.2	18.8	0.3		9.4
Miami County Farm Bureau Co-op. Ass'n, Inc	980a	844	Peru	found	2.89			3.1	18.4	0.5		9.5
Henry County Farm Bureau Co-op. Ass'n, Inc	980a	914	Newcastle	found	3.00			3.2	18.0	1.0		9.1
Farm Bureau 1-11-4	1172a			guaranteed				1.0	11.0			4.0
Decatur County Co-operative Co	1172a	1112	Greensburg	found	0.96			1.1	11.2	0.8		4.8
Decatur County Co-operative Co	1172a	1132	Greensburg	found	0.80			1.0	11.8	0.7		3.8
Farm Bureau 0-21-9	1300a			guaranteed					21.0			9.0
Gibson County Shipping Association[175]	1300a	99	Princeton	found					21.0	0.2		9.1
Clinton County Farm Bureau Co-op. Ass'n, Inc	1300a	910	Frankfort	found					21.0	1.0		9.1
Hancock County Farm Bureau Co-op. Ass'n, Inc	1300a	919	Greenfield	found					21.0	0.5		9.3
Tri-County Farm Bureau Co-op. Ass'n, Inc.[176]	1300a	987	Poseyville	found					**19.6**	0.8		8.6
Indiana Farm Bureau Purchasing Department, Inc., Indianapolis, Ind.												
Farm 0-16-0	9085			guaranteed					16.0			
Tipton County Farm Bureau Co-op. Ass'n, Inc	9085	557	Tipton	found					16.8	0.3		
Shelby County Farm Bureau Co-op. Ass'n, Inc	9085	1157	Shelbyville	found					17.0	0.6		
Sulphate of Ammonia	9112			guaranteed					20.0			
Noble County Farm Bureau Co-op. Ass'n, Inc	9112	9793	Albion	found					**19.7**			
Fayette County Farm Bureau Co-op. Ass'n, Inc.[177]	9112	210	Connersville	found					20.4			
Muriate of Potash	9135			guaranteed								50.0
Lake County Farm Bureau Co-op. Ass'n, Inc	9135	9980	Crown Point	found								59.4
Wayne County Farm Bureau Co-op. Ass'n, Inc	9135	317	Richmond	found								50.1
Farm Bureau 2-27 Steamed Bone	9182			guaranteed				1.6			27.0	
Hancock County Farm Bureau Co-op. Ass'n, Inc	9182	333	Greenfield	found	0.40	1.24	0.76	2.4			27.8	
Franklin County Farm Bureau Co-op. Ass'n, Inc.[178]	9182	1017	Brookville	found	0.44	0.95	0.51	1.9			27.6	

Where 60.0 per cent or more of the total nitrogen guaranteed was found to be water soluble, the active and inactive insoluble organic nitrogen was not determined.

Percentages appearing in bold type in the "Inactive water insoluble organic" column denote inferior nitrogen.

[163] Sample received in the spring.

[164] Sample received in the spring.

[165] Sample received in the spring.

[166] Distributed by Calumet Fertilizer Corp., New Albany, Ind.

[167] Sample received in the spring.

[168] Purchased from Boone County Farm Bureau Cooperative Association, Inc., Lebanon, Ind.

[169] Sample drawn at Bloomfield, Ind.

[170] Distributed by Calumet Fertilizer Corp., New Albany, Ind.

[171] Distributed by Calumet Fertilizer Corp., New Albany, Ind.

[172] Distributed by Tennessee Corp., Lockland, Ohio. Refund $1.65.

[173] Distributed by Calumet Fertilizer Corp., New Albany, Ind.

[174] Purchased from LaPorte County Farm Bureau Cooperative Association, Inc., LaPorte, Ind. Sample drawn at LaPorte, Ind.

[175] Not tagged. Labels furnished.

[176] Sample drawn at Wadesville, Ind. Refund $3.60.

[177] Not tagged. Labels furnished.

[178] Not tagged. Labels furnished.

TABLE 13. Report of Inspection of Fertilizer Collected in 1934—Continued

Labels and names of persons from whom samples were secured	Official No.	Inspection No. H. H. and No. L.	Samples taken at		Nitrogen (N)				Phosphoric acid (P₂O₅)			Potash (K₂O), soluble in water, per cent
					Water soluble as nitrates, ammonia salts and organic, per cent	Active water insoluble organic, per cent	Inactive water insoluble organic, per cent	Total per cent	Soluble and reverted (available), per cent	Insoluble, per cent	Total per cent	
Farm Bureau 44% Superphosphate	9942			guaranteed					44.0	1.0		
LaPorte County Farm Bureau Co-op. Ass'n, Inc	9942	9859	LaPorte	found					43.9	0.1		
W. A. Breyfogle[179]	9942	9962	Crown Point	found					43.9	0.1		
Jay County Farm Bureau Co-op. Ass'n, Inc	9942	778	Portland	found					43.9	0.1		
Farm Bureau 2-14-4	351a			guaranteed				2.0	14.0			4.0
Porter County Farm Bureau Co-op. Ass'n, Inc	351a	9915	Valparaiso	found	2.04			2.2	12.8	2.2		5.3
Phillip Thrine[180]	351a	648	Lebanon	found	1.79			2.0	14.0	1.2		4.5
Randolph County Farm Bureau Co-op. Ass'n, Inc	351a	775	Winchester	found	2.04			2.2	14.4	0.9		4.4
Dekalb County Farm Bureau Co-op. Ass'n, Inc	351a	858	Auburn	found	1.96			2.1	14.4	1.0		4.3
Fayette County Farm Bureau Co-op. Ass'n, Inc	351a	946	Connersville	found	1.91			2.1	14.7	0.9		4.3
Farm Bureau 3-9-18	352a			guaranteed				3.0	9.0			18.0
Noble County Farm Bureau Co-op. Ass'n, Inc	352a	9791	Albion	found	2.94			3.2	9.6	0.2		18.1
LaPorte County Farm Bureau Co-op. Ass'n, Inc	352a	9857	LaPorte	found	3.53			3.6	9.0	0.2		17.4
Grant County Farm Bureau Co-op. Ass'n, Inc	352a	9898	Marion	found	2.87			3.0	9.3	0.4		17.8
Lake County Farm Bureau Co-op. Ass'n, Inc	352a	9986	Crown Point	found	3.03			3.2	10.3	0.4		17.3
Wabash County Farm Bureau Co-op. Ass'n, Inc	352a	66	Wabash	found	3.03			3.2	9.3	0.4		20.2
Farm Bureau 4-10-6	353a			guaranteed				4.0	10.0			6.0
Morgan County Farm Bureau Co-op. Ass'n, Inc	353a	9920	Martinsville	found	3.98			4.1	10.5	0.8		6.5
Miami County Farm Bureau Co-op. Ass'n, Inc	353a	78	Peru	found	4.00			4.2	10.6	0.8		6.1
Farm Bureau 4-12-4	354a			guaranteed				4.0	12.0			4.0
Howard County Farm Bureau Co-op. Ass'n, Inc	354a	9994	Kokomo	found	4.16			4.3	13.0	0.7		4.6
Knox County Farm Bureau Co-op. Ass'n, Inc.[181]	354a	82	Vincennes	found	3.80			4.0	12.8	0.7		4.2
Farm Bureau 0-24-24	359a			guaranteed					24.0			24.0
Wabash County Farm Bureau Co-op. Ass'n, Inc	359a	67	Wabash	found					24.0			24.3
Farm Bureau 2-10-8	687a			guaranteed				2.0	10.0			8.0
Howard County Farm Bureau Co-op. Ass'n, Inc	687a	9987	Kokomo	found	2.10			2.2	10.1	1.2		8.0
International Agricultural Corporation, Cincinnati, Ohio.												
International 16% Superphosphate	7881			guaranteed					16.0	1.0		
Heise Bros. & Co	7881	292	Mitchell	found					17.1	0.7		
Johnson & Burton	7881	687	Orleans	found					16.7	0.9		
Muriate of Potash	7976			guaranteed								50.0
S. A. Craigmile	7976	9845	Knox	found								52.4
Buffalo Grain Grower	8835			guaranteed				0.8	10.0	1.0		3.0
Fred H. Tripp Hardware Co	8835	154	North Vernon	found	0.71			1.0	11.2	0.9		3.7
International 20% Superphosphate	9040			guaranteed					20.0	1.0		
Johnson & Burton	9040	677	Orleans	found					20.6	0.7		

F. E. Gray & Son [182]	9040	703	Spencer	found					20.4	0.5		
International High Potash	9921			guaranteed					8.0			24.0
Glen Heffley	9921	45	Auburn, R. R. 1	found					7.6	0.1		25.6
International Ten-Ten	9222			guaranteed					10.0			10.0
Glen Heffley	9922	57	Auburn, R. R. 1	found					10.9	0.1		10.0
International Multiple Strength 4-24-12	141a			guaranteed				4.0	24.0			12.0
Farmers Elevator Co.	141a	853	Garrett	found	3.61			4.0	23.1	0.5		12.1
International Multiple Strength 4-24-4	143a			guaranteed				4.0	24.0			4.0
Farmers Elevator Co.	143a	846	Garrett	found	3.71			4.1	24.2	0.4		7.5
International Early Onion Grower 2-8-16	146a			guaranteed				2.0	8.0			16.0
Glen Heffley	146a	50	Auburn, R. R. 1	found	1.41			1.8	7.6	0.6		17.5
Hallawell's Feed Store [183]	146a	1131	North Vernon	found	1.51			1.9	10.0	0.9		7.6
International Top Dresser 10-6-4	147a			guaranteed				10.0	6.0			4.0
Glen Heffley [184]	147a	51	Auburn, R. R. 1	found	8.70			9.4	6.5	0.4		4.4
International Extra High Grade 2-12-6	149a			guaranteed				2.0	12.0			6.0
The Karsell Co., Inc.	149a	9821	Bloomington	found	1.63			1.9	11.9	0.4		5.4
Roy Nedderman	149a	32	Sunman	found	1.61			2.0	12.1	0.8		6.1
Roy Nedderman	149a	39	Sunman	found	1.62			2.0	11.8	0.6		6.5
Fred H. Tripp Hardware Co.	149a	157	North Vernon	found	1.69			2.0	13.2	0.7		6.0
Hugh C. McCoy [185]	149a	285	Orleans	found	1.69			2.0	12.3	0.8		6.2
F. E. Gray & Son	149a	293	Spencer	found	1.78			2.0	12.0	0.9		6.1
Farmers Co-operative Elevator Co.	149a	345	Seymour	found	1.78			2.0	12.5	1.0		6.3
Farmer's Service Station	149a	421	Corydon	found	1.73			2.0	12.6	0.9		6.4
Johnson & Burton	149a	697	Orleans	found	1.36			1.7	13.5	0.7		5.4
Farmers Elevator Co.	149a	848	Garrett	found	1.56			2.0	12.5	0.5		6.0
Worthington Grain Co.	149a	1001	Worthington	found	1.47			2.0	12.0	0.9		6.0
Albert Gesell [186]	149a	1009	Brookville, R.R. 6	found	1.52			2.0	12.0	1.0		6.1
W. F. Kaiser	149a	1016	Harrison, P. O., Ohio	found	1.51			2.1	12.5	0.1		6.3
Castner Hardware Co.	149a	1123	Holton	found	1.56			1.9	12.0	1.0		6.0
Hallawell's Feed Store [187]	149a	1146	North Vernon	found	1.53			2.0	12.8	0.6		4.4
Farmers Co-operative Elevator Co. [188]	149a	1189	Seymour	found	1.22			1.6	12.3	0.9		3.8
International Ideal Wheat and Corn 2-10-4	154a			guaranteed				2.0	10.0			4.0
Roy Nedderman	154a	33	Sunman	found	1.50			2.0	10.0	0.8		4.0
Farmers Co-operative Elevator Co. [189]	154a	336	Seymour	found	1.58			2.0	10.4	0.3		4.6
Farmers Co-operative Elevator Co.	154a	1155	Seymour	found	1.51			2.0	10.3	0.9		4.0
International Crop Grower 2-12-2	155a			guaranteed				2.0	12.0			2.0
The Karsell Co., Inc.	155a	9815	Bloomington	found	1.72			2.0	11.9	0.4		2.2
Roy Nedderman	155a	36	Sunman	found	1.55			2.0	12.0	0.9		2.0
Glen Heffley	155a	52	Auburn	found	1.72			2.0	12.5	0.7		2.2
F. E. Gray & Son	155a	298	Spencer	found	1.69			2.0	12.8	0.7		2.6
Farmers Co-operative Elevator Co. [190]	155a	349	Seymour	found	1.72			2.0	12.2	0.9		3.2
Farmers Elevator Co.	155a	854	Garrett	found	1.61			2.0	12.1	0.7		2.2
Farmers Co-operative Elevator Co.	155a	1195	Seymour	found	1.53			2.0	12.3	0.8		2.7

Where 60.0 per cent or more of the total nitrogen guaranteed was found to be water soluble, the active and inactive insoluble organic nitrogen was not determined. Percentages appearing in bold type in the "Inactive water insoluble organic" column denote inferior nitrogen.

[179] Purchased from Lake County Farm Bureau Cooperative Association, Inc., Crown Point, Ind.

[180] Purchased from Boone County Farm Bureau Cooperative Association, Inc., Lebanon, Ind.

[181] Distributed by Calumet Fertilizer Corp., New Albany, Ind.

[182] Not tagged. Labels furnished.

[183] Refund $3.40. Sample to manufacturer. Not tagged. Labels furnished.

[184] Refund $1.20.

[185] Not tagged. Labels furnished.

[186] Not tagged. Labels furnished. Purchased from Philip Alig, St. Leon, Ind.

[187] Refund $14.40. Sample to manufacturer.

[188] Refund $23.24. Seven bags returned to manufacturer. Sample to manufacturer.

[189] Sample received in the spring.

[190] Sample received in the spring.

TABLE 13. Report of Inspection of Fertilizer Collected in 1934—Continued

Labels and names of persons from whom samples were secured	Official No.	Inspection No. H. H. and No. L.	Samples taken at		Nitrogen (N): Water soluble as nitrates, ammonia salts and organic, per cent	Nitrogen (N): Active water insoluble organic, per cent	Nitrogen (N): Inactive water insoluble organic, per cent	Nitrogen (N): Total per cent	Phosphoric acid (P_2O_5): Soluble and reverted (available), per cent	Phosphoric acid (P_2O_5): Insoluble, per cent	Phosphoric acid (P_2O_5): Total per cent	Potash (K_2O), soluble in water, per cent
International Ground Bone	1194a			guaranteed				1.8			29.0	
Johnson & Burton	1194a	683	Orleans	found	0.60	1.06	0.34	2.0			28.0	
Hallawell's Feed Store	1194a	1136	North Vernon	found	0.70	1.58	0.22	2.5			27.3	
Jarecki Chemical Company (Armour Owned), Cincinnati, Ohio.												
Jarecki's 20% Superphosphate	8648			guaranteed					20.0	1.0		
Ohio Valley Seed Co.	8648	106	Evansville	found					20.2	0.6		
J. R. Erwin	8648	121	Inglefield, R. R. 1.	found					21.0	0.3		
Joslin Schmidt Corporation, Cincinnati, Ohio.												
20% Superphosphate	9453			guaranteed					20.0	1.0		
Finch & Weisel Elevator Co., Inc.[191]	9453	788	Portland	found					19.8	0.9		
Pardieck Hardware	9453	1185	Jonesville	found					20.9	1.1		
Square Brand 4-10-6	182a			guaranteed				4.0	10.0	0.5		6.0
John L. Sample[192]	182a	140	Madison	found	3.60			4.2	12.0	0.6		6.3
Square Brand 2-12-6	415a			guaranteed				2.0	12.0	0.5		6.0
John L. Sample	415a	129	Madison	found	1.55			1.9	13.3	0.9		6.1
Holton Milling Co.[193]	415a	156	Holton	found	1.72			2.0	13.8	0.6		6.1
Graves Implement Store	415a	713	Tell City	found	1.68			2.0	11.4	1.2		6.0
Farmers Grain Co.	415a	930	Pershing	found	1.61			2.0	12.2	0.9		6.0
John H. Gesell	415a	1003	Brookville, R. R. 6	found	1.57			2.1	11.9	0.8		6.4
Tuxedo Feed & Supply Co.	415a	1050	Aurora	found	1.47			2.0	12.0	0.7		6.0
Schlemmer Feed Co.	415a	1110	Harrison, P. O., Ohio	found	1.69			2.0	12.1	1.0		6.0
Holton Milling Co.	415a	1113	Holton	found	1.35			1.8	12.0	1.0		6.5
Square Brand 2-12-2	416a			guaranteed				2.0	12.0	0.5		2.0
Schlemmer Feed Co.	416a	1083	Harrison, P. O., Ohio	found	1.62			2.0	12.4	0.7		2.0
Tuxedo Feed & Supply Co.	416a	1111	Aurora	found	1.71			2.1	12.6	0.8		2.2
Square Brand 3-8-6	419a			guaranteed				3.0	8.0	0.5		6.0
Holton Milling Co.	419a	158	Holton	found	2.56			3.1	9.7	0.4		6.2
Square Brand 1-11-4	844a			guaranteed				1.0	11.0			4.0
Holton Milling Co.	844a	147	Holton	found	1.06			1.4	13.4	0.2		4.0
Ground Steamed Bone	1207a			guaranteed				2.0			27.0	
John H. Gesell	1207a	1008	Brookville, R.R.6.	found	0.60	1.19	0.51	2.3			27.8	

		....	....	guaranteed	....	....	....	3.7	....	....	22.0	....
Gesell	1275a	1014	Brookville, R.R. 6	found	0.64	3.13	0.73	4.5	....	....	20.8	....
Special Bone Mixture	1308a	....	....	guaranteed	....	....	....	2.0	8.0	4.0	....	6.0
Tower & Merryman	1308a	664	Marengo	found	1.52	....	....	2.0	9.0	3.2	....	6.1
Math Gayer	1308a	712	Troy	found	1.57	....	....	2.3	7.5	4.3	....	6.0
O. L. Cauble	1308a	1094	Pekin	found	1.68	....	....	2.1	7.9	4.5	....	6.2
Farmers Co-operative Elevator Co.	1308a	1135	Seymour	found	1.48	....	....	2.0	9.3	2.7	....	6.6
Holton Milling Co.	1308a	1149	Holton	found	1.41	....	....	2.2	8.3	3.7	....	6.8
Square Brand Bone Mixture	1309a	....	....	guaranteed	....	....	....	2.0	8.0	4.0	....	2.0
Math Gayer	1309a	716	Troy	found	1.50	....	....	2.0	8.8	3.6	....	2.6
John H. Gesell	1309a	1005	Brookville, R.R. 1	found	1.43	....	....	2.3	8.8	3.8	....	2.5
Pardieck Hardware	1309a	1181	Jonesville	found	1.27	....	....	2.0	8.7	4.1	....	2.2
Farmers Co-operative Elevator Co.	1309a	1196	Seymour	found	1.43	....	....	2.1	8.8	3.7	....	2.1
Kendallville Fertilizer Company, Kendallville, Ind.												
Bone Meal and Tankage Screenings	670a	....	....	guaranteed	....	....	....	3.2	....	....	20.0	....
Kendallville Fertilizer Co.[195]	670a	1200	Kendallville	found	2.03	3.10	1.07	6.2	....	....	14.9	....
Kentucky Fertilizer Company (Branch Federal Chemical Company, Inc.), Louisville, Ky.												
O. K. 16% Superphosphate	5508	....	....	guaranteed	....	....	....	....	16.0	....	....	....
Farmers Exchange, Inc	5508	532	Warren	found	....	....	....	....	17.3	0.4	....	....
Kingsbury & Company, Inc., Indianapolis, Ind.												
D. & K. 4-24-12	939a	....	....	guaranteed	....	....	....	4.0	24.0	....	....	12.0
Wabash Valley Canning Co[196]	939a	475	Attica	found	3.88	....	....	4.1	25.8	1.3	....	**11.0**
Goodrich Bros. Co.[197]	939a	633	Onward	found	3.76	....	....	4.0	23.5	0.9	....	13.0
Goodrich Bros. Co.	939a	770	Winchester	found	3.68	....	....	3.9	23.9	1.0	....	12.0
Farmers Co-operative Co.	939a	792	Yorktown	found	3.78	....	....	4.0	24.3	0.6	....	11.8
D. & K. 2-12-6	942a	....	....	guaranteed	....	....	....	2.0	12.0	....	....	6.0
Reynolds-Brooks Hardware Co.	942a	9822	Loogootee	found	1.91	....	....	2.3	13.2	0.8	....	6.8
Rich Valley Co-operative Elevator	942a	63	Rich Valley	found	1.96	....	....	2.3	12.3	0.5	....	6.1
W. S. Wisehart[198]	942a	163	Newcastle	found	1.68	....	....	2.1	13.5	0.9	....	6.6
Goodrich Bros. Co.[199]	942a	179	Winchester	found	1.68	....	....	2.0	13.4	0.6	....	6.5
Uhl Snider Milling Co.	942a	180	Connersville	found	1.64	....	....	2.1	12.3	0.9	....	6.7
J. A. Bertch & Son	942a	213	Liberty	found	1.75	....	....	2.1	13.0	0.7	....	6.5
Hutchinson & Son	942a	227	Arlington	found	1.68	....	....	2.1	12.5	0.8	....	6.2
Rock Spring Canning Co.	942a	329	Knightstown	found	1.85	....	....	2.1	13.2	0.5	....	6.7
Bunker Hill Elevator Co.	942a	374	Bunker Hill	found	1.85	....	....	2.2	12.6	0.9	....	6.1
Wabash Valley Canning Co.	942a	476	Attica	found	1.81	....	....	2.2	12.9	0.7	....	6.5
Jones Bros.	942a	516	West Lebanon	found	1.82	....	....	2.1	13.2	0.6	....	6.4
Lafayette Co-operative Elevator Co.	942a	570	Lafayette	found	1.78	....	....	2.2	12.2	1.6	....	6.5
W. S. Wisehart[200]	942a	634	Millville	found	1.75	....	....	2.1	12.0	1.0	....	7.0

Where 60.0 per cent or more of the total nitrogen guaranteed was found to be water soluble, the active and inactive insoluble organic nitrogen was not determined.

Percentages appearing in bold type in the "Inactive water insoluble organic" column denote inferior nitrogen.

[191] Not tagged. Labels furnished.

[192] Not tagged. Labels furnished.

[193] Sample received in the spring.

[194] Not tagged. Labels furnished

[195] Refund $7.14.

[196] Refund $2.00.

[197] Sample drawn at Indianapolis, Ind.

[198] Sample drawn at Millville, Ind.

[199] Sample received in the spring.

[200] Sample drawn at Indianapolis, Ind.

TABLE 13. Report of Inspection of Fertilizer Collected in 1934—Continued

Labels and names of persons from whom samples were secured	Official No.	Inspection No. H. H. and No. L.	Samples taken at		Nitrogen (N)				Phosphoric acid (P_2O_5)			Potash (K_2O), soluble in water, per cent
					Water soluble as nitrates, ammonia salts and organic, per cent	Active water insoluble organic, per cent	Inactive water insoluble organic, per cent	Total per cent	Soluble and reverted (available), per cent	Insoluble, per cent	Total per cent	
Farmers Elevator Co.[201]	942a	635	Oakville	found	1.78			2.1	11.6	1.3		6.4
Wilbur Cop, et al[202]	942a	636	Elwood, R. R. 2	found	1.78			2.1	11.8	1.4		6.6
Victor Samuelson[203]	942a	637	Plymouth, R. R. 3	found	1.71			2.1	11.7	1.7		6.7
Goodrich Bros. Co.	942a	768	Winchester	found	1.71			2.1	12.6	0.9		6.0
Goodrich Bros. Co.	942a	803	Durbin	found	1.64			2.0	12.1	0.8		6.3
Goodrich Bros. Co.	942a	806	Eaton	found	1.64			2.0	12.8	0.9		6.0
Farmers Grain Co.	942a	907	Pershing	found	1.72			2.1	12.7	0.9		6.0
Carrie Walton[204]	942a	918	Greenfield	found	1.88			2.1	11.7	1.6		6.3
D. & K. 2-12-2	943a			guaranteed				2.0	12.0			2.0
Reynolds-Brooks Hardware Co.	943a	9826	Loogootee	found	1.85			2.1	12.3	1.1		2.6
Rich Valley Co-operative Elevator	943a	62	Rich Valley	found	1.65			2.1	12.2	1.1		2.5
Goodrich Bros. Co.	943a	173	Winchester	found	1.52			2.0	14.3	0.9		2.3
J. A. Bertch & Son	943a	215	Liberty	found	1.79			2.2	13.0	1.2		2.2
Hutchinson & Son	943a	228	Arlington	found	1.90			2.2	12.8	0.9		3.4
Farmers Co-operative Co.	943a	313	Centerville	found	2.13			2.2	14.7	1.2		2.8
Jones Bros.	943a	515	West Lebanon	found	1.95			2.4	13.3	1.2		2.7
Wilson Shirley[205]	943a	639	Blountsville	found	1.62			2.1	11.5	1.8		2.6
Sunshine Feed Store	943a	923	Greenfield	found	1.91			2.1	11.6	1.4		2.4
Griffith Feed Store	943a	965	Coal City	found	1.53			2.0	12.2	0.9		2.1
D. & K. 2-8-16	944a			guaranteed				2.0	8.0			16.0
Al Konovsky	944a	9982	DeMotte	found	1.72			2.0	8.2	0.6		17.2
D. & K. 0-20-20	947a			guaranteed					20.0			20.0
Lee Hartman[206]	947a	646	Pershing	found					20.5	0.4		20.9
D. & K. 0-12-12	948a			guaranteed					12.0			12.0
Bunker Hill Elevator Co.	948a	370	Bunker Hill	found					12.9	0.6		12.3
Glen Jackson[207]	948a	458	Kokomo, R. R. 4	found					13.1	0.6		12.0
Kingsbury & Co., Inc.[208]	948a	645	Indianapolis	found					11.5	1.0		11.3
D. & K. 0-10-10	949a			guaranteed					10.0			10.0
Rich Valley Co-operative Elevator	949a	68	Rich Valley	found					12.2	0.5		11.3
Rock Springs Canning Co.	949a	321	Knightstown	found					11.2	0.5		10.4
Ozro Mason[209]	949a	647	Connersville	found					10.1	1.2		11.1
Northern Indiana Co-operative Association	949a	895	Mentone	found					9.4	1.2		10.0
Emmett F. Doddridge[210]	949a	927	Centerville, R.R.A	found					9.6	1.3		10.7
D. & K. 0-14-6	950a			guaranteed					14.0			6.0
Uhl-Snider Milling Co.	950a	188	Connersville	found					15.0	0.8		6.0
Goodrich Bros. Co.	950a	783	Winchester	found					14.4	0.9		5.8

									8.0			24.0
			Demotte	found					8.9	0.4		23.6
	951a	830	Francesville	found					7.8	1.0		23 8
D. & K. 0-16-0	953a			guaranteed					16.0			
Goodrich Bros Co.	953a	167	Winchester	found					18.3	0.9		
Lafayette Co-operative Elevator Co.	953a	571	Lafayette	found					16 4	1 2		
Chas. Chamberlin[211]	953a	644	Cottage Grove	found					**15.3**	1.5		
Goodrich Bros. Co.	953a	804	Eaton	found					16 0	1.8		
Miller Grain Co., Inc.	953a	841	Greencastle	found					17.6	0.6		
D. & K. Nitrate of Soda	990a			guaranteed				15.0				
Kemp Bros. Packing Co.	990a	467	Kokomo	found				15 7				
D. & K. 3-15-12	1022a			guaranteed				3.0	15.0			12.0
Greentown Packing Co.	1022a	9917	Greentown	found	2.71			3.1	15 5	1.1		12.8
Paul Conk[212]	1022a	466	Galveston, R. R. 1	found	2.65		0.35	3.0	15 4	1.2		13.1
D. & K. 0-20-0	1023a			guaranteed					20.0			
Rich Valley Co-operative Elevator	1023a	60	Rich Valley	found					20 3	1.1		
Lafayette Co-operative Elevator Co.	1023a	572	Lafayette	found					20 0	0.9		
John Raymond[213]	1023a	602	Remington	found					**19 6**	2.2		
Farmers Elevator Co., et al[214]	1023a	642	Oakville	found					**19.7**	1 6		
Goodrich Bros. Co.	1023a	779	Winchester	found					**19 3**	2 1		
Farmers Co-operative Co.	1023a	787	Yorktown	found					19.8	2.0		
D. & K. 2-16-8	1026a			guaranteed				2 0	16 0			8 0
Levi Conwell[215]	1026a	461	Kokomo, R. R. 2	found	1 95			2 2	16.4	1.3		8.4
Kemp Bros. Packing Co.	1026a	464	Kokomo	found	1 85			2 1	16 8	1 2		8.6
D. & K. 4-24-4	1030a			guaranteed				4 0	24.0			4.0
Goodrich Bros. Co.[216]	1030a	632	Onward	found	3 51			3 8	24 0	1 3		5 3
Kingsbury & Co., Inc.	1030a	638	Indianapolis	found	3 85			4.1	**23 3**	1 2		5.2
Charles Chamberlin[217]	1030a	640	Cottage Grove	found	3 85			4 0	**23 6**	1.1		4 3
D. & K. 1-10-5	1055a			guaranteed				1.0	10 0			5.0
Reynolds-Brooks Hardware Co.	1055a	9823	Loogootee	found	0 91			1 3	10.3	1 2		5 0
D. & K. 0-12-6	1176a			guaranteed					12 0			6 0
Rich Valley Co-operative Elevator	1176a	71	Rich Valley	found					14 2	0.6		6 7
D. & K. 4-16-4	1229a			guaranteed				4 0	16 0			4 0
Kingsbury & Co., Inc.	1229a	643	Indianapolis	found	3 44			4.0	**15 2**	1.5		4.3
D. & K. 0-40-0	1381a			guaranteed					40 0			
Goodrich Bros Co.[218]	1381a	782	Winchester	found					40 4	0 8		
Paul Kenedy[219]	1381a	1199	Templeton	found					40 0	0 8		
D. & K. 0-24-12	1382a			guaranteed					24 0			12 0
L. R. Young[220]	1382a	1056	Frankfort	found					**23 0**	0 9		13 5

Where 60.0 per cent or more of the total nitrogen guaranteed was found to be water soluble, the active and inactive insoluble organic nitrogen was not determined.

Percentages appearing in bold type in the "Inactive water insoluble organic" column denote inferior nitrogen.

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[201] Sample drawn at Indianapolis, Ind.

[202] Sample drawn at Indianapolis, Ind.

[203] Sample drawn at Indianapolis, Ind.

[204] Puchased from Sunshine Feed Store, Greenfield, Ind.

[205] Sample drawn at Indianapolis, Ind.

[206] Sample drawn at Indianapolis, Ind. Purchased from Farmers Grain Co., Pershing, Ind.

[207] Purchased from Kemp Bros. Packing Co., Kokomo, Ind.

[208] Refund $1.80.

[209] Purchased from G. B. Irwill, Connersville, Ind. Sample drawn at Indianapolis, Ind.

[210] Purchased from Farmers Grain Co., Pershing, Ind.

[211] Sample drawn at Indianapolis, Ind.

[212] Purchased from Kemp Bros. Packing Co., Kokomo, Ind. Sample drawn at Kokomo, Ind.

[213] Purchased from Evans & Hedworth, Remington, Ind.

[214] Sample drawn at Indianapolis, Ind. Not tagged. Labels furnished.

[215] Purchased from Kemp Bros. Packing Co., Kokomo, Ind.

[216] Sample drawn at Indianapolis, Ind.

[217] Sample drawn at Indianapolis, Ind.

[218] Sold as 0-40-0 but tagged as 0-24-0. Reregistered under 0-40-0.

[219] Sold as 0-40-0 but tagged as 0-24-0. Reregistered under 0-40-0.

[220] Purchased from Sedalia Elevator Co., Sedalia, Ind. Refund $2.50. Sold as 0-24-12. Tagged 0-20-10. Reregistered under 0-24-12.

TABLE 13. Report of Inspection of Fertilizer Collected in 1934—Continued

Labels and names of persons from whom samples were secured	Official No.	Inspection No. H. H. and No. L.	Samples taken at		Nitrogen (N)				Phosphoric acid (P_2O_5)			Potash (K_2O), soluble in water, per cent
					Water soluble as nitrates, ammonia salts and organic, per cent	Active water insoluble organic, per cent	Inactive water insoluble organic, per cent	Total per cent	Soluble and reverted (available), per cent	Insoluble, per cent	Total per cent	
Louisville Fertilizer Company (Armour Owned),												
Cincinnati, Ohio.												
Louisville High Analysis Burley Tobacco Grower 4-12-8	297a			guaranteed				4.0	12.0	0.5		8.0
Main Feed Store	297a	148	Madison	found	3.23			4.0	13.0	0.6		8.0
Louisville 1-8-4 Fertilizer	305a			guaranteed				1.0	8.0	0.5		4.0
L. N. Jobe & Son	305a	234	English	found	0.92			1.1	8.7	0.2		4.1
Geo. P. Wagner	305a	275	Jasper	found	0.93			1.1	8.9	0.1		4.0
Louisville Fertilizer Company, The, (Armour Owned),												
Louisville, Ky.												
Sixteen Per Cent	8073			guaranteed					16.0	0.5		
L. N. Jobe & Son	8073	657	English	found					16.0	0.6		
McCarty Seed Company, J. A.,												
Evansville, Ind.												
Lucky Jim 0-10-10	965a			guaranteed					10.0			10.0
J. A. McCarty Seed Co.[221]	965a	119	Evansville	found					10.8	0.9		10.4
J. A. McCarty Seed Co.	965a	996	Evansville	found					11.1	0.7		10.5
Lucky Jim 3-9-18	967a			guaranteed				3.0	9.0			18.0
J. A. McCarty Seed Co.	967a	120	Evansville	found	3.05			3.4	9.8	0.9		18.8
Lucky Jim 2-12-2	968a			guaranteed				2.0	12.0			2.0
J. A. McCarty Seed Co.	968a	720	Evansville	found	2.14			2.7	12.0	1.0		2.1
J. A. McCarty Seed Co.	968a	721	Evansville	found	2.23			2.7	11.8	1.1		2.2
J. A. McCarty Seed Co.	968a	977	Evansville	found	1.82			2.3	11.6	2.5		2.2
Lucky Jim 16% Superphosphate	969a			guaranteed					16.0			
J. A. McCarty Seed Co.	969a	719	Evansville	found					16.2	2.5		
J. A. McCarty Seed Co.	969a	972	Evansville	found					15.7	2.7		
Lucky Jim 20% Superphosphate	970a			guaranteed					20.0			
J. A. McCarty Seed Co.	970a	717	Evansville	found					21.1	1.8		
J. A. McCarty Seed Co.	970a	1019	Evansville	found					20.0	2.4		
Lucky Jim 2-12-6	973a			guaranteed				2.0	12.0			6.0
Standard Hatcheries	973a	9918	Terre Haute	found	2.14			2.7	12.0	1.6		6.7
R. C. Kell	973a	103	Oakland City	found	1.97			2.6	12.5	1.7		6.6
J. A. McCarty Seed Co.[222]	973a	118	Evansville	found	2.08			2.7	12.8	1.7		6.3
J. A. McCarty Seed Co.	973a	718	Evansville	found	2.27			2.8	12.1	0.8		5.9
J. A. McCarty Seed Co.	973a	975	Evansville	found	2.13			2.6	12.4	1.3		6.4
J. A. McCarty Seed Co.	973a	1022	Evansville	found	1.98			2.4	13.3	0.9		6.5

Lucky Jim 4-24-12	1082a			guaranteed				4 0	24.0			12.0
J. A. McCarty Seed Co.	1082a	725	Evansville	found	4 12			4 2	25.9	0.4		12.0
Lucky Jim 0-16-8	1158a			guaranteed					16.0			8 0
J. A. McCarty Seed Co.	1158a	1041	Evansville	found					16.3	0.5		8.3
Sulphate of Ammonia	1210a			guaranteed				20.5				
Standard Hatcheries[223]	1210a	9995	Terre Haute	found				20.9				
Lucky Jim 0-12-6	1239a			guaranteed					12.0			6.0
J. A. McCarty Seed Co.	1239a	976	Evansville	found					12 6	0 6		6.6
Madison Glue Corporation, Madison, Ind.												
Fertilizer Digested Glue Stock Tankage	1331a			guaranteed				7.5				
Madison Glue Corp.[224]	1331a	533	Madison	found	1.53	2.87	0.90	5.3				
Miami Fertilizer Company, The, Dayton, Ohio.												
Big M 0-20-0	9476			guaranteed					20 0	1 0		
Beach & Simmers	9476	791	Albany	found					20.2	0.5		
Big M 0-16-0	9477			guaranteed					16.0	1.0		
Beach & Simmers	9477	795	Albany	found					16.5	0.5		
Big M 2-12-2	436a			guaranteed				2.0	12.0	1.0		2.0
Beach & Simmers	436a	9956	Albany	found	1.90			2 1	12 6	0 5		2 6
Big M 2-12-6	440a			guaranteed				2 0	12 0	1 0		6.0
Beach & Simmers	440a	9942	Albany	found	1.85			2.0	12.5	0.5		6.0
Morgan Packing Company, Austin, Ind.												
Morgan's 20%	1321a			guaranteed					20 0			
Morgan Packing Co.	1321a	334	Columbus	found					21.4	0.5		
Morgan Packing Co.	1321a	341	Franklin	found					21.3	0.5		
Morgan Packing Co.	1321a	354	Ewing	found					20.6	0.4		
Morgan Packing Co.	1321a	436	Austin	found					21.2	0.4		
Morgan Packing Co	1321a	443	Scottsburg	found					21 4	0 6		
Morgan Packing Co.	1321a	445	Edinburg	found					21.5	0.4		
Morgan's 2-12-6	1322a			guaranteed				2 0	12.0			6 0
Morgan Packing Co.	1322a	338	Edinburg	found	1.83			2.0	12.1	0.4		5.9
Morgan Packing Co.	1322a	340	Columbus	found	1.93			2.1	12.1	0.6		5.6
Morgan Packing Co	1322a	350	Ewing	found	1.83			2.0	12 2	0 6		5 6
Morgan Packing Co	1322a	360	Seymour	found	1.90			2 1	12 1	0 6		5 5
Morgan Packing Co.	1322a	440	Austin	found	1.89			2.1	12.0	0.6		5.6
Morgan's 3-12-12	1323a			guaranteed				3.0	12 0			12 0
Morgan Packing Co.	1313a	335	Columbus	found	3.50			3.6	12.5	0.1		11.4
Morgan Packing Co.	1323a	342	Edinburg	found	3.16			3.3	12.3	0.1		11.8
Morgan Packing Co.	1323a	353	Ewing	found	2.98			3.1	12.4	0.1		11.5
Morgan Packing Co.	1323a	435	Scottsburg	found	2.83			3.0	12.4	0.2		11.5
Morgan Packing Co.	1323a	442	Austin	found	2.80			3.0	12.3	0.1		11.4
Morgan Packing Co.	1323a	446	Franklin	found	2.93			3.1	12.1	0.2		11.9

Where 60.0 per cent or more of the total nitrogen guaranteed was found to be water soluble, the active and inactive insoluble organic nitrogen was not determined.

Percentages appearing in bold type in the "Inactive water insoluble organic" column denote inferior nitrogen.

[221] Sample received in the spring.

[222] Sample received in the spring.

[223] Not tagged. Labels furnished.

[224] Misbranded. Reregistered under 1361a with a 5% nitrogen guarantee.

TABLE 13. Report of Inspection of Fertilizer Collected in 1934—Continued

Labels and names of persons from whom samples were secured	Official No.	Inspection No. H. H. and No. L.	Samples taken at		Nitrogen (N)				Phosphoric acid (P_2O_5)			Potash (K_2O), soluble in water, per cent
					Water soluble as nitrates, ammonia salts and organic, per cent	Active water insoluble organic, per cent	Inactive water insoluble organic, per cent	Total per cent	Soluble and reverted (available), per cent	Insoluble, per cent	Total per cent	
Morgan's 0-10-10	1329a			guaranteed					10.0			10.0
Morgan Packing Co.	1329a	351	Ewing	found					10.3	0.3		9.5
Morgan Packing Co[225]	1329a	438	Austin	found					10.3	0.5		9.0
Morgan Packing Co.	1329a	439	Scottsburg	found					10.5	0.3		9.4
Natural Products, Inc., Indianapolis, Ind.												
Indiana 2-12-2	1244a			guaranteed				2.0	12.0			2.0
J. E. Robbins	1244a	19	Greensburg, R.R. 2	found	0.08	0.71	1.01	1.8	13.9	0.1		2.7
Natural Products, Inc.	1244a	800	Daleville	found	0.49	0.83	0.88	2.2	12.0	0.3		2.0
Indiana 2-12-6	1245a			guaranteed				2.0	12.0			6.0
J. E. Robbins	1245a	18	Greensburg, R.R. 2	found	0.02	0.75	1.23	2.0	12.8	0.1		6.1
2-0-0	1328a			guaranteed				2.0				
Natural Products, Inc.	1328a	796	Daleville	found	0.11	10.91	1.08	2.1				
Norris Fertilizer Company, The, Rushville, Ind.												
Norris' 16% Superphosphate	8930			guaranteed					16.0			
The Norris Fertilizer Co.[226]	8930	942	Rushville	found					15.2	0.9		
Norris' 20% Superphosphate	8933			guaranteed					20.0			
Central States Elevator[227]	8923	484	Manilla	found					20.0	0.9		
Norris' High Quality 0-10-10	9063			guaranteed					10.0			10.0
Hagerstown Grain Co.	9063	164	Hagerstown	found					11.9	0.5		10.2
Norris' High Quality Steamed Bone Meal	49a			guaranteed				1.6			27.0	
The Norris Fertilizer Co.	49a	936	Rushville	found	0.56	1.28	0.56	2.4			27.6	
Norris' Corn and Wheat Special (1-12-2)	514a			guaranteed				1.0	12.0			2.0
Leo Hoeing[228]	514a	487	Milroy	found	0.75			1.0	12.4	0.8		2.3
The Norris Fertilizer Co.	514a	939	Rushville	found	0.83			1.0	12.0	0.7		2.0
Norris' Grain Grower	516a			guaranteed				1.0	11.0			5.0
Hagerstown Grain Co.	516a	170	Hagerstown	found	0.85			1.1	12.4	0.6		5.0
The Norris Fertilizer Co.	516a	488	Rushville	found	0.70			0.9	11.9	0.6		6.5
The Norris Fertilizer Co[229]	516a	940	Rushville	found	0.83			1.0	11.5	0.6		5.0
The Norris Fertilizer Co.	516a	944	Rushville	found	0.93			1.1	11.6	0.3		5.4
Norris' High Quality 2-12-6	522a			guaranteed				2.0	12.0			6.0
John Booth[230]	522a	481	Milroy	found	1.65			1.7	12.3	0.6		6.5
Roach Ind. Corp.[231]	522a	485	New Palestine	found	1.39			1.6	12.5	0.8		6.5
The Norris Fertilizer Co.[232]	522a	935	Rushville	found	1.55			1.8	11.7	0.6		5.7
The Norris Fertilizer Co.	522a	941	Rushville	found	1.49			1.8	12.0	0.5		5.8

The Norris Fertilizer Co.	523a	.....		guaranteed	.....	.....	.....	2.0	12.0	.....	.....	2.0
The Norris Fertilizer Co.	523a	482	Rushville	found	1.78	.....	.....	2.0	13.5	0.7	.....	2.2
The Norris Fertilizer Co.	523a	934	Rushville	found	1.72	.....	.....	2.0	12.1	0.8	.....	2.2
The Norris Fertilizer Co.	523a	943	Rushville	found	1.78	.....	.....	2.0	12.0	1.1	.....	2.0
North American Fertilizer Company, Inc., Louisville, Ky.												
North American High Grade 16% Superphosphate	9381	.....		guaranteed	.....	.....	.....	.....	16.0	.....	.....	.....
Pleasant Nole[233]	9381	1086	Pekin, R. R. 1	found	.....	.....	.....	.....	17.2	0.8	.....	.....
North American Steamed Bone	9384	.....		guaranteed	.....	.....	.....	1.0	.....	.....	30.0	.....
Lambeck Bros.[234]	9384	715	Tell City	found	0.81	.....	.....	2.8	.....	.....	**24.9**	.....
North American Crop and Tobacco Fertilizer 1-8-4	101a	.....		guaranteed	.....	.....	.....	1.0	8.0	.....	.....	4.0
Lambeck Bros	101a	243	Tell City	found	1.12	.....	.....	1.3	9.2	0.5	.....	4.0
North American Champion 2-12-2	108a	.....		guaranteed	.....	.....	.....	2.0	12.0	.....	.....	2.0
O. L. Cauble	108a	1095	Pekin	found	1.85	.....	.....	2.1	12.0	0.7	.....	2.5
Farmers Supply Co.	108a	1160	Mooresville	found	1.82	.....	.....	2.1	12.4	1.4	.....	2.0
North American Tomato and Potato Fertilizer 2-12-6	109a	.....		guaranteed	.....	.....	.....	2.0	12.0	.....	.....	6.0
Crawford Hardware	109a	1150	Morgantown	found	1.85	.....	.....	2.1	13.0	0.7	.....	6.4
North American 2-12-6 Fertilizer	1043a	.....		guaranteed	.....	.....	.....	2.0	12.0	.....	.....	6.0
Lambeck Bros.[235]	1043a	245	Tell City	found	2.06	.....	.....	2.3	12.3	1.0	.....	6.0
J. W. McReynolds	1043a	674	Boonville	found	1.33	.....	.....	1.6	12.3	0.3	.....	6.4
Lambeck Bros	1043a	675	Tell City	found	1.68	.....	.....	2.0	11.3	1.3	.....	6.0
O. L. Cauble	1043a	1092	Pekin	found	1.44	.....	.....	1.8	12.3	0.6	.....	6.6
Farmers Supply Co.	1043a	1194	Mooresville	found	1.99	.....	.....	2.3	12.1	1.5	.....	6.0
Price Chemical Company, Louisville, Ky.												
Ten and Ten Percent Potash	8823	.....		guaranteed	.....	.....	.....	.....	10.0	.....	.....	10.0
J. L. Isay	8823	9798	Churubusco	found	.....	.....	.....	.....	10.0	1.5	.....	11.6
Cartwright Coal & Ice Co.	8823	9897	Alexandria	found	.....	.....	.....	.....	10.7	1.2	.....	10.7
Consumers Coal Co.	8823	471	Plainfield	found	.....	.....	.....	.....	10.3	1.4	.....	10.0
Twelve-Twelve Fertilizer	9024	.....		guaranteed	.....	.....	.....	.....	12.0	.....	.....	12.0
Farmers Mill & Elevator Co.	9024	9810	Columbia City	found	.....	.....	.....	.....	11.9	1.7	.....	13.3
Hamlet Grain & Feed Co.	9024	9849	Hamlet	found	.....	.....	.....	.....	11.8	2.0	.....	12.9
Burket Elevator Co.	9024	9905	Burket	found	.....	.....	.....	.....	12.0	1.6	.....	12.5
Twenty Percent Superphosphate	9129	.....		guaranteed	.....	.....	.....	.....	20.0	.....	.....	.....
Hoosier Grain & Supply Co.	9129	9930	Bluffton	found	.....	.....	.....	.....	20.4	0.5	.....	.....
Muriate of Potash	9290	.....		guaranteed	.....	.....	.....	.....	.....	.....	.....	50.0
Henry Mathys	9290	9804	South Bend, R. R. 2	found	.....	.....	.....	.....	.....	.....	.....	52.1
Farmers Mill & Elevator Co.	9290	9811	Columbia City	found	.....	.....	.....	.....	.....	.....	.....	52.2
Kiest Milling Co.	9290	9858	Knox	found	.....	.....	.....	.....	.....	.....	.....	52.4
Phosphate and Tobacco	9591	.....		guaranteed	.....	.....	.....	.....	16.0	.....	.....	.....
Farmers Grain & Coal Co.	9591	564	Frankton	found	.....	.....	.....	.....	16.9	0.8	.....	.....
Knecht Milling Co.	9591	807	Hartford City	found	.....	.....	.....	.....	16.8	0.9	.....	.....
Mattix & Son Elevator	9591	913	Frankfort	found	.....	.....	.....	.....	17.2	0.9	.....	.....

Where 60.0 per cent or more of the total nitrogen guaranteed was found to be water soluble, the active and inactive insoluble organic nitrogen was not determined.

Percentages appearing in bold type in the "Inactive water insoluble organic" column denote inferior nitrogen.

[225] Refund $4.00.

[226] Refund $1.50.

[227] Sample drawn at Rushville, Ind.

[228] Sample drawn at Rushville, Ind.

[229] Sample received in the spring.

[230] Sample drawn at Rushville, Ind.

[231] Sample drawn at Rushville, Ind.

[232] Refund $1.13.

[233] Purchased from O. L. Cauble, Pekin, Ind.

[234] Refund $5.36.

[235] Sample received in the spring.

TABLE 13. Report of Inspection of Fertilizer Collected in 1934—Continued

Labels and names of persons from whom samples were secured	Official No.	Inspection No. H. H. and No. L.	Samples taken at		Nitrogen (N)				Phosphoric acid (P₂O₅)			Potash (K₂O), soluble in water, per cent
					Water soluble as nitrates, ammonia salts and organic, per cent	Active water insoluble organic, per cent	Inactive water insoluble organic, per cent	Total per cent	Soluble and reverted (available), per cent	Insoluble, per cent	Total per cent	
Eight Twenty-four Fertilizer	9898			guaranteed					8.0			24.0
J. L. Isay	9898	9790	Churubusco	found					8.3	1.1		24.2
Hamlet Grain & Feed Co.	9898	9851	Hamlet	found					8.4	0.8		25.5
Henry Mathys	9898	9862	South Bend, R. 2	found					8.7	1.0		24.6
One-Eight-Three Fertilizer	159a			guaranteed				1.0	8.0			3.0
J. A. Fortwendel	159a	249	Troy	found	1.12			1.4	9.0	0.6		3.6
Vegetable Grower	161a			guaranteed				2.0	10.0			4.0
R. A. Stuckey	161a	9944	Decatur	found	1.89			2.3	10.7	0.8		4.3
J. A. Fortwendel	161a	242	Troy	found	2.06			2.4	10.7	0.8		4.1
Dunreith Grain & Coal Co.	161a	318	Dunreith	found	1.89			2.2	10.3	0.7		4.4
Indiana Special	162a			guaranteed				2.0	12.0			2.0
R. A. Stuckey	162a	9954	Decatur	found	1.79			2.2	12.0	0.8		2.6
Hoosier Grain & Supply Co.	162a	9966	Bluffton	found	1.99			2.3	11.6	0.9		2.5
Andry Bros.	162a	264	Birdseye	found	2.11			2.5	12.4	0.8		2.8
Dunreith Grain & Coal Co.	162a	327	Dunreith	found	1.97			2.3	12.3	0.8		2.5
W. S. Oneal	162a	546	Rushville	found	1.73			2.2	13.1	0.7		2.6
Cash Coal & Supply Co.	162a	754	Decatur	found	1.77			2.3	12.0	1.0		2.3
Knecht Milling Co.	162a	805	Hartford City	found	1.67			2.4	12.3	1.2		2.1
Mulberry Grain Co.	162a	828	Mulberry	found	1.77			2.4	12.0	1.5		2.2
Burket Elevator Co.	162a	900	Burket	found	1.58			2.2	12.0	0.8		2.5
J. A. Bertch & Son	162a	1011	Liberty	found	1.70			2.4	12.1	1.4		2.2
Bickel Feed Store	162a	1029	Corydon	found	1.64			2.2	12.1	1.1		2.1
Consumers Coal Co.	162a	1158	Plainfield	found	1.75			2.3	12.9	1.0		2.1
Tomato Special 2-12-6	163a			guaranteed				2.0	12.0			6.0
Dunreith Grain & Coal Co.	163a	322	Dunreith	found	2.08			2.3	12.3	0.9		7.0
J. A. Bertch & Son	163a	1013	Liberty	found	1.68			2.2	12.3	1.1		6.5
A-1 Grain Grower	164a			guaranteed				2.0	12.0			6.0
Bloomfield Mill & Elevator Co.	164a	9783	Bloomfield	found	2.08			2.5	12.3	0.9		6.0
Farmers Mill & Elevator Co.	164a	9809	Columbia City	found	1.91			2.3	12.1	0.8		7.2
Cartwright Coal & Ice Co.	164a	9896	Alexandria	found	1.86			2.3	12.0	1.0		7.3
Burket Elevator Co.[236]	164a	9910	Burket	found	2.02			2.2	12.2	0.8		6.6
Hoosier Grain & Supply Co.[237]	164a	9939	Bluffton	found	2.00			2.2	12.3	1.1		6.7
R. A. Stuckey	164a	9958	Decatur	found	1.95			2.4	12.0	0.9		6.8
J. A. Fortwendel	164a	248	Troy	found	2.10			2.5	12.7	1.1		6.6
Andry Bros.	164a	256	Birdseye	found	2.04			2.4	12.8	1.0		6.5
Dunreith Grain & Coal Co.	164a	319	Dunreith	found	2.22			2.4	12.1	0.9		6.7
Bornwasser & Gwin	164a	428	New Albany	found	2.09			2.4	12.3	2.2		6.5
Consumers Coal Co.[238]	164a	472	Plainfield	found	1.82			2.1	12.9	0.7		7.0

....	164a	544	Rushville	found	1.78	.....	.....	2.2	12.3	1.2	.....	6.0
Farmers Grain & Coal Co.	164a	566	Frankton	found	1.72	.....	.....	2.2	12.2	1.2	.....	6.2
Hoosier Grain & Supply Co.	164a	755	Bluffton	found	1.64	.....	.....	2.2	12.0	1.1	.....	6.5
Cash Coal & Supply Co.	164a	756	Decatur	found	1.79	.....	.....	2.3	12.0	1.2	.....	6.3
Washington Hardware	164a	840	Noblesville	found	1.92	.....	.....	2.4	12.7	0.9	.....	6.8
Burket Elevator Co.	164a	899	Burket	found	1.90	.....	.....	2.4	12.8	0.4	.....	6.8
Mattix & Son Elevator	164a	911	Frankfort	found	2.05	.....	.....	2.4	12.3	1.0	.....	6.6
Geo. Couch & Sons	164a	980	New Harmony	found	1.68	.....	.....	2.3	12.2	1.1	.....	6.4
Farmers Cooperative Elevator Co.	164a	997	Clay City	found	1.75	.....	.....	2.3	12.0	1.3	.....	6.6
Bickel Feed Store	164a	1030	Corydon	found	1.64	.....	.....	2.3	11.8	1.3	.....	6.3
J. D. Best	164a	1033	Floyds Knobs	found	1.78	.....	.....	2.3	12.5	1.0	.....	6.0
Consumers Coal Co.	164a	1153	Plainfield	found	1.72	.....	.....	2.3	12.7	0.8	.....	6.5
Three-Eight-Six Tobacco Fertilizer	165a	.....	.....	guaranteed	.....	.....	.....	3.0	8.0	.....	.....	6.0
Bloomfield Mill & Elevator Co.	165a	9784	Bloomfield	found	2.99	.....	.....	3.5	8.5	0.6	.....	6.9
L. Keilman Co.	165a	9913	Dyer	found	2.77	.....	.....	3.2	8.2	0.7	.....	6.5
Consumers Coal Co.	165a	473	Plainfield	found	2.82	.....	.....	3.1	9.4	0.4	.....	6.2
Big Forty	168a	.....	.....	guaranteed	.....	.....	.....	4.0	24.0	.....	.....	12.0
Cartwright Coal & Ice Co.[239]	168a	9893	Alexandria	found	3.16	.....	.....	3.4	23.9	0.4	.....	13.3
Hoosier Grain & Supply Co.	168a	9931	Bluffton	found	3.53	.....	.....	3.8	24.1	0.3	.....	13.3
Bickel Feed Store[240]	168a	1034	Corydon	found	3.86	.....	.....	4.3	**20.6**	0.7	.....	12.5
Consumers Coal Co.	168a	1152	Plainfield	found	3.55	.....	.....	4.0	24.3	0.5	.....	12.0
Onion and Truck Special (2-8-16)	227a	.....	.....	guaranteed	.....	.....	.....	2.0	8.0	.....	.....	16.0
J. L. Isay	227a	9789	Churubusco	found	1.63	.....	.....	2.1	8.4	1.0	.....	16.3
Farmers Mill & Elevator Co.	227a	9806	Columbia City	found	1.79	.....	.....	2.1	8.7	0.8	.....	17.7
Hamlet Grain & Feed Co.	227a	9853	Hamlet	found	1.58	.....	.....	2.0	8.0	1.1	.....	18.5
Henry Mathys	227a	9863	South Bend, R. 2	found	1.88	.....	.....	2.1	9.0	0.8	.....	16.1
Burket Elevator Co.	227a	9877	Burket	found	1.55	.....	.....	2.0	8.1	1.2	.....	17.2
L. Keilman Co.	227a	9907	Dyer	found	1.72	.....	.....	2.3	8.1	1.4	.....	17.9
Economy Grain	594a	.....	.....	guaranteed	.....	.....	.....	1.0	11.0	.....	.....	3.0
J. A. Fortwendel	594a	239	Troy	found	1.02	.....	.....	1.4	11.8	0.7	.....	3.0
Farmers Grain & Coal Co.	594a	569	Frankton	found	0.91	.....	.....	1.3	11.6	1.0	.....	3.3
Phosphate and Potash	680a	.....	.....	guaranteed	.....	.....	.....	.....	12.0	.....	.....	6.0
Hagerstown Grain Co.	680a	931	Hagerstown	found	.....	.....	.....	.....	12.8	0.5	.....	5.8
30% Grain Grower	870a	.....	.....	guaranteed	.....	.....	.....	3.0	18.0	.....	.....	9.0
Walton Elevator Co.	870a	379	Walton	found	2.78	.....	.....	3.1	19.2	0.5	.....	9.4
Two-Eight-Five Fertilizer	878a	.....	.....	guaranteed	.....	.....	.....	2.0	8.0	.....	.....	5.0
Bornwasser-Gwin Implement Co.	878a	427	New Albany	found	2.06	.....	.....	2.3	10.2	4.6	.....	5.4
J. D. Best	878a	1038	Floyds Knobs	found	1.97	.....	.....	2.3	9.2	0.7	.....	4.8
Two-Eight-Ten Fertilizer	1064a	.....	.....	guaranteed	.....	.....	.....	2.0	8.0	.....	.....	10.0
Burket Elevator Co.	1064a	9908	Burket	found	1.68	.....	.....	2.2	8.1	1.1	.....	10.8
Consumers Coal Co.[241]	1064a	469	Plainfield	found	1.84	.....	.....	2.4	8.2	1.1	.....	9.0
45% Superphosphate	1089a	.....	.....	guaranteed	.....	.....	.....	.....	45.0	.....	.....	.
Henry Mathys	1089a	9868	South Bend, R. 2	found	.....	.....	.....	.....	44.8	0.2	.....	.....
Bone Grain Grower	1246a	.....	.....	guaranteed	.....	.....	.....	2.0	8.0	4.0	.....	6.0
Hoosier Grain & Supply Co.	1246a	758	Bluffton	found	1.61	.....	.....	2.2	7.3	3.6	.....	6.2
George Steckley	1246a	873	Kendallville	found	1.37	.....	.....	2.1	8.1	4.2	.....	6.3
Burket Elevator Co.	1246a	898	Burket	found	1.53	.....	.....	2.2	8.4	3.7	.....	6.4
J. D. Best	1246a	1049	Floyds Knobs	found	1.61	.....	.....	2.3	8.8	3.7	.....	6.0
Bornwasser-Gwin Implement Co.	1246a	1087	New Albany	found	1.29	.....	.....	2.2	8.2	4.4	.....	6.1

Where 60.0 per cent or more of the total nitrogen guaranteed was found to be water soluble, the active and inactive insoluble organic nitrogen was not determined.
Percentages appearing in bold type in the "Inactive water insoluble organic" column denote inferior nitrogen.

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[236] Sample received in the spring.

[237] Sample received in the spring.

[238] Sample received in the spring.

[239] Refund $3.60.

[240] Refund $3.40.

[241] Refund $0.25.

TABLE 13. Report of Inspection of Fertilizer Collected in 1934—Continued

Labels and names of persons from whom samples were secured	Official No.	Inspection No. H. H. and No. L.	Samples taken at		Nitrogen (N): Water soluble as nitrates, ammonia salts and organic, per cent	Nitrogen (N): Active water insoluble organic, per cent	Nitrogen (N): Inactive water insoluble organic, per cent	Nitrogen (N): Total per cent	Phosphoric acid (P_2O_5): Soluble and reverted (available), per cent	Phosphoric acid (P_2O_5): Insoluble, per cent	Phosphoric acid (P_2O_5): Total per cent	Potash (K_2O), soluble in water, per cent
Pulverized Manure Company, The, Chicago, Ill.												
Wizard Brand Pulverized Sheep Manure	797a			guaranteed				2.0			1.0	2.0
Seberger Seed Co.	797a	601	Crown Point	found	0.61	0.40	1.19	2.2			2.6	3.9
Rauh & Sons Fertilizer Company, E., Indianapolis, Ind.												
Red Star Brand 16% Superphosphate	8726			guaranteed					16.0			
Paoli Hardware Co.	8726	9836	Paoli	found					16.4	1.2		
Versailles Feed Co.	8726	150	Versailles	found					18.4	1.8		
Pennington Feed Store	8726	295	Bloomington	found					16.8	1.2		
Conrad Windish[242]	8726	613	Corydon	found					16.0	1.9		
Jas. L. Record	8726	1168	Edinburg	found					16.6	1.6		
Central States Grain Association	8726	1184	Shelbyville	found					17.3	0.9		
Red Star Brand 20% Superphosphate	8727			guaranteed					20.0			
E. K. Sowash	8727	9985	Crown Point	found					20.0	1.0		
Farmers Elevator & Mill Co.[243]	8727	608	Ferdinand	found					22.3	1.2		
Geneva Equity Exchange	8727	766	Geneva	found					21.5			
Hartford City Milling Co.	8727	801	Hartford City	found					20.5	1.1		
Red Star Brand 0-10-10	8732			guaranteed					10.0			10.0
F. L. Crowe	8732	9927	Pennville	found					10.1	7.4		15.5
Victoria Mill & Elevator Co.	8732	280	Jasper	found					10.7	0.4		10.0
E. Rauh & Sons Fertilizer Co.	8732	618	Indianapolis	found					10.2	1.0		9.8
Hartford City Milling Co.	8732	797	Hartford City	found					10.1	0.9		9.9
Rauh's Red Star 0-28-12	9950			guaranteed					28.0			12.0
E. Rauh & Sons Fertilizer Co.	9950	615	Indianapolis	found					27.7	0.7		11.6
Rauh's Red Star 0-12-18	9952			guaranteed					12.0			18.0
Clamme Packing Co.[244]	9952	9989	Hartford City	found					12.2	0.7		18.4
Rauh's Red Star 0-14-6	9953			guaranteed					14.0			6.0
Versailles Feed Co.	9953	538	Versailles	found					15.6	0.7		6.7
E. Rauh & Son Fertilizer Co.	9953	606	Indianapolis	found					14.0	1.4		6.4
Pioneer Elevator Co.	9953	1018	Worthington	found					15.3	0.9		9.1
Rauh's Red Star 2-12-6 Fertilizer	89a			guaranteed				2.0	12.0			6.0
G. C. Jones	89a	9827	Shoals	found	1.69			2.0	12.0	1.4		6.1
Pioneer Elevator Co.	89a	9839	Worthington	found	1.78			2.0	11.7	1.6		6.8
Peoples Co-operative Store	89a	9960	Wolcott	found	1.76			2.0	11.4	1.6		6.3
E. K. Sowash	89a	9972	Crown Point	found	1.78			2.0	11.7	1.4		6.1

Versailles Feed Co.[245]	89a	149	Versailles	found	1.78			2.0	14.5	0.1		6.2
Victoria Mill & Elevator Co.	89a	272	Jasper	found	1.73			2.0	12.0	2.0		6.3
Elmer Scarlett	89a	287	West Baden	found	1.79			2.1	12.0	1.8		6.2
Shirley Elevator	89a	380	Walton	found	1.72			2.0	12.1	1.8		6.1
Versailles Feed Co.	89a	539	Versailles	found	1.71			2.1	12.0	1.5		6.1
Clyde Oler[246]	89a	612	Greensfork	found	1.88			2.1	11.8	1.5		6.2
A. B. Martin[247]	89a	614	LaFontaine	found	1.91			2.1	**11.6**	1.6		**6.4**
Tucker Feed Mill	89a	686	Springville	found	1.97			2.2	**11.3**	1.3		6.0
Pennington Feed Co.	89a	704	Bloomington	found	1.89			2.0	12.2	0.9		6.2
Hartford City Milling Co.	89a	798	Hartford City	found	1.96			2.1	12.0	1.0		6.0
Griffith Feed Store	89a	964	Worthington	found	1.74			2.1	12.1	1.3		6.0
Conrad Windish	89a	1027	Corydon	found	1.90			2.1	12.0	1.1		6.0
Jas. L. Record	89a	1141	Edinburg	found	2.05			2.3	12.5	1.1		6.2
Frank Richards	89a	1142	Taylorsville	found	1.68			2.1	12.0	1.3		6.0
Rauh's Red Star 2-14-4 Fertilizer	90a			guaranteed				2.0	14.0			4.0
E. Rauh & Sons Fertilizer Co.[248]	90a	610	Indianapolis	found	1.69			2.0	**13.0**	2.3		4.1
Hartford City Milling Co.	90a	793	Hartford City	found	1.73			**1.9**	**12.9**	**2.9**		**3.9**
Rauh's Red Star 3-9-18 Fertilizer	91a			guaranteed				3.0	9.0			18.0
E. K. Sowash	91a	9974	Crown Point	found	2.52			2.7	9.1	0.7		18.8
Rauh's Red Star 3-21-6 Fertilizer	94a			guaranteed				3.0	21.0			6.0
E. Rauh & Sons Fertilizer Co.	94a	617	Indianapolis	found	2.59			2.9	**20.1**	2.9		6.0
Rauh's Red Star 4-24-12	95a			guaranteed				4.0	24.0			12.0
Lake & Reagan[249]	95a	463	Colfax	found	3.44			3.8	**21.0**	2.8		14.0
A. D. Shirley[250]	95a	609	Walton	found	3.46			3.8	**22.4**	3.3		12.8
J. A. Gaze[251]	95a	824	Lafayette, R. R. 5	found	3.66			4.0	23.8	2.7		12.8
Rauh's Red Star 2-12-2	550a			guaranteed				2.0	12.0			2.0
Paoli Hardware Co.	550a	9833	Paoli	found	1.80			2.0	11.8	1.3		2.0
Versailles Feed Co.[252]	550a	151	Versailles	found	1.79			2.1	14.2	0.7		2.0
Versailles Feed Co.	550a	535	Versailles	found	1.78			2.0	12.3	0.8		6.1
Noldo Blansett[253]	550a	611	Winchester, R. 2	found	1.92			2.1	**11.3**	1.3		2.3
Tucker Feed Mill	550a	700	Springville	found	1.97			2.0	12.0	1.0		2.0
Pennington Feed Co.	550a	710	Bloomington	found	1.81			2.0	**11.7**	1.8		2.2
Farmers Co-operative Elevator	550a	937	Centerville	found	1.82			2.1	12.0	1.2		2.1
Home Lumber & Coal Co.	550a	1170	Waldron	found	1.78			2.0	12.4	0.9		2.3
Jas. L. Record	550a	1183	Edinburg	found	1.88			2.1	12.2	1.4		2.1
Rauh's Red Star 4-24-4	552a			guaranteed				4.0	24.0			4.0
Clyde Oler[254]	552a	604	Greensfork	found	3.43			3.8	**22.1**	2.8		4.7
Rauh's Red Star 1-8-2	617a			guaranteed				1.0	8.0			2.0
Elmer Scarlett	617a	279	West Baden	found	0.79			1.1	8.3	0.6		2.0
Brownstown Hardware	617a	352	Brownstown	found	0.82			1.0	8.1	0.7		2.2
E. Rauh & Sons Fertilizer Co.	617a	605	Indianapolis	found	0.90			1.1	8.1	0.8		2.2
Conrad Windish	617a	1026	Corydon	found	0.98			1.1	7.9	0.9		2.0
Rauh's Kwikgro	791a			guaranteed				12.0	3.0			3.0
Clamme Packing Co.[255]	791a	9991	Hartford City	found	11.19			**11.5**	3.0	1.0		3.4

Where 60.0 per cent or more of the total nitrogen guaranteed was found to be water soluble, the active and inactive insoluble organic nitrogen was not determined.
Percentages appearing in bold type in the "Inactive water insoluble organic" column denote inferior nitrogen.

[242] Sample drawn at Indianapolis, Ind.

[243] Sample drawn at Indianapolis, Ind.

[244] Purchased from Hartford City Milling Co., Hartford City, Ind.

[245] Sample received in the spring.

[246] Sample drawn at Indianapolis, Ind.

[247] Sample drawn at Indianapolis, Ind.

[248] Refund $7.00.

[249] Refund $7.50.

[250] Refund $8.00. Sample drawn at Indianapolis, Ind.

[251] Purchased from Dayton Grain Co., Dayton, Ind. **Sample drawn at Dayton, Ind.**

[252] Sample received in the spring.

[253] Sample drawn at Indianapolis, Ind.

[254] Refund $8.00. Sample drawn at Indianapolis, Ind.

[255] Refund $9.00. Purchased from Hartford City, Ind.

TABLE 13. Report of Inspection of Fertilizer Collected in 1934—Continued

Labels and names of persons from whom samples were secured	Official No.	Inspection No. H. H. and No. L.	Samples taken at		Nitrogen (N) Water soluble as nitrates, ammonia salts and organic, per cent	Nitrogen (N) Active water insoluble organic, per cent	Nitrogen (N) Inactive water insoluble organic, per cent	Nitrogen (N) Total per cent	Phosphoric acid (P_2O_5) Soluble and reverted (available), per cent	Phosphoric acid (P_2O_5) Insoluble, per cent	Phosphoric acid (P_2O_5) Total per cent	Potash (K_2O), soluble in water, per cent
Rauh's Red Star 1-12-3	924a			guaranteed				1.0	12.0			3.0
E. Rauh & Sons Fertilizer Co.	924a	607	Indianapolis	found	0.87			1.1	12.0	1.7		3.0
Rauh's Red Star 0-12-12	1231a			guaranteed					12.0			12.0
Clamme Packing Co.[256]	1231a	9929	Hartford City	found					12.6	0.7		11.5
Peoples Co-operative Store	1231a	9961	Wolcott	found					12.2	0.7		11.4
Rauh's Red Star 4-8-6	1289a			guaranteed				4.0	8.0			6.0
Shirley Elevator Co.	1289a	372	Walton	found	3.88			4.1	8.1	0.8		6.1
Burnettsville Elevator Co.	1289a	406	Burnettsville	found	3.58			3.8	8.2	1.4		6.2
Rauh's Red Star 1-11-5	1330a			guaranteed				1.0	11.0			5.0
Carlos Harrison[257]	1330a	616	Greensburg	found	0.81			1.1	10.7	1.6		5.0
Read Phosphate Company, New Albany, Ind.												
Ten-Ten	7641			guaranteed					10.0			10.0
Ladoga Canning Co.	7641	486	Lebanon	found					10.9	0.4		10.5
Twenty-Twenty All Available	8450			guaranteed					20.0	1.0		20.0
Evans & Hedworth	8450	9886	Remington	found					20.0	0.4		20.3
Geo. F. Poor	8450	512	Winamac, R. R. 8	found					20.6	0.4		20.2
Twelve-Twelve	9144			guaranteed					12.0	1.0		12.0
Evans & Hedworth	9144	9876	Remington	found					12.2	0.4		12.5
Farmers Co-operative Elevator	9144	9884	Wolcott	found					12.3	0.3		12.8
Ladoga Canning Co.[258]	9144	480	Lebanon	found					12.7	0.2		12.7
Ladoga Canning Co.[259]	9144	483	Lebanon	found					12.7	0.4		12.5
Ladoga Canning Co.[260]	9144	490	Ladoga	found					12.5	0.7		12.5
Zearnie Stotler[261]	9144	513	Winamac, R. R. 4	found					13.0	0.2		12.8
Two-Twelve-Six	466a			guaranteed				2.0	12.0	1.0		6.0
Geo. F. Poor	466a	511	Winamac, R. R. 8	found	1.86			2.3	12.9	0.6		6.4
Gilbert Combs[262]	466a	993	Bloomfield	found	1.74			2.1	12.0	0.9		6.2
Read's Three-Twelve-Twelve	1266a			guaranteed				3.0	12.0	1.0		12.0
Ladoga Canning Co.	1266a	491	Jamestown	found	2.45			2.7	12.2	0.5		12.0
Royster Guano Company, The F. S., Toledo, Ohio												
Royster's 16% Superphosphate	7578			guaranteed					16.0	0.5		
Felton Supply Co.	7578	752	Fairmount	found					17.2	0.8		
Royster's 20% Superphosphate	8508			guaranteed					20.0	0.5		
P. Sweeny	8508	565	Greentown	found					21.1	0.4		
John Reed Implement Co.	8508	831	Mulberry	found					21.1	0.5		

	9993			guaranteed						20.0	0 5		20.0
Burl Williamson[263]	9993	9946	Decatur, R. R. 8	found						20 2	0 7		20.9
H. L. Sipe[264]	9993	9955	Berne, R. R. 3	found						20 1	0 8		20 4
Royster's 2-8-10	556a			guaranteed					2 0	8 0	0 5		10.0
Central Sugar Co.[265]	556a	9947	Decatur	found	1 74				2 1	8.2	0 7		10.0
John Wolf[266]	556a	9959	Berne	found	1 75				2 1	7 8	0 8		10.7
Royster's 2-8-16	557a			guaranteed					2 0	8 0	0 5		16.0
H. L. Sipe[267]	557a	9948	Berne, R. R. 3	found	1 78				2.1	8 1	0.4		16.6
Royster's 2-12-2	558a			guaranteed					2 0	12.0	0.5		2.0
Roper & Brown, Inc.	558a	9968	McCool	found	1 82				2 2	12.3	0.9		2.3
Royster's 2-12-6	559a			guaranteed					2 0	12 0	0 5		6.0
Roper & Brown, Inc.	559a	9967	McCool	found	1 83				2 2	11 7	1 1		6 6
P. Sweeny	559a	568	Greentown	found	1 72				2 2	12 0	0.7		6.5
Felton Supply Co.	559a	753	Fairmount	found	1 68				2 1	12 1	0 8		6.4
Royster's 2-16-2	560a			guaranteed					2 0	16.0	0 5		2.0
P. Sweeny	560a	556	Greentown	found	1 92				2 4	16 1	1 3		2.4
Royster's 0-8-24	570a			guaranteed						8.0	0 5		24.0
Jos. J. Swartz[268]	570a	9953	Berne, R. R. 2	found						8 6	0.3		24 5
Royster's 2-10-4	768a			guaranteed					2 0	10 0	0 5		4.0
Roper & Brown, Inc	768a	9969	McCool	found	1 71				2 1	9 7	1 3		4.3
Royster's 0-12-12	961a			guaranteed						12 0	0 5		12.0
Central Sugar Co.[269]	961a	9949	Decatur	found						12 2	0 6		12 0
Ruhm Phosphate and Chemical Company, Mount Pleasant, Tenn.													
"Ground Phosphate Rock (Ruhm's Lime Phosphate)"	652a			guaranteed								33 0	
Geo. A. Berry	652a	9846	Royal Center	found								33 7	
L. O. Nixon	652a	561	Kokomo	found								33 6	
Smith Agricultural Chemical Company, The, Indianapolis, Ind.													
Muriate of Potash	8417			guaranteed									50.0
Co-operative Elevator Co.[270]	8417	404	Winamac	found									48 5
Smith's 20% Superphosphate	8418			guaranteed						20 0			
Huntington Equity Exchange	8418	9891	Huntington	found						19 9	1 1		
The Smith Agricultural Chemical Co.	8418	624	Indianapolis	found						20 1	1 3		
Morrison-Tegarden Co.	8418	769	Saratoga	found						20 4	1 2		
Veedersburg Grain Co.	8418	802	Veedersburg	found						20.0	1.2		
Smith's Standard Twelve-Six	8787			guaranteed						12 0			6 0
Chas. Huffman[271]	8787	625	Chester	found						12.2	0.7		6 0

Where 60.0 per cent or more of the total nitrogen guaranteed was found to be water soluble, the active and inactive insoluble organic nitrogen was not determined.

Percentages appearing in bold type in the "Inactive water insoluble organic" column denote inferior nitrogen.

[256] Purchased from Hartford City Milling Co., Hartford City, Ind.

[257] Sample drawn at Indianapolis, Ind.

[258] Not tagged. Labels furnished.

[259] Not tagged. Labels furnished.

[260] Sample drawn at Lizton, Ind.

[261] Purchased from Geo. F. Poor, Winamac, Ind.

[262] Distributed by Hopkins Fertilizer Co., New Albany, Ind.

[263] Purchased from Central Sugar Co., Decatur Ind. Sample drawn at Pleasant Mills, Ind.

[264] Purchased from Central Sugar Co., Decatur, Ind.

[265] Sample drawn at Pleasant Mills, Ind.

[266] Purchased from Central Sugar Co., Decatur, Ind.

[267] Purchased from Central Sugar Co., Decatur, Ind.

[268] Purchased from Central Sugar Co., Decatur, Ind.

[269] Sample drawn at Pleasant Mills, Ind.

[270] Refund $4.50.

[271] Sample drawn at Indianapolis, Ind.

TABLE 13. Report of Inspection of Fertilizer Collected in 1934—Continued

Labels and names of persons from whom samples were secured	Official No.	Inspection No. H. H. and No. L.	Samples taken at		Nitrogen (N)				Phosphoric acid (P_2O_5)			Potash (K_2O), soluble in water, per cent
					Water soluble as nitrates, ammonia salts and organic, per cent	Active water insoluble organic, per cent	Inactive water insoluble organic, per cent	Total per cent	Soluble and reverted (available), per cent	Insoluble, per cent	Total per cent	
Smith's Sacco 0-20-20	9977			guaranteed					20.0			20.0
C. R. Seymour	9977	9787	Kimmel	found					20.1	0.3		22.6
The Smith Agricultural Chemical Co.	9977	628	Indianapolis	found					20.1	0.4		21.3
Sacco Plant Food	79a			guaranteed				4.0	12.0			4.0
Habig Bros.	79a	9901	Indianapolis	found	3.81			4.2	12.4	1.0		4.5
Sacco 2-12 2	212a			guaranteed				2.0	12.0			2.0
Martinsville Milling Co.	212a	9926	Martinsville	found	1.78			2.1	12.5	1.0		2.3
H. H. Crum	212a	40	Milan	found	2.00			2.2	12.0	1.4		2.1
Oak & Minix	212a	75	Flora	found	1.81			2.2	12.3	1.1		2.2
Syler & Syler	212a	389	Plymouth	found	1.98			2.2	12.9	0.7		2.4
Campbellsburg Milling Co.[272]	212a	408	Salem	found	1.92			2.2	12.8	0.6		2.0
Boone County Farm Bureau Co-operative Assn., Inc.	212a	465	Lebanon	found	1.86			2.2	12.2	1.1		2.2
Lapaz Grain Co.[273]	212a	621	Lapaz	found	1.74			2.1	12.4	0.8		2.1
Lewis & Company[274]	212a	622	Paragon	found	1.74			2.1	12.1	0.8		2.1
Morrison-Tegarden Co.	212a	771	Saratoga	found	1.74			2.1	12.2	0.9		2.0
Home Grain Co.	212a	878	LaGrange	found	1.76			2.1	12.0	0.9		2.2
Griffith Feed Store	212a	966	Coal City	found	1.67			2.0	12.0	1.0		2.1
Campbellsburg Milling Co.	212a	1076	Salem	found	1.72			2.0	12.1	0.5		2.3
Geo. Brummett[275]	212a	1126	Morgantown, R. 3	found	0.74			2.1	12.0	0.9		2.2
Sacco 2-14-4	213a			guaranteed				2.0	14.0			4.0
Central States Elevator Corp.	213a	520	Montezuma	found	1.82			2.1	14.8	0.9		4.5
The Smith Agricultural Chemical Co.	213a	631	Indianapolis	found	1.76			2.1	14.1	0.8		4.3
Sacco 2-12-6	215a			guaranteed				2.0	12.0			6.0
Huntington Equity Exchange	215a	9903	Huntington	found	1.82			2.1	12.0	1.0		6.3
Martinsville Milling Co.[276]	215a	9921	Martinsville	found	1.81			2.1	12.1	1.0		6.4
Maxwell Hardware Co.	215a	9922	Martinsville	found	1.82			2.1	12.4	1.1		6.3
H. H. Crum	215a	30	Milan	found	1.69			2.0	12.0	1.3		6.3
Oak & Minix	215a	76	Flora	found	1.72			2.1	12.1	1.2		6.5
Boonville Elevator Co.	215a	302	Boonville	found	1.78			2.1	12.3	1.2		6.2
Kiefer Feed & Supply Co.	215a	311	Elwood	found	1.74			2.1	12.7	0.8		6.3
Rochester Co-operative Co.	215a	402	Rochester	found	1.79			2.1	12.7	0.7		6.0
Central States Elevator Corp.	215a	518	Montezuma	found	1.93			2.2	13.2	0.8		6.0
Farmers Co-operative Co.	215a	530	Rochester	found	1.86			2.2	12.2	0.9		6.5
Vanek Bros.	215a	584	North Judson	found	1.79			2.1	12.0	0.8		6.7
Co-operative Elevator Co.	215a	585	Winamac	found	1.85			2.2	12.2	0.7		6.7
Economy Co-operative Co.[277]	215a	623	Economy	found	1.78			2.1	12.0	0.9		6.3
Lapaz Grain Co.[278]	215a	626	Lapaz	found	1.79			2.1	12.0	1.0		6.3
Morrison-Tegarden Co.	215a	777	Saratoga	found	1.86			2.1	12.3	0.9		6.0

Farmers Co-operative Co.	215a	786	Shideler	found	1.79			2.1	12.2	0.7		6.1
Home Grain Co.	215a	870	LaGrange	found	1.86			2.2	12.2	0.8		6.3
Menaugh Coal & Feed Co.	215a	883	Osceola	found	1.65			2.1	12.3	0.7		6.1
H. O. Greene	215a	884	Goshen	found	1.64			2.1	12.4	0.9		6.5
Acme Coal & Lime Co.	215a	989	Terre Haute	found	1.68			2.1	12.1	0.8		6.3
Worthington Grain Co.	215a	998	Worthington	found	1.64			2.0	12.0	1.2		5.8
Corn Belt Feed Co.	215a	1051	Boswell	found	1.77			2.1	12.2	0.8		6.5
Campbellsburg Milling Co.	215a	1085	Salem	found	1.75			2.1	12.1	0.3		6.0
Martinsville Milling Co.	215a	1103	Martinsville	found	1.75			2.1	11.9	1.0		6.5
Osgood Grain Co.	215a	1116	Osgood	found	1.79			2.1	12.5	0.8		6.2
Oren W. Deer & Son	215a	1162	Franklin	found	1.82			2.1	12.5	0.9		6.3
Maxwell Implement Co.	215a	1169	Martinsville	found	1.79			2.1	12.0	1.1		6.4
Sacco 2-8-10	216a			guaranteed				2.0	8.0			10.0
Huntington Equity Exchange	216a	9902	Huntington	found	1.82			2.1	8.5	0.6		10.1
Oak & Minix	216a	79	Flora	found	1.92			2.2	8.2	0.7		11.0
Rochester Co-operative Elevator	216a	397	Rochester	found	1.83			2.1	8.4	0.5		10.4
Sacco 2-8-16	217a			guaranteed				2.0	8.0			16.0
Co-operative Elevator Co.	217a	403	Winamac	found	1.92			2.1	9.1	0.6		16.6
Sacco 4-16-4	218a			guaranteed				4.0	16.0			4.0
The Smith Agricultural Chemical Co.	218a	620	Indianapolis	found	3.75			4.0	16.7	0.8		4.3
Sacco 4-24-4	219a			guaranteed				4.0	24.0			4.0
The Smith Agricultural Chemical Co.	219a	619	Indianapolis	found	3.75			4.0	24.2	1.0		4.0
Sacco 4-24-12	220a			guaranteed				4.0	24.0			12.0
Ray Anderson Hardware[279]	220a	627	Darlington	found	3.76			4.0	23.8	0.4		12.9
Lake & Reagan Grain Co.	220a	912	Manson, P. O., Frankfort	found	3.82			4.0	24.2	1.1		12.4
Sacco 4-8-6	221a			guaranteed				4.0	8.0			6.0
Co-operative Elevator Co.	221a	405	Winamac	found	3.88			4.1	9.3	0.5		6.2
Gotto Mathias Co.	221a	592	Michigan City	found	3.66			4.0	8.2	0.5		6.7
Sacco 1-8-4	222a			guaranteed				1.0	8.0			4.0
H. H. Crum	222a	38	Milan	found	0.74			1.0	8.0	0.6		4.4
Campbellsburg Milling Co.	222a	409	Salem	found	0.79			1.1	8.1	0.5		4.0
The Smith Agricultural Chemical Co.	222a	629	Indianapolis	found	0.79			1.1	8.0	0.6		4.1
Sacco 0-14-6	223a			guaranteed					14.0			6.0
Purdue University Botany Department[280]	223a	456	Lafayette	found					14.2	1.2		6.1
The Smith Agricultural Chemical Co.	223a	630	Indianapolis	found					14.2	0.6		6.2
Farmers Co-operative Co.	223a	794	Shideler	found					14.1	0.5		6.1
Maxwell Implement Co.	223a	1192	Martinsville	found					14.5	0.5		6.5
Sacco 0-10-10	224a			guaranteed					10.0			10.0
Kiefer Feed & Supply Co.	224a	312	Elwood	found					10.5	0.5		10.1
Co-operative Elevator Co.	224a	401	Winamac	found					10.4	0.7		10.4
Central States Elevator Corp.	224a	517	Montezuma	found					10.8	0.6		10.6
Farmers Co-operative Co.	224a	528	Rochester	found					10.1	0.5		10.4
Sacco 0-12-12	225a			guaranteed					12.0			12.0
Wilson Grain & Coal Co.	225a	398	Rochester	found					12.7	1.0		12.6
Co-operative Elevator Co.[281]	225a	399	Winamac	found					12.6	0.9		12.8

Where 60.0 per cent or more of the total nitrogen guaranteed was found to be water soluble, the active and inactive insoluble organic nitrogen was not determined. Percentages appearing in bold type in the "Inactive water insoluble organic" column denote inferior nitrogen.

[272] Sample received in the spring.

[273] Sample drawn at Indianapolis, Ind.

[274] Sample drawn at Indianapolis, Ind.

[275] Sample drawn at Bean Blossom, Ind.

[276] Sample received in the spring.

[277] Sample drawn at Indianapolis, Ind.

[278] Sample drawn at Indianapolis, Ind.

[279] Sample drawn at Indianapolis, Ind.

[280] Purchased from Lafayette Cooperative Elevator Co., Lafayette, Ind.

[281] Sample received in the spring.

TABLE 13. Report of Inspection of Fertilizer Collected in 1934—Continued

Labels and names of persons from whom samples were secured	Official No.	Inspection No. H. H. and No. L.	Samples taken at		Nitrogen (N)				Phosphoric acid (P₂O₅)			Potash (K₂O), soluble in water, per cent
					Water soluble as nitrates, ammonia salts and organic, per cent	Active water insoluble organic, per cent	Inactive water insoluble organic, per cent	Total per cent	Soluble and reverted (available), per cent	Insoluble, per cent	Total per cent	
Lafayette Co-operative Elevator Co.	225a	455	Lafayette	found					12.7	1.1		12.1
Rochester Co-operative Elevator	225a	526	Rochester	found					12.5	0.5		12 3
Co-operative Elevator Co.	225a	587	Winamac	found					16.0	0.3		13.3
Vanek Bros.	225a	588	North Judson	found					12.5	0 4		12 0
H. O. Greene	225a	880	Goshen	found					12.9	0.4		12.1
Sacco 0-8-24	226a			guaranteed					8.0			24.0
Syler & Syler[282]	226a	392	Plymouth	found					9.4	0 7		22.7
Co-operative Elevator Co.	226a	400	Winamac	found					8.7	0 7		25.5
Smith's Sacco 3-9-18	738a			guaranteed				3.0	9 0			18.0
Lake & Reagan	738a	460	Colfax	found	2.87			3.1	9.9	0 6		18.3
Smith's Sacco 0-16-6	739a			guaranteed					16.0			6.0
Huntington Equity Exchange	739a	9895	Huntington	found					16.0	0.7		5 9
Smith's Sacco 3-12-12	740a			guaranteed				3.0	12 0			12 0
Co-operative Elevator Co.	740a	589	Winamac	found	2.82			3.1	12.	0 6		13 1
Sacco Bone Meal	1079a			guaranteed				2 0			26 0	
Paoli Hardware Co.	1079a	676	Paoli	found	0.74	1 20	0.66	2 6			25 7	
Steinkamp, Hugo, Holland, Ind.												
Steinkamp 2-12-6	1134a			guaranteed				2.0	12.0			6 0
Hugo Steinkamp	1134a	278	Huntingburg	found	1.83			2 3	12.2	0 4		6.4
Hugo Steinkamp	1134a	741	Holland	found	1.71			2 1	11.5	2 2		6.0
Grain Grower 1-8-3	1135a			guaranteed				1.0	8 0			3.0
Hugo Steinkamp[283]	1135a	265	Holland	found	0.83			1.5	9 2	0.6		4 1
Hugo Steinkamp[284]	1135a	749	Holland	found	0.83			1 5	8.5	0.6		3.6
Potash Mixture	1146a			guaranteed					10.0			10.0
Hugo Steinlamp[285]	1146a	263	Holland	found					10.0	0.4		11.6
Tobacco Base 2-12-2	1181a			guaranteed				2 0	12.0			2.0
Hugo Steinkamp[286]	1181a	276	Holland	found	2.04			2.6	12.5	0.4		2 7
Hugo Stenkamp[287]	1181a	745	Holland	found	1.79			2 8	12.5	4.2		2.4
Raw Bone Meal	1236a			guaranteed				3.6			22.0	
Hugo Steinkamp[288]	1236a	737	Holland	found	0.46	2.88	0.66	4.0			21 3	
Bone Meal Mixture	1255a			guaranteed				2 0	8 0	4.0		6.0
Hugo Steinkamp[289]	1255a	740	Holland	found	0.95	1.17	0.38	2 5	6.6	7 0		6.8
Special Bone Meal	1256a			guaranteed				3.0			22.0	
Math Gayer	1256a	714	Troy	found	0.18	2.17	0.85	3.2			23.1	

Swift & Company, Fertilizer Works, Calumet City Ill.												
Swift's Muriate of Potash	7955			guaranteed								50.0
Kiesling Bros., Inc.	7955	9842	Logansport	found								50.2
Swift's Sulphate of Ammonia	7960			guaranteed				20.5				
Kiesling Bros., Inc.	7960	9844	Logansport	found				20.5				
Swift's Red Steer 0-20-20	9561			guaranteed					20.0			20.0
Farmers Grain & Supply Co.	9561	527	Oak	found					**19.7**			21.8
Vigoro	80a			guaranteed				4.0	12.0			4.0
Newcastle Elevator Co.	80a	161	Newcastle	found	3.99			4.2	12.0	2.4		4.6
Swift's Red Steer 4-24-12	335a			guaranteed				4.0	24.0			12.0
Sunshine Feed Store	335a	9925	Terre Haute	found	4.41			4.5	24.0	0.9		12.8
City Mills	335a	808	Noblesville	found	3.86			4.0	**23.1**	1.4		12.3
Swift's Red Steer 4-24-4	336a			guaranteed				4.0	24.0			4.0
Lee McDowell[290]	336a	822	Lafayette, R. R. 6	found	3.99			4.1	**22.5**	1.6		13.0
Swift's Red Steer	337a			guaranteed				4.0	16.0			4.0
Blanton Mills	337a	470	Clayton	found	4.23			4.3	16.6	1.9		4.1
Swift's Red Steer 4-8-6	339a			guaranteed				4.0	8.0			6.0
Peru Grain & Coal Co.	339a	77	Peru	found	3.83			4.0	8.3	0.2		7.2
Swift's Red Steer 3-9-18	342a			guaranteed				3.0	9.0			18.0
Sunshine Feed Store	342a	9919	Terre Haute	found	2.95			3.0	9.5	0.1		18.9
Swift's Red Steer 2-12-6	344a			guaranteed				2.0	12.0			6.0
Sunshine Feed Store	344a	9924	Terre Haute	found	1.87			2.0	12.8	0.1		6.0
The Haynes Milling Co.[291]	344a	9951	Portland	found	2.00			2.1	12.0	0.4		6.0
Gleaners & Farmers Co-operative Elevator Co.	344a	9971	North Hayden, P. O., Lowell	found	1.92			2.0	12.3	0.4		6.8
Newcastle Elevator Co.	344a	165	Newcastle	found	2.01			2.2	14.0	0.1		6.1
Brown Supply Co.	344a	591	Valparaiso	found	1.90			2.1	12.8	0.4		6.7
The Haynes Milling Co.	344a	781	Portland	found	1.86			2.0	12.0	0.3		6.2
City Mills	344a	813	Noblesville	found	1.86			2.0	12.5	0.3		6.3
Gutwein Milling Co.	344a	835	Francesville	found	1.96			2.1	12.1	0.9		6.1
Warsaw Feed Store	344a	890	Warsaw	found	1.92			2.0	12.8			6.2
Newcastle Elevator Co.	344a	917	Newcastle	found	1.96			2.1	12.0	1.1		6.5
D. M. Bottorff	344a	1166	Columbus	found	1.92			2.1	12.9	0.4		6.3
D. M. Bottorff	344a	1167	Columbus	found	1.83			2.0	12.3	0.3		6.2
Swift's Red Steer 2-12-2	345a			guaranteed				2.0	12.0			2.0
Newcastle Elevator Co.[292]	345a	330	Newcastle	found	2.09			2.3	12.6	0.8		2.7
D. M. Bottorff[293]	345a	343	Columbus	found	1.93			2.1	12.9	0.2		2.3
Brown Supply Co.	345a	598	Valparaiso	found	2.43			2.6	12.1	0.2		2.6
The Haynes Milling Co.	345a	784	Portland	found	1.86			2.0	12.5	0.2		2.0
City Mills	345a	816	Noblesville	found	2.25			2.4	12.5	0.2		2.1
Newcastle Elevator Co.	345a	921	Newcastle	found	2.49			2.7	12.0	0.7		2.2
Blanton Mills	345a	1154	Clayton	found	1.82			2.0	12.5	0.4		2.1
D. M. Bottorff	345a	1191	Columbus	found	1.90			2.1	12.2	0.4		2.2

Where 60.0 per cent or more of the total nitrogen guaranteed was found to be water soluble, the active and inactive insoluble organic nitroge was not determined.
Percentages appearing in bold type in the "Inactive water insoluble organic" column denote inferior nitrogen.

[282] Refund $2.60.

[283] Sample drawn at Huntingburg, Ind. Sample received in the spring.

[284] Sample drawn at Huntingburg, Ind.

[285] Sample drawn at Huntingburg, Ind.

[286] Sample drawn at Huntingburg, Ind.

[287] Sample drawn at Huntingburg, Ind.

[288] Sample drawn at Huntingburg, Ind.

[289] Sample drawn at Huntingburg, Ind. Refund $4.20.

[290] Purchased from H. C. Cook, Mulberry, Ind.

[291] Sample received in the spring.

[292] Sample received in the spring.

[293] Sample received in the spring.

TABLE 13. Report of Inspection of Fertilizer Collected in 1934—Continued

Labels and names of persons from whom samples were secured	Official No.	Inspection No. H. H. and No. L.	Samples taken at		Nitrogen (N)				Phosphoric acid (P_2O_5)			Potash (K_2O), soluble in water, per cent
					Water soluble as nitrates, ammonia salts and organic, per cent	Active water insoluble organic, per cent	Inactive water insoluble organic, per cent	Total per cent	Soluble and reverted (available), per cent	Insoluble, per cent	Total per cent	
Swift's Red Steer 2-8-16	346a			guaranteed				2.0	8.0			16.0
Ort & Co.	346a	9786	Churubusco	found	2.03			2.1	8.4	0.0		16.3
Swift's Red Steer 20% Superphosphate	373a			guaranteed					20.0			
The Haynes Milling Co.	373a	9945	Portland	found					20.0	0.9		
Blanton Mills	373a	474	Clayton	found					21.3	0.3		
Roper & Brown Elevator	373a	597	Wheeler	found					20.7	0.1		
City Mills	373a	812	Noblesville	found					20.8	0.2		
Warsaw Feed Store	373a	897	Warsaw	found					20.1	1.2		
Northern Indiana Co-operative Association	373a	901	Mentone	found					20.8	0.5		
Swift's Red Steer 16% Superphosphate	584a			guaranteed					16.0			
Northern Indiana Co-operative Association	584a	896	Mentone	found					17.1	0.2		
Swift's Red Steer 45% Superphosphate	976a			guaranteed					45.0			
Kiesling Bros., Inc.[294]	976a	9847	Logansport	found					43.7	0.1		
Swift's Red Steer 2¼-26 Steamed Bone Meal Fertilizer	1087a			guaranteed				2.2			26.0	
Newcastle Elevator Co.	1087a	328	Newcastle	found	0.53	1.05	0.72	2.3			27.1	
Boonville Implement Co.	1087a	673	Boonville	found	0.70	1.19	0.61	2.5			26.0	
Blanton Mills	1087a	815	Clayton	found	0.63	1.39	0.58	2.6			26.4	
D. M. Bottorff	1087a	1164	Columbus	found	0.67	1.46	0.67	2.8			26.0	
Swift's Red Steer 0-14-7	1285a			guaranteed					14.0			7.0
Blanton Mills	1285a	468	Clayton	found					13.8	0.2		6.4
Sydenstricker, James L.,												
Indianapolis, Ind.												
Humus and Limestone Mixture	1180a			guaranteed				2.0				
J. E. Robbins	1180a	8	Greensburg, R. R. 2	found	0.45	0.87	0.88	2.2				
Synthetic Nitrogen Products Corporation,												
New York, N. Y.												
Calcium Nitrate Basf (Nitrate of Lime)	9992			guaranteed				15.0				
C. F. Heaton[295]	9992	9776	New Burnside, Ill.	found				14.8				
United States Guano Company,												
Baltimore, Md.												
20% Superphosphate	9754			guaranteed					20.0	0.5		
Indiana State Prison	9754	9864	Michigan City	found					20.7	0.6		
Indiana State Prison	9754	9865	Michigan City	found					21.3	0.6		
50% Muriate of Potash	9755			guaranteed								50.0
Indiana State Prison	9755	9866	Michigan City	found								50.3

Virginia-Carolina Chemical Corporation,												
Cincinnati, Ohio												
V-C 16% Superphosphate	6133			guaranteed					16.0	1.5		
Burk Elevator Co.[296]	6133	763	Decatur	found					16.0	3.6		
V-C Superphosphate 20%	9617			guaranteed					20.0	1.5		
C. E. Bash & Co.	9617	9899	Huntington	found					20.1	1.2		
Tocsin Lumber & Grain Co.	9617	856	Tocsin	found					20.0	2.1		
Frank Strock	9617	860	Hudson	found					20.4	2.0		
V-C Muck Special 0-8-24	9622			guaranteed					8.0	1.5		24.0
Frank Strock	9622	9794	Hudson	found					7.8	0.7		25.9
V-C Concentrated Superphosphate 44%	9668			guaranteed					44.0			
C. V. Graft	9668	774	Winchester	found					43.4	1.4		
V-C Plow Brand 0-10-10	9715			guaranteed					10.0	1.5		10.0
C. V. Graft[299]	9715	176	Winchester	found					12.4	0.4		8.7
V-C Prolific Crop Grower 14-4	9716			guaranteed					14.0	1.5		4.0
C. V. Graft	9716	172	Winchester	found					16.3	1.6		6.5
V-C Ammoniated Phospho Tobacco 2-12-2	186a			guaranteed				2.0	12.0	1.5		2.0
C. V. Graft	186a	174	Winchester	found	1.69			2.0	13.4	0.5		2.0
Mike Ripperger[298]	186a	187	Brookville	found	1.75			2.1	13.5	0.8		2.0
Mike Ripperger	186a	1010	Brookville	found	1.65			2.1	13.0	0.9		2.0
V-C Ammoniated Phospho Tobacco 2-12-6	187a			guaranteed				2.0	12.0	1.5		6.0
C. V. Graft	187a	178	Winchester	found	1.69			2.0	12.4	1.6		6.3
Uhl-Snider Milling Co.	187a	1048	Connersville	found	1.79			2.1	12.8	0.6		6.0
V-C Potash Formula 14-6	189a			guaranteed					14.0	1.5		6.0
Farmers Elevator	189a	549	South Whitley	found					14.4	1.2		6.0
C. V. Graft	189a	772	Winchester	found					14.4	1.1		6.2
V-C Tip Top 2-8-16	191a			guaranteed				2.0	8.0	1.5		16.0
Frank Strock	191a	9799	Hudson	found	1.99			2.1	8.0	0.8		16.8
C. E. Bash & Co.	191a	9900	Huntington	found	1.92			2.0	8.2	0.7		16.0
V-C Owl Brand 2-12-2	192a			guaranteed				2.0	12.0	0.5		2.0
Tocsin Lumber & Grain Co.[299]	192a	9950	Tocsin	found	2.00			2.1	12.0	1.4		2.0
Farmers Feed Exchange	192a	155	Holton	found	1.55			1.8	14.3	0.5		2.2
Uhl-Snider Milling Co.[300]	192a	181	Connersville	found	1.82			2.1	12.3	1.0		2.2
Mike Ripperger	192a	186	Brookville	found	1.72			2.0	13.1	1.3		2.5
Tuxedo Feed & Supply Co.	192a	205	Aurora	found	1.89			2.2	13.1	0.7		2.0
Farmers Elevator Co.	192a	553	South Whitley	found	1.89			2.2	12.6	1.6		2.1
Tocsin Lumber & Grain Co.	192a	760	Tocsin	found	1.84			2.1	12.1	1.8		2.1
Burk Elevator Co.	192a	761	Decatur	found	1.81			2.2	11.6	2.0		2.0
Henry G. Dotterer & Son	192a	902	Bluffton	found	1.76			2.1	12.3	2.3		2.3
Farmers Co-operative Elevator	192a	925	Centerville	found	1.71			2.1	12.0	1.4		2.0
Uhl-Snider Milling Co.	192a	1044	Connersville	found	1.76			2.1	12.5	1.3		2.1
V-C Big Potato and Truck 3-12-4	196a			guaranteed				3.0	12.0	1.5		4.0
Farmers Feed Exchange	196a	152	Holton	found	2.79			3.0	13.7	1.6		4.6
V-C Super 24 Fertilizer 4-16-4	200a			guaranteed				4.0	16.0	1.5		4.0
Mike Ripperger	200a	194	Brookville	found	3.40			3.7	16.0	1.0		4.9
Mike Ripperger	200a	1006	Brookville	found	3.43			3.7	16.6	0.7		4.5

Where 60.0 per cent or more of the total nitrogen guaranteed was found to be water soluble, the active and inactive insoluble organic nitrogen was not determined. Percentages appearing in bold type in the "Inactive water insoluble organic" column denote inferior nitrogen.

[294] Refund $6.50.

[295] Sample drawn at Vincennes, Ind. Sample to manufacturer.

[296] Not tagged. Labels furnished.

[297] Refund $2.20.

[298] Sample received in the spring.

[299] Sample received in the spring.

[300] Sample received in the spring.

TABLE 13. Report of Inspection of Fertilizer Collected in 1934—Continued

Labels and names of persons from whom samples were secured	Official No.	Inspection No. H. H. and No. L.	Samples taken at		Nitrogen (N): Water soluble as nitrates, ammonia salts and organic, per cent	Nitrogen (N): Active water insoluble organic, per cent	Nitrogen (N): Inactive water insoluble organic, per cent	Nitrogen (N): Total per cent	Phosphoric acid (P₂O₅): Soluble and reverted (available), per cent	Phosphoric acid (P₂O₅): Insoluble, per cent	Phosphoric acid (P₂O₅): Total per cent	Potash (K₂O), soluble in water, per cent
V-C Good Luck 4-24-4	201a			guaranteed				4.0	24.0	1.5		4.0
C. V. Graft	201a	773	Winchester	found	3.72			4.0	24.0	0.7		4.0
V-C Super Fertilizer 4-24-12	530a			guaranteed				4.0	24.0	1.5		12.0
Mike Ripperger[301]	530a	193	Brookville	found	3.28			3.5	24.5	0.3		11.6
The Haynes Milling Co.[302]	530a	789	Portland	found	3.74			4.0	23.6	0.4		14.3
V-C Potash Phospho Tobacco 14-6	756a			guaranteed					14.0	1.5		6.0
Mike Ripperger[303]	756a	195	Brookville	found					15.2	0.9		6.4
Mike Ripperger	756a	1007	Brookville	found					13.9	1.1		5.8
V-C Farmer's Friend 2-12-6	759a			guaranteed				2.0	12.0	1.5		6.0
Burk Elevator Co.	759a	9957	Decatur	found	1.80			2.0	13.0	0.8		6.3
Farmers Feed Exchange	759a	153	Holton	found	2.03			2.2	12.0	1.6		6.3
C. V. Graft	759a	177	Winchester	found	1.95			2.1	13.7	0.1		6.7
Mike Ripperger	759a	200	Brookville	found	1.90			2.1	12.4	0.8		6.3
Lucas Feed Store	759a	451	Brownstown	found	2.00			2.2	12.2	0.9		6.1
S. F. Trembley & Co.	759a	547	Columbia City	found	1.88			2.1	12.5	1.3		6.0
Farmers Elevator	759a	548	South Whitley	found	1.88			2.1	12.2	1.4		6.6
Henry G. Dotterer & Son	759a	757	Bluffton	found	1.88			2.1	12.0	1.7		6.3
Tocsin Lumber & Grain Co.[304]	759a	759	Tocsin	found	1.92			2.2	11.7	1.7		2.3
The Haynes Milling Co.	759a	790	Portland	found	1.90			2.1	12.0	1.2		6.2
Frank Strock	759a	864	Hudson	found	1.85			2.2	12.0	1.2		6.1
Uhl-Snider Milling Co.	759a	1046	Connersville	found	1.90			2.1	12.6	1.3		6.0
Farmers Feed Exchange	759a	1148	Holton	found	1.81			2.0	13.0	0.6		6.4
V-C Super 30 Fertilizer 3-9-18	760a			guaranteed				3.0	9.0	1.5		18.0
Frank Strock	760a	9796	Hudson	found	2.66			2.8	9.2	0.4		18.5
Frank Strock	760a	9797	Hudson	found	3.05			3.2	8.7	0.8		18.6
V-C Quality Tobacco Grower 3-8-6	763a			guaranteed				3.0	8.0	1.5		6.0
Tuxedo Feed & Supply Co.	763a	206	Aurora	found	2.53			2.7	9.3	1.3		5.4
V-C Farmer's Relief, 1-11-4	932a			guaranteed				1.0	11.0	1.5		4.0
Mike Ripperger	932a	196	Brookville	found	1.10			1.3	11.4	1.3		4.3
Welch Chemical Company, The, Columbus, Ohio												
No. 2 High Grade Bumper Crop	76a			guaranteed				2.0	12.0			6.0
Chas. Weller	76a	46	Avilla, R. R. 2	found	1.91			2.1	13.0	0.3		6.4
No. 7 Independent High Grade Potash Compound	586a			guaranteed				2.0	8.0			16.0
Tony F. Rumon[305]	586a	48	Garrett, R. R. 1	found	1.59			1.9	8.7	0.5		16.8

Wenning, A. E.,												
New Salisbury, Ind.												
Wenning's Corn and Wheat Grower	614a			guaranteed				2.0	12.0	1.0		6.0
A. E. Wenning[306]	614a	1080	New Salisbury	found	0.90			1.4	14.6	0.9		5.0
18% Superphosphate	999a			guaranteed					18.0			
A. E. Wenning	999a	1084	New Salisbury	found					19.0	0.1		

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[301] Refund $0.95.
[302] Not tagged. Labels furnished.
[303] Sample received in the spring.
[304] Refund $3.70.
[305] Purchased from Chas. Weller, R. R. 2, Avilla, Ind.
[306] Refund $17.60.

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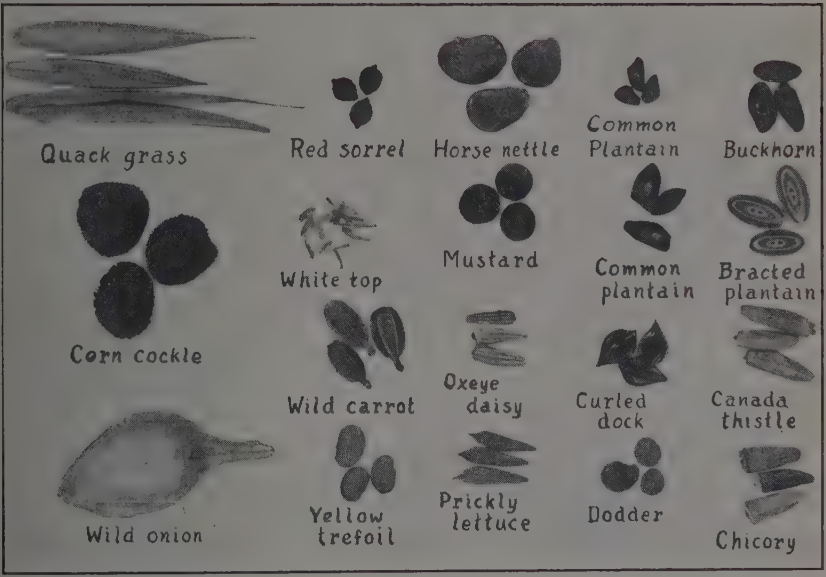
Circular No. 213 October, 1935

INSPECTION OF AGRICULTURAL SEEDS


Quack grass
Red sorrel
Horse nettle
Common Plantain
Buckhorn
Corn cockle
White top
Mustard
Common plantain
Bracted plantain
Wild carrot
Oxeye daisy
Curled dock
Canada thistle
Wild onion
Yellow trefoil
Prickly lettuce
Dodder
Chicory

The nineteen weed seeds designated as noxious in the Indiana Seed Law.

Agricultural Experiment Station
Purdue University
Lafayette, Indiana

Herein is presented a report of the Agricultural Seed inspection for the year from July 1, 1934, to June 30, 1935. The complete analyses of 1,085 official seed samples are given in detail. In addition 319 official samples drawn for test at the request of dealers and 2,937 free test samples of seed were tested during the year.

This circular also contains the Rulings of the State Seed Commissioner and discussions on free testing of seeds, directions for taking samples and directions for making germination tests at home.

Information is given to help the seedsmen in filling out the official Indiana State Seed Tag.

Violations of the Indiana Seed Law and of the Federal Seed Act are discussed together with helpful suggestions to seed dealers and seed purchasers.

Table 1 shows the progress in seed inspection.

Tables 2, 3 and 4 give the average analysis of the official samples in the years 1922, 1934 and 1935 respectively.

Tables 5 and 6 state the percentage of samples of red clover, alfalfa, sweet clover, alsike clover, timothy and Korean lespedeza containing each of the noxious weed seeds.

Table 7 gives the names and addresses of the seedsmen whose seeds were sampled and tested during the past year and the number of samples classified as technically misbranded and seriously misbranded.

Table 8 shows in detail the results of the analyses of 1,085 official samples.

INSPECTION OF AGRICULTURAL SEEDS

H. R. KRAYBILL, *State Seed Commissioner*
P. B. CURTIS, *Associate Chemist*
O. S. ROBERTS, *Chief Inspector.* REGINA B. SCHULTE,* *Seed Analyst*
Assistant Seed Analysts: PAULINE BALBACH, MARY E. GREY
Inspectors: C. M. COHEE, J. W. JACKMAN

The Indiana Seed Law is an Act to regulate the sale of and commerce in agricultural seeds. It requires every lot, package, bag or bulk lot of seed containing one pound or more which is sold, offered or exposed for sale within the state for seeding purposes to be tagged with official Indiana State Seed Tags. These tags must carry the name and address of the vendor of the seed, a statement of the minimum percentages of purity and germination and the maximum number per pound of each of the weed seeds which are listed as noxious under the law. The date of the germination test and state or foreign country in which the seed was grown must also be designated.

The Indiana Seed Law also provides for inspection and testing of samples of seed to determine whether or not the statements of the seedsmen on the tags are correct. This requires the services of Inspectors who travel over the State and secure samples of seed from seed dealers, seed stores and seed purchasers. Inspection samples are drawn with specially designed samplers so as to obtain a representative sample from each lot and these samples are then forwarded to the seed laboratory of the State Seed Commissioner where they are tested.

Results of Inspection

During the year from July 1, 1934, to June 30, 1935, 1,404 samples were collected in all sections of the state. Complete tests of these samples were made and reports were sent to the distributors, dealers and consumers from whom the samples were secured. In addition 2,937 free test samples and 116 Custom House samples were analyzed. The testing of all of these samples entailed the making of 3,258 purity tests, 17,912 individual germination tests, 87 examinations and 97 identifications. Of the 1,404 official samples, 319 of them were drawn and tested upon request of seedsmen in order that they might know the percentages of purity and germination and the number per pound of noxious weed seeds to list on their tags. Of the remaining 1,085 samples, 196 of them were found to be seriously misbranded. This represents 18.1 per cent of the samples as compared to 14.0 per cent in the preceding year. This increase in percentage of samples seriously misbranded may have been due to the abnormal high seed prices and scarcity of seed which tempted the unscrupulous seedsmen to misrepresent their seed.

Tolerances

Under the most perfect and approved conditions of testing seeds, variations will occur in purity and germination tests. For this reason the Association of Official Seed Analysts, whose methods of testing are followed in this seed laboratory, has adopted tolerances or allowances for purity and germination tests. Samples of seed with a claim within the tolerances are not considered to be misbranded under the provisions of the Indiana Seed Law, but seed dealers are expected to change the claim on the tags of the unsold portion to correspond to the analysis found by the Seed Commissioner.

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* Assistant Botanist, in cooperation with the Division of Seed Investigations, Bureau of Plant Industry, U. S. D. A.

(a) Purity Tolerance.—In determining the tolerance for purity the sample shall be considered as being composed of two parts: (1) pure seed of the kind certified and (2) everything not pure seed. The tolerance permitted shall be two-tenths of 1 per cent (0.2%) plus 20 per cent of the lesser part. Example: Seed marked 98 per cent pure, the lesser part is 100 minus 98 or 2. Twenty per cent of 2 equals 0.4. Therefore, the tolerance allowed would be 0.2 plus 0.4, or 0.6%.

(b) Germination Tolerance.—A larger and more arbitrary tolerance is applied between a given germination and the result of the germination test as follows:

Given Germination (Per Cent)	Allowable Variation (Per Cent)
90 or over	6
80 or over but less than 90	7
70 or over but less than 80	8
60 or over but less than 70	9
Less than 60	10

Rulings of the State Seed Commissioner

In accordance with the provisions of the Indiana Seed Law empowering the Seed Commissioner to prescribe and enforce such rules and regulations as he may deem necessary to carry into effect the full intent and meaning of the Act the following rulings have been made:

Ruling No. 1. Hard Seeds. The phrase "minimum percentage of germination," as contained in the Indiana Seed Law, is interpreted to mean the actual percentage of the seeds that sprout or germinate at the end of the time usually allowed for germination test. In the case of leguminous seeds containing "hard seeds," the actual percentage of germination should be given on the official label and this germination percentage may be followed by the percentage of hard seeds. For example, the seed showed 85 per cent actual germination and in addition contained 10 per cent hard seeds. This may be stated on the label as 85 per cent germination and 10 per cent hard seeds. This cannot be stated as 95 per cent germination and 10 per cent hard seeds.

Ruling No. 2. Tagging. All agricultural seed in condition for seeding purposes shipped or delivered in the State of Indiana must have attached to each bag or package of one pound or more an Indiana State Label properly filled out.

The wholesale seedsman is required to attach at least one Indiana state tag properly filled out to each package of one pound or more of seed shipped to the retail seedsman. The retail seedsman is then required to attach sufficient tags to the seed to cover its net weight before offering or exposing the seed for sale. If the seed is shipped directly to the consumer, sufficient Indiana state tags must be attached to cover the net weight of the seed.

Farmers' Exemption

A farmer is exempt from the provisions of the seed law when the seed is grown, sold and delivered by that farmer on his own premises to the purchaser himself. If, however, the seed is advertised for sale by the public press, circular or catalogue, or if the seed is delivered by a common carrier, the farmer is considered as a vendor and must comply with the provisions of the Act. Seed taken to community sales for sale must be labeled in accordance with the law.

Free Testing of Seeds

During the past year 2,937 samples of seed were tested free of charge for farmers and seedsmen. The privilege of having these tests made is one of much value to the farmer and the smaller seed dealers who do not have facilities for testing seeds. Not all of the tests requested can be made promptly during the busy season from January to March. Therefore it is important that all samples be sent in as early as possible preferably from September to December. When submitting a sample of seed for test to the seed laboratory the following directions for securing the sample should be observed in order that the sample may represent as accurately as possible the lot from which it is taken.

Directions for Taking Samples

1. The minimum weight of seed forwarded for test should be approximately:
    - (a) Two ounces (cupful) of grass seed of any kind or of white and alsike clover;
    - (b) Five ounces (cupful) of red and crimson clover, alfalfa, millet, flax or seed of like size;
    - (c) One pound (pint) of cereals or seed of like size.
2. Samples may be drawn:
    - (a) With seed triers;
    - (b) With long stickers;
    - (c) By hand, taking approximately equal parts of the sample from at least three different places in the sacks, including the top and opposite sides as near the bottom as practicable.
3. Samples should be drawn from each bag when there are not more than five bags in the lot, from every fifth bag when there are more than five bags, but never from less than five bags. All samples so drawn are combined into one composite sample.

Directions for Making Germination Tests at Home

Satisfactory germination tests may be made of the larger field seeds at home, leaving the laboratory facilities of the Agricultural Experiment Station available for the grasses and clovers which are more difficult to analyze.

The seed to be germinated should be mixed thoroughly and the required number of seeds (100 seeds of grains and 200 of clovers and other small seeds) counted out just as they come.

The plate germinator is satisfactory and very simple to operate. The seeds to be germinated are placed between two thicknesses of folded blotting paper or cloth (heavy grade of muslin or canton flannel). This should be moistened and placed between ordinary tin or porcelain plates and kept in a warm room where the range in temperature is from approximately 85 degrees during the day to 65 degrees at night. The place selected for the test should not be too near a window, stove or register.

The time required for germination tests varies with different kinds of seed. Under favorable conditions grass and clover seeds begin to sprout in three or four days. The tests should be continued for ten days or two weeks. Every two days the tests should be examined and a record made of the number of seeds that have sprouted. Also the blotting paper or cloth must be kept sufficiently moist. The number of seeds which germinate out of the 100 seeds will give the percentage of germination. However, those seeds which develop weak sprouts should not be counted because they may not continue their development into normal plants.

Filling Out Official Indiana Labels

Purity

The minimum purity means the percentage of pure seed of the kind and variety given on the official label. Statements of purity, as 97 per cent including 2 per cent crop seeds, or 95 per cent and 2 per cent crop seeds, will not be permitted. In cases where the seed contains two or more kinds of agricultural seed, each present in excess of 5 per cent, the seed mixture should be labeled with the official green colored mixture labels, Style C.

The filling out of the column "per cent of seed" on the mixture labels can be explained best by an example. For instance if a mixture is composed of 60 per cent Kentucky Blue Grass with a purity of 80 per cent and 40 per cent of Red Top with a purity of 90 per cent, the per cent of Blue Grass should be given as 48 per cent, obtained by taking 80 per cent of 60. The Red Top should be given as 36 per cent, obtained by taking 90 per cent of 40.

The percentage of purity on the large seeds such as soybeans, corn, wheat, vegetable seeds, etc., must be stated on the official label the same as on any other seed.

Germination

The term minimum germination means the percentage of sprouts obtained in the prescribed time for the test. If the seed contains hard seeds this percentage should be stated after the term "hard seed" on the official label. In no case should the sum of the percentages of sprouts and hard seeds be given as the percentage of minimum germination.

Distributors should not ship seed until the germination test is completed. The statement "In Test" on the official label does not meet the provisions of the seed law. If there is a demand for the seed the dealer may be tempted to sell the seed before he receives a report on the germination, thus placing himself liable to prosecution.

Noxious Weed Seeds

The number per pound of each of the noxious weed seeds present must be listed on the reverse side of the tag irrespective of the number present. The term "trace" is not permissible. The statement of the noxious weed seeds in terms of per cent or in terms of proportion will not be permitted.

Place Where Grown

The official tag must give the name of the state, territory or foreign country where the seed was grown. Terms such as Domestic, U. S. A., Northwestern, and Central States do not meet the requirements of the law, and seed found so labeled will be immediately removed from sale until the tags have been corrected.

Certified, Verified and Affidavit Seed

Certified seed is seed the purity, germination, and variety of which is certified to by some state certifying agency or an agency closely associated with some state office or department. The seed is shipped in sealed sacks with a certified seed tag attached. During the growing season the fields are inspected to ascertain trueness to variety of crop, and after the harvest the seed is tested to determine whether it meets the prescribed standards of the certifying agency. In Indiana the Indiana Corn Growers' Association certifies corn, wheat, oats, lespedeza and soybeans. The other most commonly certified seed found in the state is Grimm alfalfa.

Verified-Origin seed is seed the origin of which is attested to by certain government approved seed dealers. Seed verification service deals with origin only, meaning Place Where Grown, and gives no guarantee as to the variety, purity or viability of the seed. At the present time red clover and alfalfa are the only seeds verified as to origin. Verified seed is tagged with tags bearing the official verification emblem.

Affidavit Grimm is alfalfa seed for which the grower has made affidavit as to its being Grimm Alfalfa. This affidavit seed is not regulated by either State or Federal Government.

Violations of the Law

Violations of the Indiana Seed Law may be divided into two classes: first where the seed is sold or offered for sale without official Indiana State Seed Tags, and second where the seed is tagged but fails to meet the certifier's claim stated on the tags. In both of these cases shipments or lots of seed were removed from sale until proper tags had been attached to cover the seed in question.

During the past year three cases of misbranding and one case of non-tagging were called to the attention of prosecuting attorneys. All of these cases resulted in convictions and payment of fines. Furthermore, under the Interstate Clause (Sec. 6) of the Federal Seed Act seventeen cases were reported to the Division of Seed Investigations of the Bureau of Plant Industry of the United States Department of Agriculture.

The following are excerpts from publications concerning the disposition of previous seed cases submitted.

Prosecutions Under the Interstate Clause (Sec. 6) of the Federal Seed Act July 1, 1933, to June 30, 1934.

16. Misbranding of red clover seed. U. S. & Market Gardeners' Seed Company. Plea of guilty. Fine $200. (F.S.50).

Kind and amount of seed: Red clover, two bags (335 pounds).

Shipped by Market Gardeners' Seed Company, Cincinnati, Ohio, February 9, 1932.

From Cincinnati, Ohio, to Versailles, Indiana.

Action taken: Information was filed in the United States District Court for the Southern District of Ohio alleging that the Market Gardeners' Seed Company, a corporation, unlawfully delivered for transportation in interstate commerce the above-mentioned shipment, misbranded in violation of the Federal Seed Act in that it was labeled in part "minimum pure seed 94.2—4.8 crop —99.0% Min. Germination—90%", whereas the seed "did consist of pure cloverseed in a proportion less than 94.2%" and germinated "not more than 72.25%". The seed was found to be 90.08 per cent pure seed and to contain 3.46 per cent of weed seeds.

Disposition: On June 13, 1932, the defendant entered a plea of guilty and was fined $200.

17. Misbranding of sweet clover seed. U. S. & Berry Seed Company. Plea of guilty. (F. S. 51.)

Kind and amount of seed: Sweet clover, one bag (90 pounds).

Shipped by Berry Seed Company, Clarinda, Iowa, March 9, 1932.

From Chicago, Illinois, to New Albany, Indiana.

Action taken: Information was filed in the United States District Court for the Northern District of Illinois alleging that the Berry Seed Company, a corporation having a place of business in Clarinda, Iowa, and also in Chicago, Illinois, unlawfully delivered for transportation in interstate commerce the above-mentioned shipment, misbranded in violation of the Federal Seed Act in that it was labeled in part "Germ. 92%", whereas the seed germinated "not more than 44.25%".

Disposition: On December 13, 1933, the manager of the American Field Seed Company, Chicago, Illinois (reported to be a subsidiary of the Berry Seed Company), entered a plea of guilty. The case was then combined with three others against the same defendant, and a fine of $200 was imposed. (See Nos. 18, 19, and 29.)

18. Misbranding of sweet clover seed. U. S. & Berry Seed Company. Plea of guilty. (F. S. 52.)

Kind and amount of seed: Sweet clover, one bag (60 pounds).

Shipped by Berry Seed Company, Clarinda, Iowa, February 16, 1932.

From Chicago, Illinois, to Solsberry, Indiana.

Action taken: Information was filed in the United States District Court for the Northern District of Illinois alleging that the Berry Seed Company, a corporation having a place of business in Clarinda, Iowa, and also in Chicago, Illinois, unlawfully delivered for transportation in interstate commerce the above-mentioned shipment, misbranded in violation of the Federal Seed Act in that it was labeled in part "Germ. 92%", whereas the seed germinated "not more than 44.5 per cent".

Disposition: On December 13, 1933, the manager of the American Field Seed Company, Chicago, Illinois (reported to be a subsidiary of the Berry Seed Company), entered a plea of guilty. The case was then combined with three others against the same defendant, and a fine of $200 was imposed. (See Nos. 17, 19 and 29.)

29. Misbranding of sweet clover seed. U. S. & Berry Seed Company. Plea of guilty. (F. S. 88.)

Kind and amount of seed: white sweet clover, two bags (240 pounds).

Shipped by Berry Seed Company, Clarinda, Iowa, March 13, 1933.

From Chicago, Illinois, to Thorntown, Indiana.

Action taken: On August 25, 1933, information was filed with the United States District Court for the Northern District of Illinois alleging that the Berry Seed Company, a corporation with a place of business in Clarinda, Iowa, and also in Chicago, Illinois, did unlawfully deliver for transportation in interstate commerce the above-mentioned shipment of seed misbranded in violation of the Federal Seed Act in that it was labeled in part "Purity 97.5%, Germ. 88%", whereas the seed had a purity of "less than 97.5%" and germinated "much less than 88%".

Disposition: On December 13, 1933, the manager of the American Field Seed Company, Chicago, Illinois (reported to be a subsidiary of the Berry Seed Company), entered a plea of guilty. The case was then combined with three others against the same defendant, and a fine of $200 was imposed. (See Nos. 17, 18 and 19.)

Attention Distributors and Dealers

If seeds such as oats and soybeans are sold for seeding purposes they come under the provisions of the law and must be tagged with Indiana seed tags. It is not proper for the dealer to say that he is selling his oats or soybeans as feed oats or feed soybeans and thereby attempt to evade the seed law when these seeds are actually being sold for seeding purposes. The mere fact that the dealer says that he is selling his oats and soybeans as feed when it is generally known and he himself as well knows that they are going to be used for seed does not in any way relieve him from the responsibility of complying with the seed law by properly tagging the oats and soybeans with official Indiana Seed Tags.

Attention Purchasers

The seed buyer should insist that the seed be properly labeled and report any irregularities to the State Seed Commissioner. All tags, correspondence and records pertaining to seed purchases should be saved until the buyer is satisfied that the seed he received has met the desired qualifications. If the case appears to violate the Federal Seed Act the State Seed Commissioner may report the matter to the United States Department of Agriculture.

The Indiana Seed Law does not prohibit the sale of inferior seed when such seed is tagged correctly. For this reason the purchaser should always read the information stated on the tag before buying his seed. Failure to purchase good quality labeled seed may result in poor stands, undesirable varieties and infestation of the soil with noxious weed seeds.

The farmer should make it a rule to buy his seed from a reliable dealer, remembering that poor seed is dear at any price and that quality and not price should be the chief consideration. Table 7 entitled "Summary of Seed Inspection, July 1, 1934, to June 30, 1935" may be of considerable value to seed purchasers in that it shows just how careful the different seedsmen were in tagging their seeds and also in maintaining the claims on their tags.

Table 1 shows that in general there has been a continued improvement in the correct labeling of seeds in the last few years.

Examination of Tables 2, 3 and 4 also shows a marked improvement in the quality of the seed offered for sale but the quality of much of the seed could be increased a great deal by more thorough cleaning. Tables 5 and 6 showing the percentages of official samples of red clover, alfalfa, sweet clover, alsike, clover, timothy and Korean lespedeza which contained each of the noxious weed seeds further demonstrate the need for more efficient removal of the noxious weed seeds.

Table 8 gives in detail the results of the analyses of 1,085 official samples.

Table 1—Progress in Seed Inspection

Year	Number of Samples Examined	Number Seriously Misbranded	Per Cent Seriously Misbranded
1925	745	271	36.4
1928	969	289	29.6
1929	1,230	403	32.7
1930	1,044	184	17.6
1931	1,122	201	17.9
1932	926	157	17.0
1933	698	139	19.9
1934	1,139	160	14.0
1935	1,085	196	18.1

Table 2—Average Analysis of Samples in 1922 Seed Inspection

	Number of Samples	Purity per cent	Inert Matter per cent	Germ. per cent	Hard Seeds per cent	Number Weed Seeds per Pound	Number Noxious Weed Seeds per Pound
Alfalfa	33	99.19	0.33	81.42	10.44	1,228	128
Blue Grass	20	66.35	28.51	58.50	....	33,001	2,566
Alsike Clover	70	94.27	1.05	78.97	12.94	4,757	2,214
Red Clover	195	98.05	0.54	88.00	6.72	7,358	1,722
Sweet Clover	27	96.40	2.63	66.91	11.87	2,370	387
White Clover	7	95.28	0.62	79.30	14.68	15,650	10,843
Cowpeas	17	97.86	1.88	70.94	....	38	3
Millet	12	98.03	1.55	75.54	....	2,211	15
Oats	47	97.62	1.52	85.97	....	213	51
Orchard Grass	13	82.36	15.83	74.33	....	32,308	28,847
Rape	11	99.59	0.31	83.23	....	263	16
Red Top	19	83.69	12.56	81.37	....	75,163	3,810
Soy Beans	12	97.55	2.24	84.04	2.20	37	1
Sudan Grass	8	95.21	2.38	72.50	....	974	....
Timothy	85	98.90	0.55	86.72	....	2,792	1,278
Mixtures	11	76.79	11.97	57.55	11.19	81,833	26,825
Garden Seed	35	98.08	....	71.65	....	....	....
Miscellaneous	13	96.08	2.46	65.15	3.20	3,368	845

Table 3—Average Analysis of Samples in 1934 Seed Inspection

	Number of Samples	Purity per cent	Inert Matter per cent	Germ. per cent	Hard Seeds per cent	Number Weed Seeds per Pound	Number Noxious Weed Seeds per Pound	Range in Number Noxious Weed Seeds per Pound
Alfalfa	164	99.32	0.29	76.09	15.16	667	54	0- 4,410
Blue Grass	55	81.66	17.84	77.32	....	4,291	1,271	0-45,000
Alsike Clover	71	98.04	0.56	80.20	13.31	4,517	145	0-46,575
Red Clover	212	99.03	0.28	90.21	5.39	1,610	735	0-10,260
Sweet Clover	159	99.39	0.36	76.62	7.61	509	38	0- 441
White Clover	9	97.77	0.46	85.08	6.92	8,455	1,855	0- 7,875
Corn	8	99.83	0.17	95.25	....	....	....	....
Lespedeza (Largely Korean)	118	98.13	0.72	84.46	9.25	2,965	494	0- 7,380
Millet	5	99.05	0.37	87.00	....	2,394	....	....
Oats	15	97.36	1.47	95.17	....	46	13	0- 99
Orchard Grass	10	84.61	13.87	83.70	....	8,073	5,981	0-11,925
Red Top	61	93.41	5.52	88.68	....	48,472	448	0- 8,550
Soy Beans	50	98.00	1.67	91.98	0.16	47	....	0- 4
Sudan Grass	5	97.46	2.24	80.70	....	151	....	....
Timothy	156	99.53	0.28	90.46	....	934	255	0- 6,525
Mixtures	25	82.56	12.70	71.97	10.40	25,419	1,518	0- 8,100
Garden Seed	10	99.87	0.13	90.70	....	9	....	....
Miscellaneous	6	96.70	3.05	86.33	0.17	503	5	0- 27

Table 4—Average Analysis of Samples in 1935 Seed Inspection

	Number of Samples	Purity per cent	Inert Matter per cent	Germ. per cent	Hard Seeds per cent	Number Weed Seeds per Pound	Number Noxious Weed Seeds per Pound	Range in Number Noxious Weed Seeds per Pound
Alfalfa	245	99.35	0.29	79.63	11.78	591	22	0- 360
Blue Grass	45	80.71	18.69	69.42	....	8,703	723	0- 2,250
Alsike Clover	36	96.99	0.85	80.19	12.00	3,235	1,053	0-11,025
Red Clover	160	98.75	0.28	88.80	5.28	1,740	1,001	0-15,030
Sweet Clover	178	99.43	0.25	81.69	6.85	830	47	0- 2,070
White Clover	4	98.44	0.60	76.94	10.44	5,119	506	9- 918
Corn	13	99.92	0.08	91.69	....	....	....	....
Lespedeza (Largely Korean)	85	98.46	0.65	84.61	9.81	2,623	855	0- 9,360
Millet	10	98.72	0.99	82.80	....	1,463	23	0- 72
Oats	16	97.88	0.98	89.66	....	40	3	0- 27
Orchard Grass	11	84.03	13.76	82.63	....	4,540	1,829	18-2,925
Rape	4	99.86	0.10	93.00	....	79	23	0- 90
Red Top	57	91.20	7.20	79.29	....	82,313	658	0- 5,850
Soy Beans	31	98.65	1.26	83.00	0.32	15	....	0- 4
Sudan Grass	13	98.04	1.60	83.96	....	408	4	0- 18
Timothy	96	99.04	0.49	84.70	....	2,735	813	0-17,775
Mixtures	45	84.33	11.47	73.33	6.46	19,062	1,654	0-13,770
Garden Seed	23	99.40	0.58	86.78	....	22	2	0- 45
Miscellaneous	13	97.07	1.51	85.23	....	3,284	218	0- 1,170

Table 5—Percentage of Samples Showing the Presence of Each of the Noxious Weed Seeds

Noxious Weed Seeds	Red Clover			Alfalfa			Sweet Clover		
	1923 per cent	1934 per cent	1935 per cent	1923 per cent	1934 per cent	1935 per cent	1923 per cent	1934 per cent	1935 per cent
Bracted plantain	17.98	11.32	11.87	1.58	1.83	2.45	0.00	3.14	1.69
Buckhorn	68.70	74.06	75.62	11.11	6.71	11.02	15.78	6.29	8.99
Canada thistle	2.51	0.94	0.63	0.00	0.00	0.82	13.15	6.29	1.69
Chicory	1.79	0.94	0.63	1.58	0.61	0.41	0.00	0.00	0.00
Common plantain	71.22	44.81	38.13	0.00	3.66	3.67	2.63	1.26	2.25
Corn cockle	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Curled dock	49.28	50.47	58.75	30.15	10.98	15.51	13.15	20.75	17.42
Dodder	18.70	17.45	23.75	47.61	14.63	15.10	0.00	0.63	0.56
Horse nettle	0.00	0.00	8.13	0.00	0.00	3.67	0.00	0.00	0.00
Mustard	3.23	3.30	3.13	0.00	2.44	2.04	18.40	49.06	44.94
Ox-eye daisy	0.00	0.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Prickly lettuce	5.75	1.89	2.50	1.58	0.61	1.22	0.00	0.00	0.56
Quack grass	0.00	0.00	0.00	0.00	0.00	0.41	0.00	2.52	0.00
Red sorrel	15.82	23.59	18.75	7.93	2.44	1.63	0.00	2.52	2.81
White top	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Wild carrot	18.34	17.45	14.38	0.00	4.88	2.45	2.63	0.63	2.81
Wild garlic or onion	0.00	0.00	1.25	0.00	0.00	0.00	0.00	0.00	0.00
Yellow trefoil	5.75	8.02	15.63	4.76	3.66	1.63	7.89	1.26	1.12

Table 6—Percentage of Samples Showing the Presence of Each of the Noxious Weed Seeds

Noxious Weed Seeds	Alsike Clover			Timothy			Korean Lespedeza	
	1923 per cent	1934 per cent	1935 per cent	1923 per cent	1934 per cent	1935 per cent	1934 per cent	1935 per cent
Bracted plantain	2.46	8.45	5.56	1.29	8.97	8.33	63.56	61.18
Buckhorn	13.58	40.85	47.22	11.03	32.05	50.00	37.29	40.00
Canada thistle	3.70	1.41	5.56	0.64	0.64	2.08	0.00	0.00
Chicory	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Common plantain	22.22	26.76	27.78	43.50	64.10	63.54	31.35	44.71
Corn cockle	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Curled dock	59.25	63.38	75.00	22.00	21.15	21.87	44.07	32.94
Dodder	0.00	0.00	0.00	0.00	0.00	0.00	53.39	51.76
Horse nettle	0.00	0.00	0.00	0.00	0.00	0.00	0.85	67.06
Mustard	0.00	0.00	5.56	0.00	0.00	0.00	0.00	0.00
Ox-eye daisy	1.23	0.00	0.00	1.94	3.20	10.42	0.00	0.00
Prickly lettuce	0.00	0.00	2.78	0.00	1.92	5.21	1.69	0.00
Quack grass	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Red sorrel	34.56	38.03	52.78	28.57	51.92	72.91	5.93	3.53
White top	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Wild carrot	0.00	4.23	2.78	0.64	2.56	8.33	0.00	3.53
Wild garlic or onion	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Yellow trefoil	19.75	35.21	58.33	0.00	0.64	0.00	0.00	0.00

Table 7—Summary of Seed Inspection, July 1, 1934, to June 30, 1935

Name and Address of Certifier	Number of Samples Examined	Number of Samples Passed	Number Technically Misbranded	Per Cent* Technically Misbranded	Number Seriously Misbranded	Per Cent* Seriously Misbranded	Number Without State Labels
Adams & Morrow, Inc., Princeton, Ind.	1	.....	.....	.....	1	.....	.....
Ainsworth-Boone Co., Kentland, Ind.	2	2	.....	.....	.....	.....	.....
Allied Seed Co., Inc., Fort Wayne, Ind.	38	35	3	8%	.....	.....	.....
American Field Seed Co., Chicago, Ill.	11	5	1	9%	5	45%	11
Andrews, Cecil, Shoals, Ind.	1	.....	.....	.....	.....	.....	1
Banks, King, L., Delta, Colo.	1	.....	.....	.....	.....	.....	1
Berry Seed Co., Chicago, Ill.	1	.....	1	.....	.....	.....	1
Berry Seed Co., Clarinda, Ia.	19	3	7	37%	8	42%	19
Boonville Milling Co., Boonville, Ind.	2	1	.....	.....	1	.....	.....
Bottorff, D. M., Columbus, Ind.	2	.....	.....	.....	2	.....	.....
Bowman Seed Co., Concordia, Kans.	1	.....	.....	.....	.....	.....	1
Branch Grain & Seed Co., Martinsville, Ind.	1	1	.....	.....	.....	.....	.....
Brueggemann Bros., Milan Center, Ind.	1	.....	.....	.....	.....	.....	1
Burke Bros. Hardware, Gary, Ind.	1	.....	.....	.....	1	.....	.....
Burk Elevator Co., Decatur, Ind.	1	.....	1	.....	.....	.....	.....
Busenbark Grain Co., Crawfordsville, Ind.	7	6	1	14%	.....	.....	1
Byers Seed Co., Franklin, Ind.	2	1	.....	.....	1	.....	.....
Campbell & Co., Kendallville, Ind.	5	4	1	20%	.....	.....	.....
Carman Supply Co., Lynn, Ind.	7	3	1	14%	3	43%	.....
Cayce-Yost Co., Hopkinsville, Ky.	1	1	.....	.....	.....	.....	.....
Central Sugar Co., Decatur, Ind.	3	2	.....	.....	1	.....	.....
Chambers Seed Co., E. F., Lebanon, Ind.	1	.....	.....	.....	1	.....	.....
Chambers Seed Co., Louisville, Ky.	5	1	2	40%	2	40%	.....
Chance Bros., Connersville, Ind.	1	.....	1	.....	.....	.....	.....
Consolidated Seed Co., Chicago, Ill.	3	.....	1	.....	2	.....	.....
Co-operative Elevator Co., Winamac, Ind.	3	1	.....	.....	2	.....	.....
Corneli Seed Co., St. Louis, Mo.	4	4	.....	.....	.....	.....	.....
Cottrell Bros., Terre Haute, Ind.	1	.....	.....	.....	.....	.....	1
Courteen Seed Co., Milwaukee, Wis.	1	1	.....	.....	.....	.....	.....
Crabbs Reynolds Taylor Co., Crawfordsville, Ind.	57	43	10	18%	3	5%	1
Crabbs Reynolds Taylor Co., Lafayette, Ind.	4	3	.....	.....	1	.....	.....
Crawfordsville Seed Co., Crawfordsville, Ind.	24	23	1	4%	.....	.....	.....
Davis Seed Corp., Lebanon, Ind.	1	1	.....	.....	.....	.....	.....
Decatur Co. Co-operative Co., Greensburg, Ind.	2	2	.....	.....	.....	.....	.....
Dembufsky Seed Co., Goshen, Ind.	2	2	.....	.....	.....	.....	.....
Dickinson Co., The Albert, Chicago, Ill.	53	46	5	9%	2	4%	3
Early & Daniel Co., The, Cincinnati, Ohio	3	2	.....	.....	1	.....	3
Eberts Grain Co., Louisville, Ky.	1	.....	.....	.....	1	.....	.....
Ellis, R. W., R. R. 7, Lafayette, Ind.	1	1	.....	.....	.....	.....	.....
Emison Hardware Store, Vincennes, Ind.	1	1	.....	.....	.....	.....	.....
Etna Lumber & Elevator Co., Etna Green, Ind.	3	3	.....	.....	.....	.....	.....
Farm Bureau Service, Columbus, Ind.	1	1	.....	.....	.....	.....	.....
Farmers Co-operative Co., Cicero, Ind.	1	.....	1	.....	.....	.....	.....
Ferry-Morse Seed Co., Detroit, Mich.	5	5	.....	.....	.....	.....	.....
Foster-Kendall Co., Carmel, Ind.	72	62	7	10%	2	3%	1
Garten Feed Co., The, Indianapolis, Ind.	2	1	1	.....	.....	.....	.....
Giltner Seed Co., Eminence, Ky.	1	.....	.....	.....	1	.....	1
Goodrich Bros. Co., Westfield, Ind.	2	.....	1	.....	1	.....	2
Goodrich Bros. Co., Winchester, Ind.	19	12	3	16%	4	21%	.....
Graf, C. L., New Albany, Ind.	3	2	.....	.....	1	.....	.....
Graft, C. V., Winchester, Ind.	3	1	1	.....	1	.....	.....

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*Percentages calculated only on five samples or more examined.

Table 7—Summary of Seed Inspection, July 1, 1934, to June 30, 1935—Continued

Name and Address of Certifier	Number of Samples Examined	Number of Samples Passed	Number Technically Misbranded	Per Cent.* Technically Misbranded	Number Seriously Misbranded	Per Cent.* Seriously Misbranded	Number Without State Labels
Graham Grain & Supply Co., Terre Haute, Ind.	1	1	....	....	....	....	1
Grathurhl, John M., Fairmount, Minn.	1	....	....	....	1	....	....
Hall Seed Co., Louisville, Ky.	1	....	....	....	....	....	1
Heldt & Voelker Co., Evansville, Ind.	3	....	1	....	2	....	....
Heldt Co., The, Evansville, Ind.	19	12	4	21%	3	16%	1
Herbst Bros., Inc., New York, N. Y.	1	....	....	....	....	....	1
Hirsch & Sons, Henry, Toledo, Ohio	7	5	1	14%	1	14%	....
Holser & Co., B. I., Walkerton, Ind.	2	....	1	....	1	....	....
Hooton-Davis Seed Corp., Lebanon, Ind.	50	32	13	26%	5	10%	....
Indiana Farm Bureau Co-operative Assn., Inc., Indianapolis, Ind.	65	43	17	26%	5	8%	....
Indiana Seed Co., Indianapolis, Ind.	74	50	13	18%	11	15%	....
Isbell Seed Co., Jackson, Mich.	1	1	....	....	....	....	....
Jefferson Co. Farm Bureau Co-operative Assn., Inc., Madison, Ind.	2	2	....	....	....	....	....
Johnson, Inc., J. Oliver, Chicago, Ill.	9	4	1	11%	4	44%	....
Kahn Bros. Hay & Grain Co., Chicago, Ill.	1	....	....	....	1	....	....
Kentucky Lespedeza Growers Assn., Eminence, Ky.	2	....	....	....	2	....	....
Kiefer Feed & Supply Co., Elwood, Ind.	2	1	1	....	....	....	....
King & Sons, Inc., H. C., Battle Creek, Mich.	5	3	....	....	1	20%	1
Klitgord, M., Lima, N. Y.	5	5	....	....	....	....	....
Koschnick & Co., Indianapolis, Ind.	1	....	1	....	....	....	....
Kraus, Sam, Fort Wayne, Ind.	5	2	2	40%	1	20%	....
Kunin & Sons, Inc., Samuel, Chicago, Ill.	1	....	....	....	....	....	1
Lafayette Co-operative Elevator, Lafayette, Ind.	1	1	....	....	....	....	....
Lewis Implement & Seed Co., Louisville, Ky.	26	6	5	19%	15	58%	....
Linkhart & Son, North Vernon, Ind.	2	1	1	....	....	....	....
Louisville Seed Co., Louisville, Ky.	1	1	....	....	....	....	....
McCarty Seed Co., J. A., Evansville, Ind.	13	6	6	46%	1	8%	....
McCullough Seed Co., The J. Chas., Cincinnati, Ohio	28	15	8	29%	4	14%	1
McCullough's Sons Co., The J. M., Cincinnati, Ohio	3	3	....	....	....	....	....
McMahan Seed Co., Valparaiso, Ind.	5	3	1	20%	1	20%	....
Market Gardeners' Seed Co., The, Cincinnati, Ohio	16	5	6	37%	5	31%	2
Martin Hardware Co., Clayton, Ind.	4	3	1	....	....	....	....
Mayer Grain Co., South Whitley, Ind.	14	10	3	21%	1	7%	....
Meacham, Jr., Chas. M., Morganfield, Ky.	2	....	2	....	....	....	....
Miller Grain Co., Bainbridge, Ind.	2	1	1	....	....	....	....
Monon Valley Farm, Monon, Ind.	2	1	1	....	....	....	....
Moore & Kemple Hardware, Lafayette, Ind.	2	....	2	....	....	....	....
Morrow Grain Co., R. R. 4, Wabash, Ind.	1	1	....	....	....	....	....
Mutual Grain Co., Urbana, Ind.	1	1	....	....	....	....	....
Naber, Chas. F., Alexandria, Ind.	1	1	....	....	....	....	....
National Seed Co., Louisville, Ky.	10	4	2	20%	4	40%	....
Nebraska Seed Co., Omaha, Neb.	1	1	....	....	....	....	....
New Paris Elevator Co., New Paris, Ohio	4	1	1	....	2	....	....
Northern Field Seed Co., Winona, Minn.	3	....	1	....	1	....	1
Northrup, King Co., Minneapolis, Minn.	1	....	1	....	....	....	1
Norton's Sons, C. C., Greenfield, Ohio	2	....	....	....	2	....	....
Ohio Valley Seed Co., Evansville, Ind.	5	3	1	20%	1	20%	....
Orme & Sons, Arnold, Rushville, Ind.	1	....	....	....	1	....	....

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*Percentages calculated only on five samples or more examined

Table 7—Summary of Seed Inspection, July 1, 1934, to June 30, 1935—Continued

Name and Address of Certifier	Number of Samples Examined	Number of Samples Passed	Number Technically Misbranded	Per Cent* Technically Misbranded	Number Seriously Misbranded	Per Cent* Seriously Misbranded	Number Without State Labels
Ostberg Seed Co., Chicago, Ill.	17	.....	3	18%	14	82%	1
Outland, T. W., Antwerp, Ohio	2	2	.....	.....	.....	.....	2
Pierceton Elevator Co., Pierceton, Ind.	2	1	.....	.....	1	.....	.....
Purcell Seed Co., Evansville, Ind.	18	14	3	17%	.....	.....	2
Quinlan Seed Store, Terre Haute, Ind.	4	2	.....	.....	2	.....	.....
Quirk, John B., North Madison, Ohio	5	4	.....	.....	.....	.....	1
Ragsdale & Co., Chas., Bedford, Ind.	1	.....	.....	.....	1	.....	.....
Ridenour, Robert, R. R. 1, English, Ind.	1	.....	.....	.....	.....	.....	1
Ross Seed Co., Louisville, Ky.	28	16	5	18%	7	25%	2
Rush Service Co., Inc., Rushville, Ind.	1	.....	1	.....	.....	.....	.....
Scarlet & Co., Wm. G., Baltimore, Md.	1	1	.....	.....	.....	.....	.....
Schlemmer Coal & Feed Co., Lawrenceburg, Ind.	1	.....	.....	.....	1	.....	.....
Schultz Seed Co., J. M., Dieterich, Ill.	10	3	2	20%	5	50%	.....
Scott & Sons Co., O. M., Marysville, Ohio	1	.....	.....	.....	1	.....	.....
Scott Seed Co., New Albany, Ind.	31	20	8	26%	3	10%	.....
Shultz Seed Co., Olney, Ill.	3	1	.....	.....	2	.....	1
Smith, W. B., Logansport, Ind.	1	.....	1	.....	.....	.....	.....
Standard Elevator Co., Lapel, Ind.	1	1	.....	.....	.....	.....	.....
Standard Seed Co., Chicago, Ill.	17	11	3	18%	3	18%	.....
Standard Seed Co., Kansas City, Mo.	8	1	.....	.....	1	13%	6
Stanford Seed Co., Buffalo, N. Y.	1	.....	1	.....	.....	.....	1
Stauffer Grain Co., Nappanee, Ind.	3	1	1	.....	1	.....	.....
Steuben Co. Farm Bureau Co-op. Assn., Inc., Pleasant Lake, Ind.	2	2	.....	.....	.....	.....	.....
Strock, Frank, Hudson, Ind.	1	1	.....	.....	.....	.....	.....
Sugar Creek Grain Co., Thorntown, Ind.	2	2	.....	.....	.....	.....	.....
Sun-field Seed Service, Chicago, Ill.	12	1	3	25%	8	67%	.....
Sunshine Feed Store, Terre Haute, Ind.	2	1	1	.....	.....	.....	.....
Syler, Clay, North Manchester, Ind.	4	1	1	.....	2	.....	.....
Syler & Syler, Nappanee, Ind.	9	.....	1	11%	8	89%	.....
Syler & Syler, Plymouth, Ind.	23	13	9	39%	1	4%	.....
Teweles Seed Co., L., Milwaukee, Wis.	28	22	5	18%	1	4%	2
Tri-Co. Farm Bureau Co-operative Assn., Inc., Evansville, Ind.	1	.....	1	.....	.....	.....	.....
Troyer Seed Co., Goshen, Ind.	1	1	.....	.....	.....	.....	.....
Tuxedo Feed & Supply Co., Aurora, Ind.	1	.....	1	.....	.....	.....	.....
Van Camp Hardware Co., Indianapolis, Ind.	1	.....	.....	.....	1	.....	.....
Vaughan's Seed Store, Chicago, Ill.	2	2	.....	.....	.....	.....	.....
Versailles Feed Co., Versailles, Ind.	1	1	.....	.....	.....	.....	.....
Vonnegut Hardware Co., Indianapolis, Ind.	3	.....	1	.....	2	.....	.....
Warren Elevator Co., Warren, Ind.	1	.....	1	.....	.....	.....	.....
Warren Seed Co., Indianapolis, Ind.	1	1	.....	.....	.....	.....	.....
Watts, Owen T., Louisville, Ky.	1	1	.....	.....	.....	.....	.....
Wedrick & Co., W. R., Silver Lake, Ind.	1	1	.....	.....	.....	.....	.....
Westermeier Hardware Co., Columbus, Ind.	2	.....	.....	.....	2	.....	.....
Western Seed Co., Salt Lake City, Utah	1	1	.....	.....	.....	.....	.....
Whitley Co. Farm Bureau Co-op. Assn., Inc., Columbia City, Ind.	1	1	.....	.....	.....	.....	.....
Whitsell, Earl, Oxford, Ind.	1	1	.....	.....	.....	.....	.....
Wilson, John, Roachdale, Ind.	3	2	1	.....	.....	.....	.....
Wolf Seed Co., Fort Wayne, Ind.	14	9	4	29%	1	7%	.....
Wyatt Seed & Feed Store, Petersburg, Ind.	11	6	1	9%	4	36%	4
Young & Cox, Richmond, Ind.	1	.....	1	.....	.....	.....	.....

*Percentages calculated only on five samples or more examined

TABLE 8

ALFALFA

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, per cent	Inert Matter, per cent	Germination, per cent	Hard Seeds, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds		Number per Pound of each of the Noxious Weed Seeds Specified in the Law
5369	Co-operative Elevator Co., Winamac	Allied Seed Co., Inc.	C	99.50	......	84.00	8.00	4-34	......	C	None
	Blue Tag Grimm Alfalfa, Lot 288	Fort Wayne, Ind.	F	99.64	0.24	81.50	9.00	8-34	180	F	None
5370	Co-operative Elevator Co., Winamac	Allied Seed Co., Inc.,	C	99.60		80.00	12.00	4-34	......	C	None
	Blackfoot Grimm Alfalfa, Lot 194	Fort Wayne, Ind.	F	99.70	0.06	90.00	2.00	8-34	540	F	None
6302	Cowan Coal & Feed Co., Cowan[1]	Allied Seed Co., Inc.,	C	99.60	......	88.00	4.00	1-35	......	C	None
	Common Alfalfa, Lot B334	Fort Wayne, Ind.	F	99.86	0.10	89.00	2.50	4-35	180	F	None
5373	Farmers Co-operative Elevator, Rochester	Allied Seed Co., Inc.,	C	99.50	......	82.00	8.00	7-34	......	C	None
	Grimm Alfalfa, Lot B243	Fort Wayne, Ind.	F	99.90	0.04	80.50	8.00	8-34	369	F	Large-seeded alfalfa dodder 9
6269	Lima Elevator Co., Howe	Allied Seed Co., Inc.,	C	99.60	......	87.00	4.00	1-35	......	C	None
	Common Alfalfa, Lot B340	Fort Wayne, Ind.	F	99.70	0.12	83.50	7.00	4-35	185	F	Dodder 5
5491	Peru Grain & Coal Co., Peru	Allied Seed Co., Inc.,	C	99.60		82.00	10.00	7-34	......	C	None
	Grimm Alfalfa, Lot 231	Fort Wayne, Ind.	F	99.62	0.24	82.50	11.00	9-34	180	F	None
5387	Phillips, J. C., Star City	Allied Seed Co., Inc.,	C	99.00	......	80.00	10.00	7-34	......	C	None
	Grimm Alfalfa, Lot B236	Fort Wayne, Ind.	F	99.48	0.12	82.50	8.00	8-34	......	F	None
6199	Wayne Co. Farm Bureau Coop. Assn., Inc., Richmond	Allied Seed Co., Inc.,	C	99.60	......	88.00	4.00	1-35	......	C	None
	Common Alfalfa, Lot B334	Fort Wayne, Ind.	F	99.94	0.04	90.00	5.00	4-35	90	F	None
5347	*American Field Seed Co., Chicago, Ill.[2]	American Field Seed Co.,	C	99.50	......	92.00	......	4-34	......	C	None
	Alfalfa, Lot 10198	Chicago, Ill.	F	98.37	0.54	78.00	9.00	7-34	4,950	F	None
5557	American Field Seed Co., Chicago, Ill.[3]	American Field Seed Co.,	C	97.00	......	75.00	......	8-34	......	C	None
	Grimm Alfalfa, Lot 10252	Chicago, Ill.	F	96.16	2.39	48.50	6.00	10-34	4,626	F	Curled dock 9; mustard 27
6403	*American Field Seed Co., Chicago, Ill.[4]	American Field Seed Co.,	C	95.00	......	75.00	......	1-35	......	C	None
	Alfalfa, Lot 10423	Chicago, Ill.	F	94.44	3.13	67.00	10.50	3-35	7,119	F	Common plantain 45; curled dock 27; dodder 72; horse nettle 18; mustard 9; prickly lettuce 18
6588	*American Field Seed Co., Chicago, Ill.[5]	American Field Seed Co.,	C	99.60	......	92.00	......	11-34	......	C	None
	Grimm Alfalfa, Lot 10351	Chicago, Ill.	F	99.74	0.22	84.00	7.50	4-35	180	F	None
6589	*American Field Seed Co., Chicago, Ill.[6]	American Field Seed Co.,	C	99.70	......	92.00	8.00	12-34	......	C	None
	Alfalfa, Lot 10405	Chicago, Ill.	F	99.96	0.04	85.50	12.00	4-35	......	F	None
6684	*American Field Seed Co., Chicago, Ill.[7]	American Field Seed Co.,	C	98.00	......	80.00	......	8-34	......	C	None
	Alfalfa, Lot 10280	Chicago, Ill.	F	96.65	0.95	66.50	3.50	5-35	7,947	F	Curled dock 54; dodder 333

*Not labeled.

†Certified by Retailer.

C and F stands, respectively, for Claimed and Found.

[1] Distributed by O'Brien Milling Co., Greenville, Ohio.

[2] Sample secured from Earl Davis, New Paris, Ind.

[3] Sample secured from Omer E. Reichard, Kewanna, Ind.

[4] Sample secured from Alton Knote, R. R. 1, Greentown, Ind.

[5] Sample secured from J. Warren Wilson, R. R. 1, Galveston, Ind.

[6] Sample secured from C. S. Bellenbach, Brownsburg, Ind.

[7] Sample secured from John Murfitt, R. R. 1, Brook, Ind.

ALFALFA—Continued

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor	Purity, per cent	Inert Matter, per cent	Germination, per cent	Hard Seeds, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds	Number per Pound of each of the Noxious Weed Seeds Specified in the Law
6290	*Co-operative Elevator Co., Winamac[8]	American Field Seed Co., C	99.40	......	93.00	......	7-33	......	C None
	Idaho State Certified Grimm Alfalfa, Lot 10966	Chicago, Ill. F	99.62	0.10	85.50	2.50	3-35	540	F None
6272	*Berry Seed Co., Chicago, Ill.[9]	Berry Seed Co., C	99.60	......	92.00	......	11-34	......	C None
	W. B. Grimm Alfalfa	Chicago, Ill. F	99.72	0.24	81.00	8.00	3-35	......	F None
6277	*Berry Seed Co., Clarinda, Ia.[10]	Berry Seed Co., C	95.00	......	70.00	6.00	1-35	......	C None
	Alfalfa, Lot 10421	Clarinda, Ia. F	95.28	2.01	66.00	3.00	3-35	6,939	F Buckhorn 18; curled dock 45; dodder 81; small-seeded alfalfa dodder 36; horse nettle 9
6448	*Berry Seed Co., Clarinda, Ia.[11]	Berry Seed Co., C	95.00	......	72.00	......	12-34	......	C None
	Alfalfa, Lot 10406	Clarinda, Ia. F	96.17	1.99	58.50	8.00	3-35	6,309	F Bracted plantain 36; buckhorn 36; common plantain 9; curled dock 45; dodder 45; horse nettle 18
6453	*Berry Seed Co., Clarinda, Ia.[12]	Berry Seed Co., C	99.70	......	92.00	......	12-34	......	C None
	Alfalfa, Lot 10405	Clarinda, Ia. F	99.78	0.20	82.50	10.50	3-35	90	F None
6716	Berry Seed Co., Clarinda, Ia.[13]	Berry Seed Co., C	95.03	......	66.00	......	4-35	......	C None
	Grimm Alfalfa, Lot 22200	Clarinda, Ia. F	93.63	3.78	51.00	9.50	6-35	13,815	F Curled dock 162; dodder 45; horse nettle 99; prickly lettuce 9
6276	*Bowman Seed Co., Concordia, Kan.[14]	Bowman Seed Co., C	......	......	......	......	......	......	C
	Alfalfa, Lot 300	Concordia, Kan. F	99.76	0.16	82.00	9.50	3-35	360	F None
6604	†Warren Seed Co., Indianapolis	Bowman Seed Co., C	99.50	......	88.00	5.00	11-34	......	C None
	Common Alfalfa	Concordia, Kan. F	99.94	0.06	91.00	6.00	4-35	......	F None
6161	Carman Supply Co., Lynn	Carman Supply Co., C	99.18	......	80.00	11.00	1-35	......	C None
	Grimm Alfalfa, Lot 1986	Lynn, Ind. F	99.38	0.08	76.00	15.00	4-35	374	F Curled dock 9; dodder 5
6496	Bolles Hdwe. Co., Brownstown	Chambers Seed Co., C	99.25	......	92.00	......	1-35	......	C None
	Alfalfa, Lot 64	Louisville, Ky. F	99.30	0.18	84.00	4.50	3-35	1,710	F None
6467	Bulleit & Son, V. H., Corydon	Chambers Seed Co., C	99.00	......	85.00	10.00	11-34	......	C None
	Kansas-Oklahoma Alfalfa, Lot 59	Louisville, Ky. F	99.68	0.28	89.00	5.00	4-35	270	F None
6469	Bulleit & Son, V. H., Corydon	Chambers Seed Co., C	97.00	......	85.00	10.00	1-35	......	C None
	Grimm Alfalfa, Lot 63	Louisville, Ky. F	98.31	0.10	69.00	20.50	4-35	1,809	F Yellow trefoil 9
5543	Adams & Morrow, Inc., Princeton	Corneli Seed Co., C	99.60	......	80.00	13.00	8-34	......	C None
	Common Alfalfa, Lot Juno	St. Louis, Mo. F	99.65	0.27	78.50	12.50	9-34	284	F Dodder 14
5542	Weed Hardware, Vincennes	Corneli Seed Co., C	99.60	......	80.00	13.00	8-34	......	C None
	Kansas Alfalfa, Lot Juno	St. Louis, Mo. F	99.66	0.32	83.50	13.50	9-34	90	F None
5816	Barr Grain Co., O. L., Bicknell	Crabbs-Reynolds Taylor Co., C	99.54	......	73.00	18.00	8-34	......	C None
	Alfalfa, Lot 8FM	Crawfordsville, Ind. F	99.44	0.56	85.00	5.50	2-35	......	F None
5820	Barr Grain Co., O. L., Bicknell	Crabbs Reynolds Taylor Co., C	99.12	......	76.00	19.00	12-34	......	C None
	Michigan Affidavit Grimm Alfalfa, Lot 7FN	Crawfordsville, Ind. F	99.18	0.18	78.00	14.00	2-35	369	F Curled dock 9
5398	Crabbs Reynolds Taylor Co., Lafayette	Crabbs Reynolds Taylor Co., C	99.50	......	84.00	11.00	8-34	......	C None
	Dakota No. 12 Alfalfa, Lot 3FM	Crawfordsville, Ind. F	99.58	0.14	76.50	8.50	9-34	824	F Dodder 14

5400	†Crabbs Reynolds Taylor Co., Lafayette	Crabbs Reynolds Taylor Co.,	C	99.65	......	65.00	30.00	8-34	....	C	None
	Grimm Alfalfa, Lot ID16	Crawfordsville, Ind.	F	99.66	0.02	59.50	26.50	9-34	810	F	None
5401	†Crabbs Reynolds Taylor Co., Lafayette	Crabbs Reynolds Taylor Co.,	C	99.64	......	84.00	12.00	2-34	....	C	None
	Alfalfa, Lot 8FL	Crawfordsville, Ind.	F	99.64	0.28	83.50	9.50	9-34	360	F	None
5670	Crabbs Reynolds Taylor Co., Lafayette	Crabbs Reynolds Taylor Co.,	C	99.50	......	75.00	20.00	8-34	....	C	None
	Can. Variegated Alfalfa, Lot 3FM	Crawfordsville, Ind.	F	99.58	0.02	84.50	12.50	1-35	....	F	None
5674	Crabbs Reynolds Taylor Co., Lafayette	Crabbs Reynolds Taylor Co.,	C	99.60	......	80.00	10.00	8-34	....	C	None
	Alfalfa, Lot 4FN	Crawfordsville, Ind.	F	99.76	0.22	84.00	8.50	1-35	90	F	None
5772	Crabbs Reynolds Taylor Co., Lafayette	Crabbs Reynolds Taylor Co.,	C	99.50	......	75.00	18.00	1-35	....	C	None
	Blackfoot Grimm Alfalfa, Lot 403	Crawfordsville, Ind.	F	99.68	0.16	93.50	1.50	2-35	720	F	None
5475	Farmers Grain Co., Rensselaer[15]	Crabbs Reynolds Taylor Co.,	C	99.25	......	84.00	8.00	2-34	....	C	None
	Alfalfa, Lot 8FI	Crawfordsville, Ind.	F	98.68	0.92	79.50	6.50	9-34	1,310	F	Curled dock 27; dodder 23
6048	Miller Grain Co., Inc., Greencastle[16]	Crabbs Reynolds Taylor Co.,	C	99.54	......	73.00	18.00	8-34	....	C	None
	Alfalfa, Lot 8FM	Crawfordsville, Ind.	F	99.38	0.58	87.00	6.50	4-35	279	F	Horse nettle 9
5947	Newcastle Elevator Co., Newcastle	Crabbs Reynolds Taylor Co.,	C	99.62	......	85.00	7.00	1-35	....	C	None
	Alfalfa, Lot 2FO	Crawfordsville, Ind.	F	99.82	0.08	84.50	6.50	3-35	360	F	None
5950	Newcastle Elevator Co., Newcastle	Crabbs Reynolds Taylor Co.,	C	99.12	......	76.00	19.00	12-34	....	C	None
	Michigan Affidavit Grimm Alfalfa, Lot 7FN	Crawfordsville, Ind.	F	99.40	0.04	73.50	10.50	3-35	270	F	None
6039	Owen Farmers Supply Co., Spencer	Crabbs Reynolds Taylor Co.,	C	99.62	......	85.00	7.00	1-35	....	C	None
	Alfalfa, Lot 2FO	Crawfordsville, Ind.	F	99.80	0.10	83.50	8.50	4-35	720	F	None
5515	Smock & Co., W. C., Burrows	Crabbs Reynolds Taylor Co.,	C	99.66	......	80.00	12.00	8-34	....	C	None
	Alfalfa, Lot 7FM	Crawfordsville, Ind.	F	99.62	0.32	80.50	14.50	9-34	180	F	None
5803	Worthington Grain Co., Worthington	Crabbs Reynolds Taylor Co.,	C	99.12	......	76.00	19.00	12-34	....	C	None
	Michigan Affidavit Grimm Alfalfa, Lot 7FN	Crawfordsville, Ind.	F	99.00	0.16	82.50	10.50	2-35	90	F	None
5804	Worthington Grain Co., Worthington	Crabbs Reynolds Taylor Co.,	C	99.54	......	73.00	18.00	8-34	....	C	None
	Alfalfa, Lot 8FM	Crawfordsville, Ind.	F	99.50	0.44	84.00	6.00	2-35	270	F	None
5359	Crabbs Reynolds Taylor Co., Lafayette[17]	Crabbs Reynolds Taylor Co.,	C	98.41	......	69.00	27.50	7-34	....	C	None
	Variegated Common Alfalfa, Lot 502	Lafayette, Ind.	F	95.31	0.10	70.00	21.50	8-34	....	F	None
5379	Crabbs Reynolds Taylor Co., Reynolds	Crabbs Reynolds Taylor Co.,	C	99.25	......	65.00	25.00	7-34	....	C	None
	Idaho Grimm Alfalfa, Lot ID465	Lafayette, Ind.	F	99.58	0.10	77.00	8.50	8-34	1,175	F	Dodder 5
5952	Beach & Simmers, Albany	Crawfordsville Seed Co.,	C	99.75	......	90.00	5.00	1-35	....	C	None
	Alfalfa, Lot 631	Crawfordsville, Ind.	F	99.84	0.14	90.50	6.50	3-35	....	F	None
5378	Brookston Grain Corp., Elevator B, Brookston	Crawfordsville Seed Co.,	C	99.50	......	85.00	8.00	7-34	....	C	None
	Alfalfa, Lot 620	Crawfordsville, Ind.	F	99.96	0.00	91.00	2.00	8-34	90	F	None
5455	Decatur Co. Farm Bureau Co-operative Assn., Inc., Decatur	Crawfordsville Seed Co.,	C	99.25	......	80.00	10.00	7-34	....	C	None
	Grimm Alfalfa, Lot 27678	Crawfordsville, Ind.	F	99.46	0.10	70.00	19.00	9-34	720	F	None
5412	Farm Bureau Elevator & Supply Co., Crawfordsville	Crawfordsville Seed Co.,	C	99.50	......	85.00	10.00	8-34	....	C	None
	Alfalfa, Lot 629	Crawfordsville, Ind.	F	99.82	0.06	80.00	15.00	9-34	275	F	Dodder 5

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*Not labeled.

†Certified by Retailer.

C and F stands, respectively, for Claimed and Found.

[8] Distributed by Henry Burrows, Winamac, Ind.

[9] Sample secured from E. M. Lawson, R. R. 1, Gaston, Ind.

[10] Sample secured from Walter F. Knox, R. R. 4, Hartford City, Ind.

[11] Sample secured from Boone Serum Co., Thorntown, Ind.

[12] Sample secured from Leo Hood, R. R. 9, Lafayette, Ind.

[13] Sample secured from August Samuelson, R. R. 3, Plymouth, Ind.

[14] Sample secured from Raymond Robertson, R. R. 2, Fairmount, Ind.

[15] Sample secured from James Amsler, R. R. 4, Rensselaer, Ind.

[16] Distributed by Miller Grain Co., Inc., Bainbridge, Ind.

[17] Sample secured from Purdue University Poultry Department.

ALFALFA—Continued

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor	Purity, per cent	Inert Matter, per cent	Germination, per cent	Hard Seeds, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds	Number per Pound of each of the Noxious Weed Seeds Specified in the Law
5743	Farmers Elevator Co., Oakville	Crawfordsville Seed Co., C	99.70		90.00	5.00	12-34		C None
	Alfalfa, Lot 631	Crawfordsville, Ind. F	99.86	0.10	92.00	5.00	2-35	185	F Field dodder 5
5472	Hillis Feed Store, Greencastle	Crawfordsville Seed Co., C	99.50		85.00	8.00	7-34		C None
	Alfalfa, Lot 620	Crawfordsville, Ind. F	99.62	0.08	89.50	3.00	9-34	270	F None
5405	Lafayette Co-operative Elevator Co.,								
	Lafayette	Crawfordsville Seed Co., C	99.50		85.00	10.00	8-34		C None
	Alfalfa, Lot 629	Crawfordsville, Ind. F	99.66	0.14	77.00	11.00	9-34	90	F None
5406	Lafayette Co-operative Elevator Co., Lafayette	Crawfordsville Seed Co., C	99.60		80.00	10.00	7-34		C None
	Alfalfa, Lot 624	Crawfordsville, Ind. F	99.82	0.18	80.00	12.50	9-34	18	F Bracted plantain 18
6102	New Ross Grain & Lumber Co., New Ross	Crawfordsville Seed Co., C	99.78		90.00	5.00	2-35		C None
	Alfalfa, Lot 631	Crawfordsville, Ind. F	99.82	0.18	90.50	4.00	4-35		F None
6686	Russiaville Electric Hatchery, Russiaville	Davis Seed Corp., C	99.50		80.00	10.00	5-35		C None
	Common Alfalfa, Lot F574	Lebanon, Ind. F	99.88	0.00	82.50	12.50	6-35	90	F None
5427	Blanton Feed Store, Jasonville	Dickinson Co., The Albert, C	99.40		65.00	27.00	8-34		C None
	Grimm Alfalfa, Lot 27685	Chicago, Ill. F	99.48	0.16	64.00	24.00	9-34	990	F None
6436	Brown Supply Co., Valparaiso	Dickinson Co., The Albert, C	99.38		70.00	24.00	11-34		C None
	Grimm Alfalfa, Lot 27705	Chicago, Ill. F	99.16	0.28	72.00	22.00	4-35	459	F Curled dock 9
5528	†Emison Hdwe. Store, Vincennes	Dickinson Co., The Albert, C	99.20		71.00	23.00	8-34		C None
	Common Alfalfa, Lot 28357	Chicago, Ill. F	99.37	0.63	84.00	8.50	9-34		F None
6395	Farmers Grain & Supply Co., Thornhope	Dickinson Co., The Albert, C	99.54		73.00	22.00	1-35		C None
	P. O., Oak								
	Grimm Alfalfa, Lot 27731	Chicago, Ill. F	99.80	0.06	70.00	18.50	4-35	378	F Curled dock 9; dodder 9
5954	Haynes Milling Co., The, Portland	Dickinson Co., The Albert, C	99.54		73.00	22.00	1-35		C None
	Grimm Alfalfa, Lot 27731-27729	Chicago, Ill. F	99.70	0.24	71.00	16.00	3-35	90	F None
5372	Northern Indiana Coop. Assn., Mentone	Dickinson Co., The Albert, C	99.80		90.00		8-34		C None
	Grimm Alfalfa, Lot 027295	Chicago, Ill. F	99.62	0.30	89.00	2.00	8-34	180	F None
6379	Protsman & Son, G. L., Plymouth	Dickinson Co., The Albert, C	99.82		84.00	10.00	1-35		C None
	Grimm Alfalfa, Lot 27730	Chicago, Ill. F	99.88	0.10	80.00	14.50	4-35	270	F None
6380	Protsman & Son, G. L., Plymouth	Dickinson Co., The Albert, C	99.70		90.00	5.00	2-35		C None
	Common Alfalfa, Lot 28394	Chicago, Ill. F	99.84	0.10	90.00	6.50	4-35	360	F None
5351	Sowash, E. K., Crown Point	Dickinson Co., The Albert, C	99.50		82.00	11.00	7-34		C None
	Grimm Alfalfa, Lot 27666	Chicago, Ill. F	99.48	0.12	80.00	8.50	8-34	824	F Large-seeded alfalfa dodder 14;
5354	Sowash, E. K., Crown Point	Dickinson Co., The Albert, C	99.10		76.00	5.00	7-34		C None
	Alfalfa, Lot 128504-B96	Chicago, Ill. F	99.42	0.16	83.00	8.00	8-34	639	F Curled dock 9
6356	Warsaw Feed Store, Warsaw	Dickinson Co., The Albert, C	99.54		73.00	22.00	11-34		C None
	Grimm Alfalfa, Lot 27736	Chicago, Ill. F	99.80	0.16	74.00	13.50	4-35		F None
5356	Way, C. B., LaPorte	Dickinson Co., The Albert, C	99.00		81.00	12.00	7-34		C None
	Alfalfa, Lot 28322	Chicago, Ill. F	98.81	0.00	79.50	13.50	8-34	1,854	F Curled dock 54
5529	Weed Hardware, Vincennes	Dickinson Co., The Albert, C	99.52		72.00	18.00	8-34		C None
	Grimm Alfalfa, Lot 27699	Chicago, Ill. F	99.76	0.14	68.50	24.50	10-34	270	F None

			C	98.88		85.00	5.00	7-34	....	C	None
		Chicago, Ill.	F	98.90	0.36	77.50	9.00	8-34	450	F	None
	Co., Amo	Foster-Kendall Co.,	C	99.60	....	84.00	10.00	12-34	....	C	None
	Common Alfalfa	Carmel, Ind.	F	99.78	0.12	87.50	7.50	4-35	720	F	None
6115	Armstrong-Landon Co., Kokomo	Foster-Kendall Co.,	C	99.60	....	86.00	7.00	12-34	....	C	None
	Common Alfalfa	Carmel, Ind.	F	99.88	0.10	83.50	8.50	4-35	90	F	None
5735	Atlanta Grain Co., Atlanta	Foster-Kendall Co.,	C	99.60	....	88.00	7.00	12-34	....	C	None
	Common Alfalfa	Carmel, Ind.	F	99.72	0.24	86.00	9.00	2-35	180	F	None
6015	Bahler Grain & Feed Co., Galveston	Foster-Kendall Co.,	C	99.60	....	80.00	12.00	12-34	....	C	None
	Common Alfalfa	Carmel, Ind.	F	99.60	0.36	88.50	6.50	4-35	90	F	None
5985	Bash & Co., C. E., Huntington	Foster-Kendall Co.,	C	99.75	....	75.00	14.00	12-34	....	C	None
	Common Alfalfa	Carmel, Ind.	F	99.60	0.40	85.00	9.00	3-35	....	F	None
5709	Branch Grain & Seed Co., Martinsville	Foster-Kendall Co.,	C	99.60	....	78.00	13.00	12-34	....	C	None
	Common Alfalfa	Carmel, Ind.	F	99.51	0.46	86.00	10.00	2-35	90	F	None
6184	Central States Grain Assn., Morristown[18]	Foster-Kendall Co.,	C	99.54	....	80.00	13.00	12-34	....	C	None
	Common Alfalfa	Carmel, Ind.	F	99.54	0.44	80.00	14.50	4-35	90	F	None
5910	Central States Grain Assn., Shelbyville	Foster-Kendall Co.,	C	99.60	....	80.00	14.00	12-34	....	C	None
	Common Alfalfa	Carmel, Ind.	F	99.82	0.18	85.00	10.00	3-35	9	F	Buckhorn 9
6072	Farm Bureau Service, Columbus	Foster-Kendall Co.,	C	99.70	....	84.00	10.00	12-34	....	C	None
	Common Alfalfa, Lot Columbus	Carmel, Ind.	F	99.82	0.08	85.00	6.50	4-35	....	F	None
5740	Farmers Co-operative Co., Cicero	Foster-Kendall Co.,	C	99.70	....	72.00	20.00	12-34	....	C	None
	Grimm Alfalfa	Carmel, Ind.	F	99.68	0.10	81.00	14.00	2-35	90	F	None
5741	Farmers Co-operative Co., Cicero	Foster-Kendall Co.,	C	99.60	....	76.00	17.00	12-34	....	C	None
	Common Alfalfa	Carmel, Ind.	F	99.70	0.26	85.00	10.00	2-35	....	F	None
5687	Farmers Co-operative Co., Southport	Foster-Kendall Co.,	C	99.60	....	78.00	13.00	12-34	....	C	None
	Common Alfalfa	Carmel, Ind.	F	99.74	0.26	85.00	10.00	2-35	....	F	None
5362	Farmers Co-operative Co., Yorktown[19]	Foster-Kendall Co.,	C	99.56	....	75.00	14.00	6-34	....	C	None
	Common Alfalfa	Carmel, Ind.	F	99.60	0.40	50.00	42.50	8-34	....	F	None
5363	Farmers Co-operative Co., Yorktown	Foster-Kendall Co.,	C	97.05	....	80.00	10.00	6-34	....	C	Buckhorn 45
	Grimm Alfalfa	Carmel, Ind.	F	97.53	0.04	66.50	24.50	8-34	572	F	Buckhorn 135; common plantain 81; small-seeded alfalfa dodder 5; wild carrot 171
6140	Farmers Co-operative Co., Yorktown	Foster-Kendall Co.,	C	99.45	....	80.00	10.00	12-34	....	C	None
	Common Alfalfa	Carmel, Ind.	F	99.20	0.72	88.00	3.50	3-35	459	F	Curled dock 9
5667	Farmers Grain Co., Pershing	Foster-Kendall Co.,	C	99.60	....	78.00	13.00	12-34	....	C	None
	Common Alfalfa, Lot FR3	Carmel, Ind.	F	99.70	0.24	91.00	5.50	1-35	360	F	None
5711	Farmers Supply Co., Mooresville	Foster-Kendall Co.,	C	99.60	....	76.00	17.00	12-34	....	C	None
	Common Alfalfa	Carmel, Ind.	F	99.56	0.44	82.50	13.00	2-35	....	F	None
5915	Farmers Supply, Shelbyville	Foster-Kendall Co.,	C	99.90	....	75.00	20.00	12-34	....	C	None
	Grimm Alfalfa	Carmel, Ind.	F	99.76	0.16	86.00	8.00	3-35	185	F	Dodder 5
5922	Farmers Supply, Shelbyville	Foster-Kendall Co.,	C	99.75	....	82.00	10.00	11-34	....	C	None
	Common Alfalfa, Lot Bath	Carmel, Ind.	F	99.74	0.24	81.00	12.50	3-35	90	F	None
5712	Hobbs Grain Co., Hobbs	Foster-Kendall Co.,	C	99.70	....	90.00	5.00	12-34	....	C	None
	Common Alfalfa	Carmel, Ind.	F	99.68	0.28	90.00	7.00	2-35	180	F	None
6052	Karsell Co., Inc., The, Bloomington	Foster-Kendall Co.,	C	99.60	....	70.00	25.00	12-34	....	C	None
	Common Alfalfa	Carmel, Ind.	F	99.94	0.06	60.50	33.50	4-35	....	F	None
5996	King Elevator Co., Wabash	Foster-Kendall Co.,	C	99.75	....	66.00	25.00	12-34	....	C	None
	Grimm Alfalfa, Lot AF158	Carmel, Ind.	F	99.66	0.32	75.50	20.50	3-35	....	F	None

*Not labeled.

†Certified by Retailer.

C and F stands, respectively, for Claimed and Found.

[18] Distributed by Central States Grain Assn., Shelbyville, Ind.

[19] Removed from sale. Misbranded. Retagged.

ALFALFA—Continued

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, per cent	Inert Matter, per cent	Germination, per cent	Hard Seeds, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds	Number per Pound of each of the Noxious Weed Seeds Specified in the Law
6097	Lizton Grain & Lumber Co., Lizton	Foster-Kendall Co.,	C	99.70		76.00	15.00	12-34		C None
	Common Alfalfa	Carmel, Ind.	F	99.70	0.30	80.50	12.00	4-35		F None
6306	Markin Hardware Co., Eaton	Foster-Kendall Co.,	C	99.80		72.00	20.00	12-34		C None
	Grimm Alfalfa	Carmel, Ind.	F	99.68	0.20	80.00	16.50	4-35	180	F None
6310	Markin Hardware Co., Eaton	Foster-Kendall Co.,	C	99.60		86.00	7.00	12-34		C None
	Common Alfalfa	Carmel, Ind.	F	99.58	0.38	84.00	7.50	4-35	180	F None
5727	Moore Bros., Kirklin	Foster-Kendall Co.,	C	98.06		83.00	7.00	12-34		C None
	Grimm Alfalfa	Carmel, Ind.	F	97.50	0.12	81.00	10.50	2-35	108	F Buckhorn 9; Canada thistle 9
5713	Sharpsville Elevator Co., Sharpsville	Foster-Kendall Co.,	C	99.60		87.00	12.00	12-34		C None
	Common Alfalfa, Lot Dale	Carmel, Ind.	F	99.82	0.16	91.00	7.50	2-35	90	F None
5701	Shaw, W. R., Orestes	Foster-Kendall Co.,	C	99.70		90.00	5.00	12-34		C None
	Common Alfalfa	Carmel, Ind.	F	99.84	0.16	90.00	4.00	2-35		F None
5705	Shaw, W. R., Orestes	Foster-Kendall Co.,	C	99.60		70.00	17.00	12-34		C None
	Grimm Alfalfa	Carmel, Ind.	F	99.66	0.06	78.50	13.00	2-35	90	F None
6297	Standard Elevator Co., Lapel	Foster-Kendall Co.,	C	99.50		84.00	10.00	12-34		C None
	Common Alfalfa	Carmel, Ind.	F	99.60	0.40	78.50	17.00	4-35		F None
6095	Wolfram Grain Co., Brownsburg	Foster-Kendall Co.,	C	99.70		75.00	15.00	12-34		C None
	Common Alfalfa	Carmel, Ind.	F	99.80	0.20	79.50	16.50	4-35		F None
5988	Bash & Co., C. E., Huntington	Goodrich Bros. Co.,	C	99.25		80.00	12.00	2-34		C None
	Grimm Alfalfa, Lot Lark 4087	Winchester, Ind.	F	99.54	0.06	66.50	20.00	4-35	378	F Buckhorn 18
5994	Bash & Co., C. E., Huntington	Goodrich Bros. Co.,	C	99.50		82.00	14.00	11-34		C None
	Common Alfalfa, Lot Lark 564	Winchester, Ind.	F	99.78	0.18	75.50	16.00	4-35	90	F None
6307	Goodrich Bros. Co., Eaton[20]	Goodrich Bros. Co.,	C	99.18		80.00	15.00	1-35		C None
	Grimm Alfalfa, Lot 1886	Winchester, Ind.	F	99.50	0.02	79.00	16.00	4-35	495	F Quackgrass 45
6150	Goodrich Bros. Co., Farmland	Goodrich Bros. Co.,	C	99.50		80.00	14.00	12-34		C None
	Common Alfalfa, Lot Lark 564	Winchester, Ind.	F	99.72	0.16	82.00	11.00	3-35	360	F None
6156	Goodrich Bros. Co., Farmland	Goodrich Bros. Co.,	C	99.50		80.00	12.00	2-35		C None
	Common Alfalfa	Winchester, Ind.	F	99.76	0.22	91.50	3.00	4-35	99	F Curled dock 9
6305	Goodrich Bros. Co., Gaston	Goodrich Bros. Co.,	C	99.50		80.00	14.00	12-34		C None
	Common Alfalfa, Lot Lark 564	Winchester, Ind.	F	99.66	0.30	86.50	5.00	4-35	90	F None
6016	Goodrich Bros. Co., Onward	Goodrich Bros. Co.,	C	99.40		85.00	8.00	11-34		C None
	Common Alfalfa	Winchester, Ind.	F	99.90	0.06	88.50	5.00	3-35	360	F None
6019	Goodrich Bros. Co., Onward	Goodrich Bros. Co.,	C	99.25		82.00	10.00	11-34		C None
	Grimm Alfalfa, Lot Lark	Winchester, Ind.	F	99.31	0.02	79.00	12.00	3-35	639	F Buckhorn 9
6148	Graft, C. V., Winchester[21]	Graft, C. V.,	C	99.00		80.00	15.00	1-35		C None
	Grimm Alfalfa, Lot H	Winchester, Ind.	F	98.52	0.24	51.50	43.50	4-35	1,260	F None
5532	Heldt & Voelker Co., Evansville	Heldt Co., The,	C	99.52		80.00	11.00	8-34		C None
	Thelco Alfalfa, Lot 3029	Evansville, Ind.	F	99.56	0.40	74.00	14.50	10-34	90	F None
5554	Heldt Co., The, Evansville	Heldt Co., The,	C	99.52		79.00	12.00	8-34		C None
	Oklahoma Alfalfa, Lot 3041	Evansville, Ind.	F	99.56	0.40	82.00	9.00	9-34	185	F Dodder 5

5862	Heldt Co., The, Evansville	Heldt Co., The,	C	99.71	......	80.00	11.00	8-34	....	C None
	Alfalfa, Lot 3040	Evansville, Ind.	F	99.84	0.14	89.00	8.00	3-35	90	F None
5874	Kindermann's Sons, Wm., Boonville	Heldt Co., The,	C	99.52	......	82.00	9.00	8-34	....	C None
	Alfalfa, Lot 3041	Evansville, Ind.	F	99.58	0.40	89.00	3.00	3-35	189	F Horse nettle 9
5535	McCarty Hdwe. Co., Fort Branch	Heldt Co., The,	C	99.40	......	80.00	12.00	8-34	....	C None
	Alfalfa, Lot 3030	Evansville, Ind.	F	99.44	0.54	68.50	15.50	10-34	180	F None
5550	Tri-County Farm Bureau Coop. Assn., Inc., Mount Vernon	Heldt Co., The,	C	99.52	......	80.00	11.00	8-34	....	C None
	Alfalfa, Lot 3029	Evansville, Ind.	F	99.60	0.40	77.00	11.50	9-34	....	F None
6389	†Co-operative Elevator Co., Winamac[22]	Hirsch & Sons, Henry,	C	99.10	......	81.00	10.00	1-35	....	C None
	Grimm Alfalfa, Lot 6853	Toledo, Ohio	F	99.16	0.24	49.50	45.00	4-35	1,710	F Buckhorn 45; common plantain 135
6394	Farmers Grain & Supply Co., Thornhope, P. O., Oak	Hirsch & Sons, Henry,	C	99.00	......	74.00	19.00	1-35	....	C None
	Affidavit Grimm Alfalfa, Lot 6843	Toledo, Ohio	F	99.24	0.06	62.50	30.50	4-35	810	F None
6330	Russell, J. A., Elkhart	Hirsch & Sons, Henry,	C	99.75	......	83.00	13.00	12-34	....	C None
	Affidavit Grimm Alfalfa, Lot 6388	Toledo, Ohio	F	99.64	0.16	80.50	10.00	4-35	189	F Curled dock 9
5348	Holser & Co., B. I., Walkerton	Holser & Co., B. I.,	C	96.24	......	85.00	7.00	6-34	....	C None
	Michigan Grimm Alfalfa, Lot 5	Walkerton, Ind.	F	95.69	0.12	76.50	13.00	8-34	333	F Buckhorn 63
6114	Armstrong-Landon Co., Kokomo[21]	Hooton-Davis Seed Corp.,	C	98.50	......	75.00	15.00	11-34	....	C None
	Grimm Alfalfa, Lot G536	Lebanon, Ind.	F	97.42	0.38	57.50	31.50	4-35	1,935	F Buckhorn 63; common plantain 45; wild carrot 27
6118	Armstrong-Landon Co., Kokomo	Hooton-Davis Seed Corp.,	C	99.50	......	80.00	10.00	11-34	....	C None
	Alfalfa, Lot F66A	Lebanon, Ind.	F	99.84	0.16	87.00	7.00	4-35	....	F None
5802	Bloomfield Mill & Elevator Co., Bloomfield	Hooton-Davis Seed Corp.,	C	97.60	......	75.00	15.00	1-35	....	C None
	Grimm Alfalfa, Lot G534	Lebanon, Ind.	F	97.58	0.42	51.50	33.00	2-35	450	F None
5384	Burnettsville Elevator Co., Burnettsville	Hooton-Davis Seed Corp.,	C	99.50	......	75.00	15.00	3-34	....	C None
	Grimm Alfalfa, Lot G505	Lebanon, Ind.	F	99.80	0.16	68.00	25.50	9-34	....	F None
5645	Clay Co. Farm Bureau Coop. Assn., Inc., Clay City	Hooton-Davis Seed Corp.,	C	99.50	......	75.00	15.00	8-34	....	C None
	Common Alfalfa, Lot 66	Lebanon, Ind.	F	99.64	0.32	86.00	8.00	1-35	189	F Buckhorn 9
6511	Cloverdale Hdwe. & Lumber Co., Cloverdale	Hooton-Davis Seed Corp.,	C	97.50	......	64.00	26.00	1-35	....	C None
	Grimm Alfalfa, Lot G625	Lebanon, Ind.	F	97.47	0.36	63.00	22.00	4-35	1,175	F Buckhorn 9; common plantain 36; dodder 14; wild carrot 18; yellow trefoil 18
6309	Farmers Co-operative Co., Matthews	Hooton-Davis Seed Corp.,	C	99.50	......	80.00	10.00	1-35	....	C None
	Kansas Alfalfa, Lot F511	Lebanon, Ind.	F	99.74	0.22	87.00	5.50	4-35	90	F None
6124	Farmers Co-operative Co., Sheridan	Hooton-Davis Seed Corp.,	C	99.50	......	80.00	10.00	11-34	....	C None
	Alfalfa, Lot F66A	Lebanon, Ind.	F	99.72	0.26	86.00	5.00	3-35	9	F Dodder 9
6192	Farmers Supply Co., Danville	Hooton-Davis Seed Corp.,	C	99.50	......	88.00	8.00	1-35	....	C None
	Common Alfalfa, Lot F511	Lebanon, Ind.	F	99.56	0.40	93.00	4.00	4-35	90	F None
5935	Frazier & Sanders, Newcastle	Hooton-Davis Seed Corp.,	C	99.50	......	80.00	10.00	1-35	....	C None
	Alfalfa, Lot F66A	Lebanon, Ind.	F	99.74	0.26	90.50	2.00	3-35	....	F None
6315	Hartford City Milling Co., Hartford City	Hooton-Davis Seed Corp.,	C	99.50	......	75.00	20.00	1-35	....	C None
	Grimm Alfalfa, Lot G540	Lebanon, Ind.	F	99.78	0.16	65.50	31.50	4-35	99	F Curled dock 9

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*Not labeled.

†Certified by Retailer.

C and F stands, respectively, for Claimed and Found.

[20] Removed from sale. Misbranded. Retagged.

[21] Removed from sale. Misbranded. Retagged.

[22] Removed from sale. Misbranded. All sold.

[23] Removed from sale. Misbranded. All sold.

ALFALFA—Continued

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, per cent	Inert Matter, per cent	Germination, per cent	Hard Seeds, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds	Number per Pound of each of the Noxious Weed Seeds Specified in the Law
5565	Hemlock Grain Co., Hemlock Alfalfa, Lot 66	Hooton-Davis Seed Corp., Lebanon, Ind.	C	99.50		75.00	25.00	8-34		C None
			F	99.84	0.12	87.50	9.50	10-34	180	F None
6022	Hillis Feed Store, Greencastle Alfalfa, Lot 66A	Hooton-Davis Seed Corp., Lebanon, Ind.	C	99.50		80.00	10.00	11-34		C None
			F	99.98	0.02	87.00	7.50	4-35		F None
6507	Ragsdale & Co., Chas., Bedford Common Alfalfa, Lot F511	Hooton-Davis Seed Corp., Lebanon, Ind.	C	99.50		80.00	10.00	1-35		C None
			F	99.62	0.34	90.50	2.50	4-35	189	F Horse nettle 9
6005	Santa Fe Elevator Co., Santa Fe, P. O., Peru Grimm Alfalfa, Lot G540	Hooton-Davis Seed Corp., Lebanon, Ind.	C	99.50		75.00	15.00	1-35		C None
			F	99.88	0.08	66.00	30.50	3-35	117	F Curled dock 27
5360	Weer, F. W., Anderson Common Alfalfa, Lot F471	Hooton-Davis Seed Corp., Lebanon, Ind.	C	99.25		75.00	12.00	3-34		C None
			F	99.64	0.36	85.50	9.50	8-34		F None
5361	Weer, F. W., Anderson Grimm Alfalfa, Lot 495	Hooton-Davis Seed Corp., Lebanon, Ind.	C	98.00		75.00	15.00	3-34		C None
			F	99.45	0.04	68.00	18.00	8-34	9	F Curled dock 9
6136	Weer, F. W., Anderson Common Alfalfa, Lot F511	Hooton-Davis Seed Corp., Lebanon, Ind.	C	99.50		75.00	15.00	1-35		C None
			F	99.72	0.28	88.00	3.00	3-35		F None
6142	Weer, F. W., Anderson Grimm Alfalfa, Lot G540	Hooton-Davis Seed Corp., Lebanon, Ind.	C	99.50		75.00	15.00	1-35		C None
			F	99.84	0.12	61.50	30.50	4-35	18	F Curled dock 18
6128	Woodbury-Elliott Grain Co., Muncie Alfalfa, Lot F511	Hooton-Davis Seed Corp., Lebanon, Ind.	C	99.50		80.00	10.00	1-35		C None
			F	99.76	0.18	90.50	6.00	3-35	270	F None
5657	Wynn, Arlie S., Rochester Grimm Alfalfa	Hooton-Davis Seed Corp., Lebanon, Ind.	C	95.00		75.00	15.00	8-34		C None
			F	94.00	0.20	76.50	10.50	1-35	387	F Buckhorn 117
5381	Clinton Co. Farm Bureau Co-op., Assn. Inc., Frankfort Grimm Alfalfa, Lot 2353	Indiana Farm Bureau Co-op. Assn., Inc. Indianapolis, Ind.	C	99.53		75.00	20.00	4-34		C None
			F	99.78	0.06	80.00	7.50	8-34	540	F None
5526	Daviess Co. Farm Bureau Co-op. Assn., Inc., Washington Cossack Alfalfa, Lot 2340	Indiana Farm Bureau Co-op. Assn., Inc., Indianapolis, Ind.	C	99.50		78.00	12.00	4-34		C None
			F	99.80	0.12	92.00	1.00	9-34	90	F None
6229	Dekalb Co. Farm Bureau Co-op. Assn., Inc., Auburn Common Alfalfa, Lot 2723	Indiana Farm Bureau Co-op. Assn., Inc., Indianapolis, Ind.	C	99.50		80.00	14.00	12-34		C None
			F	99.86	0.12	84.00	12.00	4-35	90	F None
6235	Dekalb Co. Farm Bureau Co-op. Assn., Inc., Auburn Blue Tag Grimm Alfalfa, Lot 3190	Indiana Farm Bureau Co-op. Assn., Inc., Indianapolis, Ind.	C	99.50		75.00	20.00	12-34		C None
			F	99.78	0.08	74.00	22.50	4-35	909	F Curled dock 9
6334	Elkhart Co. Farm Bureau Co-op. Assn., Inc., Goshen Common Alfalfa, Lot 2836	Indiana Farm Bureau Co-op. Assn., Inc., Indianapolis, Ind.	C	99.50		85.00	10.00	12-34		C None
			F	99.66	0.28	78.00	16.00	4-35	180	F None
6339	Elkhart Co. Farm Bureau Co-op. Assn., Inc., Goshen Common Alfalfa, Lot 2723	Indiana Farm Bureau Co-op. Assn., Inc., Indianapolis, Ind.	C	99.50		80.00	14.00	12-34		C None
			F	99.76	0.20	87.00	9.00	4-35	99	F Curled dock 9
5531	Gibson Co. Shipping Assn., Princeton Common Alfalfa, Lot CA2368	Indiana Farm Bureau Co-op. Assn., Inc., Indianapolis, Ind.	C	99.50		80.00	14.00	4-34		C None
			F	99.38	0.30	74.00	14.50	9-34	1,103	F Dodder 23

6106	Howard Co. Farm Bureau Co-op. Assn., Inc., Kokomo Common Alfalfa, Lot 2351	Indiana Farm Bureau Co-op. Assn., Inc.,	C	99.50		85.00	10.00	12-34		C	None
		Indianapolis, Ind.	F	99.84	0.12	85.50	7.50	4-35	189	F	Dodder 9
6117	Howard Co. Farm Bureau Co-op. Assn., Inc., Kokomo Grimm Alfalfa, Lot 3190	Indiana Farm Bureau Co-op. Assn., Inc.,	C	99.50		75.00	20.00	12-34		C	None
		Indianapolis, Ind.	F	99.78	0.20	66.00	31.00	4-35	1,377	F	Curled dock 27
5430	Lawrence Co. Farm Bureau Co-op. Assn., Inc., Bedford Common Alfalfa, Lot CA2338	Indiana Farm Bureau Co-op. Assn., Inc.,	C	99.50		78.00	15.00	4-34		C	None
		Indianapolis, Ind.	F	99.68	0.12	78.50	16.00	9-34	270	F	None
6734	St. Joseph Co. Farm Bureau Co-op. Assn., Inc., South Bend Grimm Alfalfa, Lot 2367	Indiana Farm Bureau Co-op. Assn., Inc.,	C	99.50		76.00	20.00	4-34		C	None
		Indianapolis, Ind.	F	99.78	0.06	91.00	2.50	7-35	360	F	None
5436	Sullivan Co. Farm Bureau Co-op. Assn., Inc., Sullivan Grimm Alfalfa, Lot 2361	Indiana Farm Bureau Co-op. Assn., Inc.,	C	99.50		78.00	15.00	4-34		C	None
		Indianapolis, Ind.	F	99.88	0.00	75.50	15.00	9-34	360	F	None
5352	Tippecanoe Co. Farm Bureau Co-op. Assn., Inc., Lafayette Common Alfalfa, Lot CA881	Indiana Farm Bureau Co-op. Assn., Inc.,	C	99.50		80.00	14.00	4-34		C	None
		Indianapolis, Ind.	F	99.70	0.04	77.50	10.00	8-34	189	F	Buckhorn 9
5353	Tippecanoe Co. Farm Bureau Co-op. Assn., Inc., Lafayette Grimm Alfalfa, Lot 2335	Indiana Farm Bureau Co-op. Assn., Inc.,	C	99.50		75.00	20.00	4-34		C	None
		Indianapolis, Ind.	F	99.82	0.18	80.00	12.50	8-34		F	None
5399	Tippecanoe Co. Farm Bureau Co-op. Assn., Inc., Lafayette Common Alfalfa, Lot CA2338	Indiana Farm Bureau Co-op. Assn., Inc.,	C	99.50		85.00	7.00	4-34		C	None
		Indianapolis, Ind.	F	99.84	0.10	73.00	20.50	9-34	180	F	None
5404	Tippecanoe Co. Farm Bureau Co-op. Assn., Inc., Lafayette[24] Common Alfalfa, Lot GA2343	Indiana Farm Bureau Co-op. Assn., Inc.,	C	99.75		87.00	7.00	4-34		C	None
		Indianapolis, Ind.	F	98.70	0.16	75.50	19.00	9-34	180	F	None
5480	Whitley Co. Farm Bureau Co-op. Assn., Inc., Columbia City Grimm Alfalfa, Lot 2361	Indiana Farm Bureau Co-op. Assn., Inc.,	C	99.50		78.00	15.00	4-34		C	None
		Indianapolis, Ind.	F	99.74	0.16	77.50	16.00	9-34	270	F	None
6205	Whitley Co. Farm Bureau Co-op. Assn., Inc., Columbia City Blue Tag Grimm Alfalfa, Lot 3190	Indiana Farm Bureau Co-op. Assn., Inc.,	C	99.50		75.00	20.00	12-34		C	None
		Indianapolis, Ind.	F	99.86	0.02	67.00	26.50	4-35	738	F	Curled dock 18
6208	Whitley Co. Farm Bureau Co-op. Assn., Inc., Columbia City Common Alfalfa, Lot 2723	Indiana Farm Bureau Co-op. Assn., Inc.,	C	99.50		80.00	14.00	12-34		C	None
		Indianapolis, Ind.	F	99.66	0.32	80.50	15.00	4-35		F	None
5844	Adams and Morrow, Inc., Princeton Common Alfalfa, Lot E13	Indiana Seed Co.,	C	99.60		84.00	7.00	9-34		C	None
		Indianapolis, Ind.	F	99.82	0.14	88.50	7.50	2-35	189	F	Bracted plantain 9
5419	Allan, J. P., Farmersburg Common Alfalfa, Lot 360	Indiana Seed Co.,	C	99.70		85.00	7.00	7-34		C	None
		Indianapolis, Ind.	F	99.86	0.08	82.50	7.50	9-34	189	F	Bracted plantain 9
6605	Bash Seed Store, Indianapolis Common Alfalfa, Lot P151	Indiana Seed Co.,	C	99.60		80.00	12.00	1-35		C	None
		Indianapolis, Ind.	F	99.84	0.10	82.50	12.50	4-35	180	F	None
5708	Branch Grain and Seed Co., Martinsville Common Alfalfa, Lot A82	Indiana Seed Co.,	C	99.50		81.00	11.00	12-34		C	None
		Indianapolis, Ind.	F	99.78	0.08	92.00	2.50	2-35	369	F	Buckhorn 9
5454	Decatur Co. Farm Bureau Co-op. Assn., Inc., Decatur Grimm Alfalfa, Lot UB12	Indiana Seed Co.,	C	99.60		82.00	10.00	7-34		C	None
		Indianapolis, Ind.	F	99.90	0.10	78.50	11.00	9-34		F	None
5422	Farmers Co-op. Elevator Co., Clay City Common Alfalfa, Lot A360	Indiana Seed Co.,	C	99.70		85.00	7.00	7-34		C	None
		Indianapolis, Ind.	F	99.78	0.16	87.00	9.00	9-34	180	F	None

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*Not labeled.

†Certified by Retailer.

C and F stands, respectively, for Claimed and Found.

[24] Removed from sale. Misbranded. All sold.

ALFALFA—Continued

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, per cent	Inert Matter, per cent	Germination, per cent	Hard Seeds, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds	Number per Pound of each of the Noxious Weed Seeds Specified in the Law
5722	Farmers Grain and Coal Co., Frankton	Indiana Seed Co.,	C	99.60	.....	84.00	7.00	9-34	.....	C None
	Common Alfalfa, Lot E13	Indianapolis, Ind.	F	99.76	0.20	85.00	9.00	2-35	189	F Buckhorn 9
5724	Farmers Grain and Coal Co., Frankton[26]	Indiana Seed Co.,	C	99.50	. .	84.00	7.00	12-34	......	C None
	Grimm Alfalfa, Lot 1102	Indianapolis, Ind.	F	99.70	0.16	85.00	10.00	2-35	450	F None
6296	G. & M. Feed & Seed Co., Muncie	Indiana Seed Co.,	C	99.50	....	81.00	11.00	1-35	.....	C None
	Common Alfalfa, Lot A82	Indianapolis, Ind.	F	99.80	0.12	93.50	2.00	4-35	360	F None
5795	Pioneer Elevator Co., Worthington	Indiana Seed Co.,	C	99.50	....	81.00	11.00	12-34	....	C None
	Common Alfalfa, Lot A82	Indianapolis, Ind.	F	99.66	0.20	94.00	1.00	2-35	360	F None
5463	Sample, John L., Madison	Indiana Seed Co.,	C	99.70	..	81.00	4.00	5-34	....	C None
	Common Alfalfa, Lot A360	Indianapolis, Ind.	F	99.76	0.20	81.50	12.50	9-34	90	F None
6186	Springer, W. D., Gwynneville	Indiana Seed Co.,	C	99.50	. .	81.00	11.00	12-34	.	C None
	Common Alfalfa, Lot A82	Indianapolis, Ind.	F	99.88	0.04	87.50	1.00	4-35	90	F None
6299	W. S. Wisehart, Millville	Indiana Seed Co.,	C	99.60	.	84.00	7.00	1-35	....	C None
	Common Alfalfa, Lot E13	Indianapolis, Ind.	F	99.78	0.18	90.00	5.50	4-35	90	F None
5588	*Steuben Co. Farm Bureau Co-op. Assn., Inc.,									
	Angola	Isbell Seed Co.,	C	99.80	.	75.00	22.00	10-34	.	C None
	Michigan Grimm Alfalfa, Lot 1	Jackson, Mich.	F	99.56	0.12	67.50	21.00	12-34	99	F Curled dock 9
5345	Knapp, C. E., South Bend[26]	King & Sons, Inc., H. C.,	C	. .	. .	.	. . .	.	....	C
	Michigan Grimm Alfalfa, Lot B263	Battle Creek, Mich.	F	98.81	0.00	78.50	14.00	7-34	......	F None
5754	Knapp, C. E., South Bend	King & Sons, Inc., H. C.,	C	99.50	.....	80.00	16.00	8-34	.	C None
	Common Alfalfa, Lot 3160	Battle Creek, Mich.	F	99.56	0.38	88.50	6.00	2-35	180	F None
5700	Farmers Co-operative Co., Shideler	Kraus, Sam,	C	99.50	. ..	82.00	5.00	10-34	.. .	C None
	Common Alfalfa, Lot E2	Fort Wayne, Ind.	F	99.82	0.16	84.00	11.50	2-35	90	F None
6329	Wakarusa Milling Co., Wakarusa[27]	Kraus, Sam,	C	99.50	...	80.00	5.00	10-34	...	C None
	Grimm Alfalfa, Lot E6Par	Fort Wayne, Ind.	F	99.74	0.12	55.00	36.00	3-35	90	F None
5421	Ragsdale & Co., Chas., Bedford	Lewis Implement & Seed Co.,	C	99.50	. . .	80.00	14.00	6-34	..	C None
	Kansas Alfalfa, Lot 4	Louisville, Ky.	F	99.82	0.14	73.00	16.00	9-34	104	F Curled dock 9; dodder 5
5451	Sample, John L., Madison	Lewis Implement & Seed Co.,	C	99.50	...	80.00	12.00	6-34	. .	C None
	Alfalfa Clover, Lot Red Bird 3	Louisville, Ky.	F	99.80	0.16	75.00	16.00	9-34	90	F None
5551	McCarty Seed Co., J. A., Evansville	McCarty Seed Co., J. A.,	C	99.50	......	71.50	...	7-34		C None
	Kansas Alfalfa, Lot 1105A	Evansville, Ind.	F	99.80	0.18	81.50	10.00	9-34	90	F None
5849	Mount Vernon Feed & Seed Co., Mount									
	Vernon	McCarty Seed Co., J. A.,	C	99.50	......	71.50	......	7-34	....	C None
	Kansas Alfalfa, Lot 1105A	Evansville, Ind.	F	99.58	0.34	91.50	6.50	2-35	450	F None
6164	Doerflein, Chas. E., Cedar Grove	McCullough Seed Co., The J. Chas.,	C	99.75	...	73.00	25.00	12-34	....	C None
	Kansas Common Alfalfa, Lot 1730	Cincinnati, Ohio	F	99.88	0.10	89.50	5.00	4-35	90	F None
6173	Masters, Chas. L., Brookville	McCullough Seed Co., The J. Chas.,	C	99.80	. ..	73.00	25.00	12-34	. ...	C None
	Kansas Common Alfalfa, Lot 1739	Cincinnati, Ohio	F	99.92	0.04	89.50	6.00	4-35	.. ...	F None
6550	Gaudin Hardware, Geo., Vevay	McCullough's Sons Co., The J. M.,	C	99.64	.	86.00	5.00	1-35	. .	C None
	Alfalfa, Lot 1452	Cincinnati, Ohio	F	99.44	0.08	82.50	7.50	4-35	2,070	F None

6572	McMahan Seed Co., Valparaiso[28]	McMahan Seed Co.,	C	99.45		83.00	12.00	1-35		C	None
	Alfalfa, No. 12, Lot SD	Valparaiso, Ind.	F	99.54	0.30	78.00	11.00	4-35	90	F	None
5464	Eckert & Palmer, Osgood[29]	Market Gardeners' Seed Co., The,	C	99.90		90.00	3.00	8-34		C	None
	Grimm Alfalfa, Lot 8119	Cincinnati, Ohio	F	98.39	1.59	76.00	9.50	9-34	90	F	None
6549	Gibson's Sons Co., G. B., Rising Sun	Market Gardeners' Seed Co., The,	C	99.44		92.00	4.00	8-34		C	None
	Alfalfa, Lot 8119	Cincinnati, Ohio	F	99.58	0.40	90.50	2.50	4-35		F	None
6559	*Schlemmer Feed Store, Lawrenceburg	Market Gardeners' Seed Co., The,	C	99.40		87.00	7.00	12-34		C	None
	Alfalfa, Lot 8119A	Cincinnati, Ohio	F	99.52	0.48	83.00	9.00	4-35		F	None
5374	Farmers Co-operative Elevator, Rochester	Mayer Grain Co.,	C	99.25		74.00	16.00	3-34		C	Buckhorn 90
	Grimm Alfalfa, Lot P	South Whitley, Ind.	F	99.40	0.24	81.00	12.00	8-34	207	F	Buckhorn 90; common plantain 18; wild carrot 9
5492	Mayer Grain Co., Roann[30]	Mayer Grain Co.,	C	99.50		82.00	12.00	8-34		C	None
	Grimm Alfalfa	South Whitley, Ind.	F	99.54	0.28	66.50	17.50	10-34	639	F	Curled dock 9
5494	Mayer Grain Co., Roann	Mayer Grain Co.,	C	99.40		76.00	14.00	4-34		C	None
	Grimm Alfalfa	South Whitley, Ind.	F	99.24	0.14	69.50	18.00	9-34	18	F	Buckhorn 18
5518	Mayer Grain Co., South Whitley	Mayer Grain Co.,	C	99.50		80.00	12.00	7-34		C	None
	Alfalfa, Lot D96	South Whitley, Ind.	F	99.94	0.06	79.00	16.50	9-34		F	None
6492	Farmers Co-operative Elevator, Seymour	National Seed Co.,	C	99.50		93.00		10-34		C	None
	Kansas Alfalfa	Louisville, Ky.	F	99.15	0.65	89.00	2.00	4-35	909	F	Bracted plantain 36; buckhorn 36; curled dock 27
5683	†Carman Supply Co., Lynn	New Paris Elevator Co.,	C	99.50		87.00	7.00	7-34		C	None
	Common Alfalfa, Lot C2	New Paris, Ohio	F	99.68	0.24	91.50	4.50	2-35	360	F	None
5702	Farmers Co-operative Co., Shideler[31]	Northern Field Seed Co.,	C							C	
	Rocky Mountain Alfalfa, Lot B115	Winona, Minn.	F	99.00	0.20	81.00	10.50	2-35	2,061	F	Dodder 351
6725	†Foster-Kendall Co., Carmel	Northrup, King & Co.,	C	99.50		75.00	20.00	-35		C	None
	Grimm Alfalfa, Lot AG960	Minneapolis, Minn.	F	99.52	0.08	72.50	20.00	6-35	108	F	Large-seeded alfalfa dodder 18
5833	Daviess Co. Farm Bureau Co-op. Assn., Inc., Washington	Purcell Seed Co.,	C	99.50		82.00	8.50	11-34		C	None
	Kansas Common Alfalfa, Lot 3105	Evansville, Ind.	F	99.32	0.52	89.00	5.50	2-35	720	F	None
5544	Greenwood & Co., Washington	Purcell Seed Co.,	C	99.50		82.00	3.00	7-34		C	None
	Tru Val Alfalfa, Lot 3090	Evansville, Ind.	F	99.48	0.32	84.00	5.00	9-34	540	F	None
5523	Marvel, Byron O., Owensville	Purcell Seed Co.,	C	99.50		82.00	3.00	7-34		C	None
	Tru Val Alfalfa, Lot 3090	Evansville, Ind.	F	99.72	0.16	83.50	6.50	9-34	546	F	Dodder 6
5426	Scott Hardware, Newberry[32]	Purcell Seed Co.,	C	99.00		78.00	6.00	4-34		C	None
	Judge Kansas Alfalfa, Lot 2900	Evansville, Ind.	F	99.86	0.14	90.00	5.50	9-34		F	None
5536	Walker, W. A., Loogootee	Purcell Seed Co.,	C	99.50		89.50	4.00	7-34		C	None
	Tru Val Alfalfa, Lot 3084	Evansville, Ind.	F	99.56	0.20	85.00	4.00	9-34	725	F	Dodder 5
6081	Records, James L., Edinburg	Ross Seed Co.,	C	99.50		66.00	31.00	10-34		C	None
	Alfalfa, Lot MG3418	Louisville, Ky.	F	99.94	0.06	91.50	4.00	4-35		F	None
5443	Sample, John L., Madison	Ross Seed Co.,	C	99.50		70.00	20.00	8-34		C	None
	Alfalfa, Lot 938	Louisville, Ky.	F	99.68	0.30	77.00	16.00	9-34	90	F	None
5469	Sample, John L., Madison	Ross Seed Co.,	C	99.52		80.00	11.00	5-34		C	None
	Grimm Alfalfa, Lot 5217	Louisville, Ky.	F	99.58	0.24	84.50	4.50	9-34	450	F	None
5416	Linton Hdwe. Co., Linton[33]	Schultz Seed Co., J. M.,	C	99.50		90.00		8-34		C	None
	Affidavit Grimm Alfalfa	Dieterich, Ill.	F	99.34	0.66	72.00	20.50	9-34	5	F	Dodder 5

*Not labeled.
†Certified by Retailer.
C and F stands, respectively, for Claimed and Found.

[25] Distributed by Foster-Kendall Co., Carmel, Ind.
[26] Not tagged. Labels furnished.
[27] Removed from sale. Misbranded. Returned to distributor.
[28] Sample secured from A. W. Clark, Chicago, Ill., and Joe Dowd, R. R. 1, Wanatah, Ind.
[29] Removed from sale. Misbranded. Retagged.
[30] Removed from sale. Misbranded. Retagged.
[31] Not tagged. Labels furnished. Distributed by Sam Kraus, Fort Wayne, Ind.
[32] Not tagged. Labels furnished.
[33] Removed from sale. Misbranded. Retagged.

ALFALFA—Continued

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, per cent	Inert Matter, per cent	Germination, per cent	Hard Seeds, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds		Number per Pound of each of the Noxious Weed Seeds Specified in the Law
6412	Linton Hdwe. Co., Linton[34]	Schultz Seed Co., J. M.,	C	99.80	....	92.00	....	2-35	....	C	None
	Grimm Alfalfa	Dieterich, Ill.	F	99.22	0.16	65.00	25.00	3-35	180	F	None
6479	†Graf, C. L., New Albany	Scott Seed Co.,	C	99.50	....	80.00	14.00	1-35	....	C	None
	Alfalfa, Lot 1525	New Albany, Ind.	F	99.78	0.22	85.50	6.00	4-35	....	F	None
5664	Hazelrigg, J. S., Cambridge City	Scott Seed Co.,	C	99.50	....	80.00	12.00	10-34	....	C	None
	Alfalfa, Lot 1517	New Albany, Ind.	F	99.72	0.28	82.50	10.00	1-35	....	F	None
6481	James Seed Store, Jeffersonville	Scott Seed Co.,	C	99.00	....	80.00	10.00	10-34	....	C	None
	Alfalfa, Lot 1510	New Albany, Ind.	F	99.54	0.46	85.00	12.50	4-35	....	F	None
5341	Menaugh, Will H., Osceola	Standard Seed Co.,	C	99.50	....	92.00	5.00	4-34	....	C	None
	Common Alfalfa, Lot 10198	Chicago, Ill.	F	98.94	0.42	80.00	9.00	8-34	2,610	F	None
6663	Rochester Co-op. Elevator Co., Rochester	Standard Seed Co.,	C	99.50	....	82.00	10.00	3-35	....	C	None
	Grimm Alfalfa, Lot 10519	Chicago, Ill.	F	99.43	0.35	77.50	13.00	5-35	360	F	None
6664	Rochester Co-op. Elevator Co., Rochester	Standard Seed Co.,	C	99.60	....	84.00	8.00	3-35	....	C	None
	Alfalfa, Lot 10416	Chicago, Ill.	F	99.82	0.14	84.00	7.50	5-35	270	F	None
6444	Roper & Brown, Inc., Hobart	Standard Seed Co.,	C	99.60	....	82.00	10.00	1-35	....	C	None
	Alfalfa, Lot 10324	Chicago, Ill.	F	99.58	0.36	85.00	6.00	3-35	360	F	None
6445	Roper & Brown, Inc., Hobart	Standard Seed Co.,	C	99.50	....	82.00	11.00	1-35	....	C	None
	Alfalfa, Lot 10410	Chicago, Ill.	F	99.38	0.26	83.50	6.00	3-35	270	F	None
6285	*Brown, Harlen M., R. R. 3, Newcastle[35]	Standard Seed Co.,	C	....	....	....	....	....	....	C	
	Alfalfa	Kansas City, Mo.	F	99.74	0.06	81.00	7.00	3-35	185	F	Dodder 5
6328	Russell, J. A., Elkhart	Standard Seed Co.,	C	99.80	....	92.00	....	12-34	....	C	None
	Alfalfa	Kansas City, Mo.	F	99.72	0.20	86.50	7.00	3-35	90	F	None
6274	*Standard Seed Co., Kansas City, Mo.[36]	Standard Seed Co.,	C	....	....	....	....	....	....	C	
	Common Alfalfa	Kansas City, Mo.	F	93.61	4.04	45.50	7.50	3-35	11,079	F	Bracted plantain 9; curled dock 27; dodder 99; horse nettle 99; mustard 18; prickly lettuce 9; red sorrel 9; yellow trefoil 9
6282	*Standard Seed Co., Kansas City, Mo.[37]	Standard Seed Co.,	C	....	....	....	....	....	....	C	
	Choice Alfalfa	Kansas City, Mo.	F	95.78	2.74	63.00	7.50	3-35	6,606	F	Buckhorn 18; curled dock 54; dodder 45; horse nettle 9
6247	Steuben Co. Farm Bureau Co-op. Assn., Inc., Pleasant Lake	Steuben Co. Farm Bureau Co-op. Assn., Inc.	C	99.21	....	62.00	33.00	2-34	....	C	None
	Alfalfa, Lot 69401	Pleasant Lake, Ind.	F	99.80	0.04	62.00	34.50	4-35	9	F	Buckhorn 9
6405	Graham Grain & Supply Co., Terre Haute[38]	Sunshine Feed Store,	C	99.80	....	91.00	5.00	1-35	....	C	None
	Grimm Alfalfa, Lot P299	Terre Haute, Ind.	F	99.96	0.02	78.50	16.50	4-35	90	F	None
6573	†Syler, Clay, North Manchester[39]	Syler & Syler,	C	99.00	....	88.00	....	1-35	....	C	None
	Affidavit Grimm Alfalfa	Nappanee, Ind.	F	97.82	0.32	82.50	9.00	4-35	1,854	F	Buckhorn 99; curled dock 27; dodder 279; red sorrel 9

574	†Syler, Clay, North Manchester[40]	Syler & Syler,	C	99.70	......	83.00	10.00	1-35	....	C Dodder 540
	Affidavit Grimm Alfalfa	Nappanee, Ind.	F	98.07	0.34	79.50	6.00	5-35	1,287	F Buckhorn 81; Canada thistle 9; curled dock 9; dodder 360; red sorrel 9; wild carrot 9
6355	Syler & Syler, Nappanee[41]	Syler & Syler,	C	99.00	......	90.00	......	1-35	....	C None
	Grimm Alfalfa	Nappanee, Ind.	F	98.02	0.25	84.00	7.00	4-35	1,566	F Buckhorn 27; chicory 9; common plantain 36; curled dock 18; dodder 180; large-seeded alfalfa dodder 18; red sorrel 9; yellow trefoil 9
6616	†Foster-Kendall Co., Carmel	Syler & Syler,	C	99.50	......	84.00	10.00	2-35	....	C None
	Grimm Alfalfa, Lot G	Plymouth, Ind.	F	99.54	0.32	68.00	27.00	4-35	95	F Dodder 5
5375	Rochester Co-op. Elevator Co., Rochester	Syler & Syler,	C	99.00	......	85.00	8.00	7-34	......	C None
	Grimm Alfalfa, Lot 122	Plymouth, Ind.	F	99.16	0.00	76.00	15.00	8-34	....	F None
5755	Troyer Seed Co., Goshen	Syler & Syler,	C	99.33	....	87.00	7.00	9-34	....	C None
	Idaho Affidavit Grimm Alfalfa, Lot AF158	Plymouth, Ind.	F	99.70	0.22	80.50	14.50	2-35	....	F None
5391	Wilson Grain & Coal Co., Rochester	Syler & Syler,	C	99.00	..	85.00	8.00	7-34	..	C None
	Grimm Alfalfa, Lot 122	Plymouth, Ind.	F	98.93	0.08	70.50	23.00	8-34	108	F Buckhorn 9; mustard 9
6442	Brown Supply Co., Valparaiso	Teweles Seed Co., L.,	C	99.50	......	83.00	13.00	2-35	....	C None
	Liscomb Variegated Alfalfa, Lot Badger Brand	Milwaukee, Wis.	F	99.66	0.22	83.00	9.50	4-35	360	F None
6270	Dembufsky Seed Co., Goshen	Teweles Seed Co., L.,	C	99.65	.	88.00	8.00	2-35	......	C None
	Kansas Alfalfa, Lot Badger Brand	Milwaukee, Wis.	F	99.88	0.12	88.00	6.50	4-35	......	F None
5393	Farmers Co-op. Elevator, Rochester	Teweles Seed Co., L.,	C	99.61	.	85.00	10.00	2-34	....	C None
	Grimm Alfalfa, Lot Badger Brand	Milwaukee, Wis.	F	99.44	0.42	79.50	10.50	9-34	180	F None
6230	Leas, D. L., Waterloo	Teweles Seed Co., L.,	C	99.65	......	88.00	8.00	1-35	....	C None
	Kansas Alfalfa, Lot 9702	Milwaukee, Wis.	F	99.92	0.08	90.00	3.50	4-35	...	F None
6234	Leas, D. L., Waterloo	Teweles Seed Co., L.,	C	99.65	...	87.00	9.00	1-35	..	C None
	Nebraska Grimm Alfalfa, Lot 7445	Milwaukee, Wis.	F	99.84	0.14	84.50	12.00	4-35	90	F None
6244	Strock, Frank, Hudson	Teweles Seed Co., L.,	C	99.70	....	86.00	11.00	1-35	......	C None
	Kansas Alfalfa, Lot Badger Brand	Milwaukee, Wis.	F	99.82	0.14	91.00	5.00	4-35	180	F None
6246	Strock, Frank, Hudson	Teweles Seed Co., L.,	C	99.60	......	80.00	15.00	1-35	....	C None
	Northern Alfalfa, Lot Badger Brand	Milwaukee, Wis.	F	99.60	0.28	82.00	9.00	4-35	567	F Curled dock 27
6254	Tri-State Co-op. Assn., Ray	Teweles Seed Co., L.,	C	99.60	...	88.00	8.00	2-35	....	C None
	Kansas Alfalfa, Lot Badger Brand	Milwaukee, Wis.	F	99.96	0.04	88.50	7.50	4-35	...	F None
6255	Tri-State Co-op. Assn., Ray	Teweles Seed Co., L.,	C	99.55	......	82.00	14.00	2-35	......	C None
	Northwestern Alfalfa, Lot Badger Brand	Milwaukee, Wis.	F	99.78	0.16	80.50	13.00	4-35	189	F Curled dock 9
5392	Wilson Grain & Coal Co., Rochester[42]	Teweles Seed Co., L.,	C	99.60	....	81.00	15.00	2-34	......	C None
	Idaho Grimm Alfalfa, Lot Badger Brand	Milwaukee, Wis.	F	99.46	0.24	81.00	11.00	8-34	288	F Curled dock 18
5350	Gleaners & Farmers Co-op. Co., North Hayden, P. O., Lowell[43]	Western Seed Co.,	C	99.75	......	92.00	......	6-34	...	C None
	Grimm Alfalfa, Lot V115	Salt Lake City, Utah	F	99.80	0.20	86.00	4.00	8-34	....	F None

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*Not labeled.

†Certified by Retailer.

C and F stands, respectively, for Claimed and Found.

[34] Removed from sale. Misbranded. Retagged.

[35] Sample secured from Raymond Stohler, R. R. 3, Newcastle, Ind.

[36] Sample secured from Alva Johnson, Fairmount, Ind.

[37] Sample secured from Harlen M. Brown, R. R. 3, Newcastle, Ind.

[38] Distributed by Allied Mills, Inc., Peoria, Ill.

[39] Removed from sale. Misbranded. All sold.

[40] Removed from sale. Misbranded. Returned to distributor.

[41] Removed from sale. Misbranded. Will be recleaned.

[42] Distributed by Syler and Syler, Plymouth, Ind.

[43] Distributed by McMahan Seed Co., Valparaiso, Ind.

ALFALFA—Continued

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor	Purity, per cent	Inert Matter, per cent	Germination, per cent	Hard Seeds, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds	Number per Pound of each of the Noxious Weed Seeds Specified in the Law
5975	Farmers Grain Co., Liberty Center	Wolf Seed Co., C	99.00		73.00	19.00	11-34		C None
	Affidavit Grimm Alfalfa, Lot 6896	Fort Wayne, Ind. F	99.20	0.12	56.50	35.50	3-35	747	F Buckhorn 9; common plantain 9; wild carrot 9
5396	Geneva Milling & Grain Co., Geneva	Wolf Seed Co., C	99.25		81.50	12.50	6-34		C None
	Affidavit Grimm Alfalfa, Lot 6205	Fort Wayne, Ind. F	99.28	0.06	69.50	18.00	9-34	108	F Buckhorn 9; curled dock 9
5397	Geneva Milling & Grain Co., Geneva	Wolf Seed Co., C	99.15		81.00	12.00	7-34		C None
	N. W. Affidavit Grimm Alfalfa, Lot TO.	Fort Wayne, Ind. F	98.86	0.24	66.00	19.50	9-34	1,899	F Mustard 9
5395	Hoosier Grain & Supply Co., Bluffton	Wolf Seed Co., C	99.50		28.50	10.50	7-34		C None
	Hy-Test Alfalfa, Lot TMS	Fort Wayne, Ind. F	99.82	0.16	70.00	19.00	9-34	90	F None
5484	Isay Seed & Wool Co., Churubusco	Wolf Seed Co., C	99.14		83.00	9.00	8-34		C None
	Utah State Sealed and Certified Grimm Alfalfa, Lot 6249	Fort Wayne, Ind. F	99.03	0.53	80.50	9.00	9-34	212	F Curled dock 27; dodder 5
5495	Kunberger, John, Columbia City	Wolf Seed Co., C	99.68		80.00	11.00	8-34		C None
	Alfalfa, Lot B250	Fort Wayne, Ind. F	99.88	0.12	79.00	12.50	9-34		F None

BLUE GRASS

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor	Purity, per cent	Inert Matter, per cent	Germination, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds	Number per Pound of each of the Noxious Weed Seeds Specified in the Law
5578	Stauffer Grain Co., Nappanee	Allied Seed Co., Inc., C	85.00		85.00	12-33		C None
	Kentucky Blue Grass, Lot 27	Fort Wayne, Ind. F	82.35	17.35	77.50	12-34	3,285	F Buckhorn 45; red sorrel 90
6460	†Ohio Valley Seed Co., Evansville[44]	Chambers Seed Co., C	81.00		75.00	2-35		C None
	Kentucky Blue Grass, Lot C135	Louisville, Ky. F	81.03	18.28	56.50	7-35	15,435	F Bracted plantain 45; buckhorn 360; common plantain 135; oxeye daisy 45; red sorrel 2,250
6682	†McCarty Seed Co., J. A., Evansville	Corneli Seed Co., C	86.35		85.00	3-35		C None
	Lucky Jim Blue Grass, Lot 79	St. Louis, Mo. F	85.70	13.90	72.00	6-35	4,635	F Buckhorn 90; curled dock 90; red sorrel 405
5822	Barr Grain Co., O. L., Bicknell[45]	Crabbs Reynolds Taylor Co., C	85.92		75.00	7-34		C None
	21 lb. Kentucky Blue Grass, Lot 9GR	Crawfordsville, Ind. F	81.79	17.71	65.00	3-35	9,900	F Buckhorn 720; red sorrel 630
5435	Crabbs Reynolds Taylor Co., Crawfordsville[46]	Crabbs Reynolds Taylor Co., C	85.00		84.00	1-34		C None
	21 lb. Kentucky Blue Grass, Lot 7-8-2	Crawfordsville, Ind. F	83.15	16.75	72.00	10-34	1,800	F None

6512	Miller Grain Co., Inc., Greencastle[47]	Crabbs Reynolds Taylor Co.,	C	80.06	......	75.00	10-34	....	C	None
	19 lb. Kentucky Blue Grass, Lot 4GS	Crawfordsville, Ind.	F	78.16	21.08	63.00	6-35	16,155	F	Buckhorn 630; curled dock 45; red sorrel 1,980
5791	Osburn, A. R., Bloomfield[48]	Crabbs Reynolds Taylor Co.,	C	80.00	......	75.00	8-34	....	C	None
	19 lb. Kentucky Blue Grass, Lot 8GQ	Crawfordsville, Ind.	F	77.56	21.36	80.00	3-35	16,650	F	Buckhorn 540; oxeye daisy 720; red sorrel 540
6428	Brown Supply Co., Valparaiso	Dickinson Co., The Albert,	C	92.40	......	70.00	11-35	....	C	Buckhorn 96
	Kentucky Blue Grass, Lot 32793	Chicago, Ill.	F	91.94	7.86	67.50	5-35	945	F	Buckhorn 45
5388	†Co-operative Elevator Co., Winamac[49]	Dickinson Co., The Albert,	C	90.60	......	70.00	8-34	....	C	None
	Kentucky Blue Grass, Lot 32768	Chicago, Ill.	F	86.87	12.93	73.00	9-34	3,690	F	Buckhorn 45; Canada thistle 45
6368	Etna Lumber & Elevator Co., Etna Green	Dickinson Co., The Albert,	C	85.80	......	70.00	2-35	....	C	None
	Kentucky Blue Grass, Lot 32790	Chicago, Ill.	F	87.99	11.81	73.00	5-35	3,150	F	None
6322	Kiefer Feed & Supply Co., Elwood[50]	Dickinson Co., The Albert,	C	88.00	......	75.00	9-34	....	C	None
	Kentucky Blue Grass	Chicago, Ill.	F	86.43	13.28	61.00	5-35	7,650	F	None
6579	†Syler & Syler, Plymouth	Dickinson Co., The Albert,	C	84.00	......	70.00	3-35	....	C	None
	Kentucky Blue Grass, Lot 32801	Chicago, Ill.	F	88.78	10.92	72.50	5-35	3,240	F	Buckhorn 90
6191	Farmers Supply Co., Danville	Hooton-Davis Seed Corp.,	C	80.00	......	75.00	1-35	....	C	None
	Blue Grass, Lot B512	Lebanon, Ind.	F	74.55	25.05	65.50	5-35	10,440	F	Buckhorn 540
6144	Weer, F. W., Anderson	Hooton-Davis Seed Corp.,	C	80.00	......	75.00	1-35	....	C	None
	Blue Grass, Lot B512	Lebanon, Ind.	F	72.80	26.81	67.50	6-35	8,820	F	Buckhorn 180; red sorrel 90
5838	Adams & Morrow, Inc., Princeton	Indiana Seed Co.,	C	83.00	......	80.00	9-34	....	C	Red sorrel 450
	Kentucky Blue Grass, Lot MP10	Indianapolis, Ind.	F	84.57	14.84	71.00	3-35	6,795	F	Red sorrel 45
5409	Brazil Hardware Co., Brazil[51]	Indiana Seed Co.,	C	80.51	......	78.00	7-34	....	C	None
	Kentucky Blue Grass, Lot I1001	Indianapolis, Ind.	F	80.27	18.38	63.50	11-34	18,945	F	Buckhorn 1,710; oxeye daisy 135; red sorrel 450
6606	Fagan Seed Store, Indianapolis[52]	Indiana Seed Co.,	C	80.00	......	78.00	2-35	....	C	None
	Kentucky Blue Grass, Lot F236	Indianapolis, Ind.	F	82.84	16.37	62.00	6-35	10,080	F	Buckhorn 45; curled dock 90; red sorrel 45
6051	Farmers Feed & Coal Co., Bloomington[53]	Indiana Seed Co.,	C	77.00	......	80.00	9-34	....	C	None
	Kentucky Blue Grass, Lot F236	Indianapolis, Ind.	F	78.19	21.41	61.00	4-35	7,335	F	Curled dock 45; red sorrel 90
6598	Garten Feed Co., Indianapolis[54]	Indiana Seed Co.,	C	83.00	......	80.00	3-35	....	C	Red sorrel 450
	Kentucky Blue Grass, Lot MP10	Indianapolis, Ind.	F	82.38	16.93	58.00	7-35	9,045	F	Curled dock 45
5900	Norman & Roberts, G. M., Indianapolis[55]	Indiana Seed Co.,	C	77.00	......	80.00	9-34	....	C	Common plantain 450
	Kentucky Blue Grass, Lot F276	Indianapolis, Ind.	F	81.64	17.67	65.00	4-35	9,045	F	Curled dock 45
5897	Pioneer Elevator Co., Worthington[56]	Indiana Seed Co.,	C	77.00	......	80.00	9-34	....	C	Common plantain 450; red sorrel 450
	Blue Grass, Lot F236	Indianapolis, Ind.	F	77.92	21.58	58.00	4-35	9,585	F	Buckhorn 90; curled dock 45
6141	Weer, F. W., Anderson	Indiana Seed Co.,	C	83.00	......	80.00	9-34	....	C	Red sorrel 450
	Blue Grass, Lot MP10	Indianapolis, Ind.	F	81.07	18.01	69.50	4-35	13,500	F	None
6624	Minas, E. C., Hammond	Johnson, Inc., J. Oliver,	C	80.00	......	70.00	1-35	....	C	Buckhorn 256; red sorrel 1,360
	19 lb. Kentucky Blue Grass	Chicago, Ill.	F	82.10	17.31	69.00	6-35	9,900	F	Buckhorn 630; curled dock 90; oxeye daisy 180; red sorrel 1,350

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*Not labeled.

†Certified by Retailer.

C and F stands, respectively, for Claimed and Found.

[44] Removed from sale. Misbranded. All sold.

[45] Removed from sale. Misbranded. Retagged.

[46] Sample secured from Purdue University Poultry Farm.

[47] Removed from sale. Misbranded. Retagged. Distributed by Miller Grain Co., Inc., Bainbridge, Ind.

[48] Removed from sale. Misbranded. Retagged.

[49] Removed from sale. Misbranded. All sold.

[50] Not tagged. Labels furnished.

[51] Removed from sale. Misbranded. Returned to distributor.

[52] Removed from sale. Misbranded. All sold.

[53] Removed from sale. Misbranded. Retagged.

[54] Removed from sale. Misbranded. All sold.

[55] Removed from sale. Misbranded. Returned to distributor.

[56] Removed from sale. Misbranded. Returned to distributor.

BLUE GRASS—Continued

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor	Purity, per cent	Inert Matter, per cent	Germination, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds	Number per Pound of each of the Noxious Weed Seeds Specified in the Law
6750	Minas, E. C., Hammond	Johnson, Inc., J. Oliver, C	80.00	.....	70.00	1-35	.....	C Bracted plantain 256; red sorrel 1,360
	19 lb. Kentucky Blue Grass, Lot 5824	Chicago, Ill. F	82.76	16.16	63.00	8-35	18,180	F Buckhorn 990; red sorrel 1,440
5748	Knapp, C. E., South Bend[57]	King & Sons, Inc., H. C., C	95.00	.....	85.00	3-34	.....	C None
	Kentucky Blue Grass, Lot MP84	Battle Creek, Mich. F	91.55	8.35	77.00	3-35	450	F None
6485	Crescent Mills, Crothersville[58]	Lewis Implement & Seed Co., C	82.00	.....	75.00	10-34	.....	C Red sorrel 200
	Kentucky Blue Grass, Lot Red Bird	Louisville, Ky. F	75.88	24.02	58.50	4-35	4,050	F None
6499	Greger, A. C., Brownstown[59]	McCullough Seed Co., The J. Chas., C	83.00	.....	80.00	11-34	.....	C Buckhorn 900; red sorrel 900
	Fancy Kentucky Blue Glass, Lot 61517	Cincinnati, Ohio F	81.45	18.15	64.00	6-35	7,020	F Buckhorn 180; red sorrel 540
6170	Werst & Co., Peter, Brookville	McCullough Seed Co., The J. Chas., C	84.15	.....	80.00	10-34	.....	C None
	Kentucky Blue Grass, Lot 1470	Cincinnati, Ohio F	81.79	18.12	81.00	5-35	2,700	F None
6567	Eckert & Palmer Hardware, Osgood	Market Gardener's Seed Co., The C	70.00	.....	70.00	10-34	.....	C None
	Blue Grass, Lot 1702	Cincinnati, Ohio F	66.80	27.90	73.00	6-35	37,710	F Red sorrel 360
6493	Farmers Co-op. Elevator Co., Seymour	National Seed Co., C	85.00	.....	75.00	1-35	.....	C Red sorrel 450
	Kentucky Blue Grass, Lot 1440	Louisville, Ky. F	81.51	17.99	59.50	5-35	10,845	F Bracted plantain 270; buckhorn 315; red sorrel 1,260
6621	Ruff Hardware, Inc., J. J., Hammond[60]	Ostberg Seed Co., C	88.40	.....	81.00	1-35	.....	C Curled dock 32; dodder 12; oxeye daisy 12; quack grass 12; red sorrel 320
	Kentucky Blue Grass	Chicago, Ill. F	73.92	25.29	72.00	6-35	16,785	F Buckhorn 315; curled dock 180; red sorrel 1,440
6413	Johnson Feed & Supply Co., Linton[61]	Quinlan Seed Store, C	85.00	.....	80.00	11-33	.....	C None
	Blue Grass	Terre Haute, Ind. F	84.29	15.51	64.00	6-35	3,330	F Buckhorn 90; red sorrel 90
6323	Kiefer Feed & Supply Co., Elwood[62]	Ross Seed Co., C	78.00	.....	70.00	10-34	.....	C Red sorrel 450
	Blue Grass	Louisville, Ky. F	76.62	22.98	48.50	5-35	14,040	F Buckhorn 540; red sorrel 900
5872	Kindermann & Sons, Wm., Boonville	Ross Seed Co., C	82.00	.....	80.00	12-34	.....	C Red sorrel 225
	Kentucky Blue Grass, Lot 838	Louisville, Ky. F	83.79	16.01	79.50	3-35	1,935	F Buckhorn 450; red sorrel 135
5891	McCampbell, Ralph, French Lick	Ross Seed Co., C	80.00	.....	80.00	12-34	.....	C Buckhorn 225
	Blue Grass	Louisville, Ky. F	81.82	17.98	81.50	4-35	1,620	F Buckhorn 90; red sorrel 180
5618	Ragsdale & Co., Chas., Bedford	Ross Seed Co., C	78.91	.....	80.00	9-34	.....	C Buckhorn 900
	Kentucky Blue Grass, Lot 6102	Louisville, Ky. F	70.31	28.49	76.00	1-35	16,515	F Bracted plantain 45; buckhorn 2,160; oxeye daisy 90; red sorrel 270
5884	Scarlett Feed Exchange, West Baden	Ross Seed Co., C	78.91	.....	75.00	8-34	.....	C Buckhorn 3,700
	Blue Grass	Louisville, Ky. F	73.19	25.92	79.00	3-35	18,000	F Bracted plantain 45; buckhorn 2,070; oxeye daisy 45; red sorrel 990
5411	Linton Hardware Co., Linton	Schultz Seed Co., J. M., C	80.00	.....	75.00	8-34	.....	C None
	19 lb. Blue Grass	Dieterich, Ill. F	73.49	25.83	78.00	10-34	9,360	F Bracted plantain 45; buckhorn 45; oxeye daisy 45; red sorrel 225
6417	Linton Hardware Co., Linton[63]	Schultz Seed Co., J. M., C	82.16	.....	80.00	1-35	.....	C None
	Reliable Blue Grass	Dieterich, Ill. F	73.87	25.24	75.50	6-35	12,465	F Buckhorn 135; curled dock 45; red sorrel 135

6482	†Graf, C. L., New Albany[64]	Scott Seed Co.,	C 80.00	......	80 00	12-34	....	C Red sorrel 450
	Blue Grass, Lot 69	New Albany, Ind.	F 74.33	25.47	62.50	6-35	1,350	F Buckhorn 135; red sorrel 315
5417	Ragsdale & Co., Chas., Bedford	Scott Seed Co.,	C 80 00	......	75.00	8-33	....	C None
	A. B. Blue Grass, Lot 51	New Albany, Ind.	F 79.10	20.71	68.00	11-34	2,790	F Red sorrel 90
5752	Knapp, C. E., South Bend	Syler & Syler,	C 85.24	......	74.00	3-34	....	C None
	21 lb. Kentucky Blue Grass	Plymouth, Ind.	F 85 25	14.55	64 50	3-35	3,600	F None
5559	Moore & Kemple, Lafayette[65]	Vaughan's Seed Store,	C 84.25	......	85 00	9-34	....	C None
	Blue Grass, Lot 2030GK	Chicago, Ill.	F 84.04	15.56	86.50	11-34	2,745	F Curled dock 45
6603	Warren Seed Co., Indianapolis	Watts, Owen T.,	C 86.00	......	83 00	1-35	....	C None
	Blue Grass	Louisville, Ky.	F 82.10	17.56	84.50	6-35	2,700	F None
6609	†Vonnegut Hardware Co., Indianapolis	Whitney-Eckstein Seed Co.,	C 85 00	......	80.00	1-35	....	C None
	Kentucky Blue Grass, Lot 3570	Buffalo, N. Y.	F 83.90	15 50	85.00	6-35	3,420	F Buckhorn 45; curled dock 225

*Not labeled.
†Certified by Retailer.
C and F stands, respectively, for Claimed and Found.

[57] Removed from sale. Misbranded. Retagged.

[58] Not tagged. Labels furnished. Removed from sale. Misbranded. Returned to distributor.

[59] Removed from sale. Misbranded. Retagged.

[60] Removed from sale. Misbranded. Retagged.

[61] Removed from sale. Misbranded. Retagged.

[62] Removed from sale. Misbranded.

[63] Removed from sale. Misbranded. Retagged.

[64] Removed from sale. Misbranded. Returned to distributor.

[65] Sample secured from Frank Powers, West Lafayette, Ind.

ALSIKE CLOVER

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor	Purity, per cent	Inert Matter, per cent	Germination, per cent	Hard Seeds, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds	Number per Pound of each of the Noxious Weed Seeds Specified in the Law
6390	Co-operative Elevator Co., Winamac	Allied Seed Co., Inc., C	98 75	......	83 00	7 00	1-35	....	C None
	Alsike Clover, Lot B442	Fort Wayne, Ind. F	99.01	0.49	86.50	9.50	4-35	1,287	F Curled dock 18; yellow trefoil 144
6400	Phillips, J. C., Star City	Allied Seed Co., Inc., C	97 50	......	80 00	12 00	1-35	....	C None
	Alsike Clover, Lot B403	Fort Wayne, Ind. F	99.00	0.65	87.75	9.00	4-35	1,134	F Buckhorn 36; common plantain 18; curled dock 18; yellow trefoil 162
6278	Berry Seed Co., Chicago, Ill.[66]	Berry Seed Co., C	96 50	......	72 00	7 00	2-35	....	C None
	Alsike Clover, Lot 11227	Clarinda, Ia. F	92.38	1.09	71.50	2.50	3-35	14,184	F Buckhorn 72; Canada thistle 36; common plantain 288; curled dock 108; red sorrel 180; yellow trefoil 2,475
5977	Farmers Exchange, Warren[67]	Brueggemann Bros., C	98.80	......	70.00	24 00	......	....	C None
	Alsike Clover, Lot 34	Milan Center, Ind. F	98.83	1.07	70.75	24.00	2-35	243	F Curled dock 18
6120	Busenbark Grain Co., Jamestown	Busenbark Grain Co., C	99.00	......	91.00	......	2 35	....	C None
	Alsike Clover, Lot I	Crawfordsville, Ind. F	99.30	0.50	78.75	11.50	3-35	990	F Buckhorn 72; curled dock 18
6224	Campbell & Co., Kendallville	Campbell & Co., C	96.90	......	73.50	18.00	1-35	....	C Buckhorn 225; curled dock 225
	Alsike Clover, Lot B	Kendallville, Ind. F	97.82	1.29	66 25	21 75	4-35	3,258	F Buckhorn 18; curled dock 72; red sorrel 18
6225	Campbell & Co., Kendallville	Campbell & Co., C	99.50	......	78.00	18.50	1-35	....	C Red sorrel 900
	Alsike Clover, Lot A	Kendallville, Ind. F	99.75	0.15	86.25	11.75	4-35	702	F Red sorrel 252

*Not labeled.
†Certified by Retailer.
C and F stands, respectively, for Claimed and Found.

[66] Sample secured from Walter F. Knox, R. R. 4, Hartford City, Ind.

[67] Not tagged. Labels furnished.

ALSIKE CLOVER—Continued

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor	Purity, per cent	Inert Matter, per cent	Germination, per cent	Hard Seeds, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds	Number per Pound of each of the Noxious Weed Seeds Specified in the Law
5825	Barr Grain Co., O. L., Bicknell	Crabbs Reynolds Taylor Co., C	98.42	.....	85.00	7.00	8-34	.....	C None
	Alsike Clover, Lot 5AD	Crawfordsville, Ind. F	97.07	2.48	81.25	13.75	2-35	1,476	F Buckhorn 18; curled dock 108
5658	Crabbs Reynolds Taylor Co., Lafayette	Crabbs Reynolds Taylor Co., C	98.42	....	85.00	7.00	8-34	.....	C None
	Alsike Clover, Lot 5AO	Crawfordsville, Ind. F	97.96	1.64	74.25	18.00	1-35	1,494	F Bracted plantain 18; curled dock 126
5474	Farmers Grain Co., Rensselaer[68]	Crabbs Reynolds Taylor Co., C	99.05	.	87.00	6.00	2-34	..	C None
	Alsike Clover, Lot 4AN	Crawfordsville, Ind. F	98.48	0.10	82.25	12.00	9-34	1,287	F Buckhorn 90; curled dock 18; red sorrel 54
5945	Newcastle Elevator Co., Newcastle	Crabbs Reynolds Taylor Co., C	98.42	.....	80.00	12.00	1-35	.....	C None
	Alsike Clover, Lot 7AO	Crawfordsville, Ind. F	98.16	1.34	87.00	7.50	3-35	1,647	F Buckhorn 18; curled dock 18; yellow trefoil 36
6073	Westermeier Hardware Co., Columbus	Crabbs Reynolds Taylor Co., C	98.42	.....	85.00	7.00	8-34	.....	C None
	Alsike Clover, Lot 5AO	Crawfordsville, Ind. F	97.80	1.66	70.00	23.50	4-35	729	F Buckhorn 36; red sorrel 18
5630	Evans & Hedworth, Remington	Crawfordsville Seed Co., C	99.00	.....	80.00	12.00	1-34	.....	C None
	Alsike Clover, Lot 370	Crawfordsville, Ind. F	99.50	0.25	79.00	10.00	1-35	486	F Curled dock 36
5987	Peru Grain & Coal Co., Peru	Crawfordsville Seed Co., C	98.00	.....	84.00	10.00	2-35	.....	C None
	Alsike Clover, Lot 386	Crawfordsville, Ind. F	98.12	0.79	82.00	13.50	3-35	2,061	F Buckhorn 18; curled dock 18; yellow trefoil 450
6365	Etna Lumber & Elevator Co., Etna Green	Dickinson Co., The Albert, C	99.30	.....	81.00	12.00	2-35	.....	C None
	Alsike Clover, Lot 21583	Chicago, Ill. F	99.65	0.15	83.25	13.00	4-35	522	F Curled dock 72
6067	Farmers Feed & Coal Co., Bloomington	Foster-Kendall Co., C	97.50	.....	75.00	15.00	12-34	.....	C None
	Alsike Clover	Carmel, Ind. F	98.21	1.04	84.00	12.75	4-35	927	F Curled dock 18; yellow trefoil 234
6099	Lizton Grain & Lumber Co., Lizton	Foster-Kendall Co., C	97.00	.....	75.00	10.00	12-34	.....	C None
	Alsike Clover	Carmel, Ind. F	98.61	0.84	81.50	14.25	4-35	1,134	F Buckhorn 18; yellow trefoil 216
6200	Pritch Grocery, W. J., Sheridan	Foster-Kendall Co., C	97.80	.....	69.00	25.00	1-35	.....	C None
	Alsike Clover	Carmel, Ind. F	98.50	1.15	85.50	8.75	4-35	1,269	F Yellow trefoil 144
5704	Shaw, W. R., Orestes	Foster-Kendall Co., C	97.50	.....	69.00	25.00	12-34	.....	C Common plantain 50; yellow trefoil 90
	Alsike Clover	Carmel, Ind. F	99.01	0.49	78.50	17.50	2-35	1,584	F Curled dock 36; yellow trefoil 198
6303	Farmers Co-operative Co., Shidler	Hooton-Davis Seed Corp., C	97.00	.....	73.00	23.00	1-35	.....	C None
	Alsike Clover, Lot A532	Lebanon, Ind. F	97.05	1.92	85.00	11.25	4-35	6,651	F Buckhorn 54; common plantain 18; yellow trefoil 54
5655	Wynn, Arlie S., Rochester	Hooton-Davis Seed Corp., C	95.00	.....	81.00	2.00	9-34	.....	C Buckhorn 54; curled dock 108; red sorrel 90
	Alsike Clover, Lot A455	Lebanon, Ind. F	93.45	1.76	63.25	9.00	1-35	3,735	F Buckhorn 126; common plantain 54; curled dock 144; mustard 18; red sorrel 288; yellow trefoil 180
6332	Elkhart Co. Farm Bureau Co-op. Assn., Inc., Goshen	Indiana Farm Bureau Co-op. Assn., Inc., C	98.50	.....	83.00	12.00	12-34	.....	C None
	Alsike Clover, Lot 3226	Indianapolis, Ind. F	98.87	0.79	88.25	5.25	4-35	972	F Common plantain 54; red sorrel 36; yellow trefoil 432

5513	Whitley Co. Farm Bureau Co-op. Assn., Inc., Columbia City[69] Alsike Clover, Lot K482	Indiana Farm Bureau Co-op. Assn., Inc., Indianapolis, Ind.	C	99.70	.....	85.00	6.00	1-34	....	C	None
			F	98.56	0.50	77.50	17.50	9-34	225	F	None
6204	Whitley Co. Farm Bureau Co-op. Assn., Inc., Columbia City Alsike Clover, Lot 3226	Indiana Farm Bureau Co-op. Assn., Inc., Indianapolis, Ind.	C	98.50	.....	83.00	12.00	12-34	....	C	None
			F	98.85	0.60	80.50	11.50	4-35	1,845	F	Common plantain 36; curled dock 36; red sorrel 18; wild carrot 18; yellow trefoil 612
5842	Adams & Morrow, Inc., Princeton Alsike Clover, Lot 1340	Indiana Seed Co., Indianapolis, Ind.	C	99.00	.....	85.00	7.00	9-34	....	C	None
			F	99.16	0.39	75.50	13.00	3-35	855	F	Curled dock 90; red sorrel 18; yellow trefoil 72
6090	Bottorff, D. M., Columbus Alsike Clover, Lot B400	Indiana Seed Co., Indianapolis, Ind.	C	98.75	.....	80.00	13.00	12-34	....	C	None
			F	98.92	0.78	78.75	16.50	4-35	792	F	Bracted plantain 18; common plantain 18; curled dock 18; red sorrel 18; yellow trefoil 270
6580	Bullock, F. L., Butlerville[70] Alsike Clover, Lot Red Bird	Lewis Implement & Seed Co., Louisville, Ky.	C	98.00	.....	85.00	10.00	12-34	....	C	Buckhorn 80; red sorrel 200
			F	92.28	0.25	80.25	9.50	4-35	30,762	F	Buckhorn 288; curled dock 36; mustard 18; red sorrel 2,925; yellow trefoil 270
5933	Schmocker, John, Batesville Alsike Clover, Lot 1941	McCullough Seed Co., The J. Chas., Cincinnati, Ohio	C	99.00	.....	76.00	19.00	12-34	....	C	None
			F	99.16	0.34	72.00	19.50	3-35	972	F	Curled dock 18; red sorrel 36; yellow trefoil 18
6440	McMahan Seed Co., Valparaiso Alsike Clover, Lot F	McMahan Seed Co., Valparaiso, Ind.	C	99.25	.....	89.00	7.00	2-35	....	C	None
			F	99.31	0.29	86.75	3.50	4-35	1,215	F	Red sorrel 90
6003	Mayer Grain Co., Denver Alsike Clover, Lot A	Mayer Grain Co., South Whitley, Ind.	C	97.65	.....	88.00	6.00	1-35	....	C	Curled dock 225
			F	98.50	1.40	88.75	8.25	3-35	396	F	Red sorrel 54; yellow trefoil 342
5482	Mayer Grain Co., South Whitley Alsike Clover	Mayer Grain Co., South Whitley, Ind.	C	99.00	.....	86.00	6.00	1-34	....	C	None
			F	99.15	0.40	74.00	9.25	9-34	954	F	Curled dock 18; yellow trefoil 36
6155	†Young & Cox, Richmond Alsike Clover, Lot 2393	New Paris Elevator Co., New Paris, Ohio	C	97.00	.....	90.00	4.00	1-35	....	C	None
			F	96.06	1.40	82.50	11.00	4-35	1,989	F	Curled dock 54; red sorrel 360
6476	†Graf, C. L., New Albany Alsike Clover, Lot 402	Scott Seed Co., New Albany, Ind.	C	97.38	.....	80.00	12.00	1-35	....	C	Buckhorn 900; red sorrel 4,500
			F	98.50	0.05	82.25	8.25	4-35	3,222	F	Buckhorn 162; common plantain 36; curled dock 18; prickly lettuce 18; red sorrel 2,016; yellow trefoil 72
6351	Stauffer Grain Co., Nappanee[71] Alsike Clover, Lot 68907	Stauffer Grain Co., Nappanee, Ind.	C	99.21	.....	61.25	25.25	1-35	....	C	Common plantain 225; red sorrel 900
			F	97.18	0.92	80.75	9.50	4-35	9,162	F	Buckhorn 54; curled dock 108; red sorrel 6,750
6357	Syler & Syler, Nappanee[72] Alsike Clover	Syler & Syler, Nappanee, Ind.	C	99.00	.....	88.00	.....	1-35	....	C	None
			F	97.83	1.33	84.50	8.00	4-35	3,519	F	Buckhorn 1,440; common plantain 36; curled dock 144; red sorrel 1,674
6423	Syler & Syler, Nappanee[73] Alsike Clover	Syler & Syler, Nappanee, Ind.	C	87.00	.....	87.00	..	1-35	....	C	None
			F	61.69	0.35	90.25	6.75	3-35	12,762	F	Buckhorn 11,025; Canada thistle 54; common plantain 18; curled dock 306; red sorrel 342; yellow trefoil 342

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*Not labeled.

†Certified by Retailer.

C and F stands, respectively, for Claimed and Found.

[68] Sample secured from James Amsler, R. R. 4, Rensselaer, Ind.

[69] Removed from sale. Misbranded. Returned to distributor.

[70] Removed from sale. Misbranded. Returned to distributor.

[71] Removed from sale. Misbranded. Retagged.

[72] Removed from sale. Misbranded. Recleaned.

[73] Sample secured from Will H. Hews, R. R. 3, LaPorte, Ind. Contains 31.46% Red Clover with a germination of 88.00% and 6.50% Hard Seed.

RED CLOVER

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, per cent	Inert Matter, per cent	Germination, per cent	Hard Seeds, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds		Number per Pound of each of the Noxious Weed Seeds Specified in the Law
6369	Bourbon Elevator & Feed Mill, Bourbon	Allied Seed Co., Inc.,	C	99.50		90.00	2.00	1-35		C	None
	Medium Red Clover, Lot B1555	Fort Wayne, Ind.	F	99.82	0.02	93.50	1.50	4-35	99	F	Red sorrel 9
6384	Co-operative Elevator Co., Winamac	Allied Seed Co., Inc.,	C	99.50		88.00	4.00	1-35		C	None
	Mammoth Red Clover, Lot B1571	Fort Wayne, Ind.	F	99.60	0.10	95.50	2.50	4-35	198	F	Buckhorn 18
6385	Co-operative Elevator Co., Winamac	Allied Seed Co., Inc.,	C	99.50		85.00	6.00	1-35		C	None
	Medium Red Clover, Lot B1555	Fort Wayne, Ind.	F	99.78	0.04	94.00	2.50	4-35	234	F	Buckhorn 9; dodder 18; yellow trefoil 27
6017	Galveston Farmers Elevator Co., Galveston	Allied Seed Co., Inc.,	C	99.50		85.00	6.00	1-35		C	None
	Medium Red Clover, Lot B1555	Fort Wayne, Ind.	F	99.54	0.02	94.00	2.00	4-35	194	F	Buckhorn 9; dodder 5
6265	Lima Elevator Co., Howe	Allied Seed Co., Inc.,	C	99.50		90.00	2.00	1-35		C	None
	Medium Red Clover, Lot B1555	Fort Wayne, Ind.	F	99.86	0.06	94.00	1.50	4-35	108	F	Dodder 9; red sorrel 9
5478	American Field Seed Co., Chicago, Ill.[74]	American Field Seed Co.,	C	99.25		90.00		8-34		C	None
	Mammoth Clover, Lot 13108	Chicago, Ill.	F	99.48	0.20	83.00	10.00	9-34	108	F	Buckhorn 9; curled dock 9
6275	*Berry Seed Co., Chicago, Ill.[75]	Berry Seed Co.,	C							C	
	Planet Clover	Clarinda, Iowa	F	96.60	1.12	90.50	2.50	3-35	6,197	F	Bracted plantain 18; buckhorn 144; common plantain 99; curled dock 90; dodder 14; horse nettle 27; mustard 9; red sorrel 36
6086	Bottorff, D. M., Columbus[76]	Bottorff, D. M.,	C	99.00		93.00		1-35		C	Buckhorn 90
	Mammoth Clover, Lot Ross	Columbus, Ind.	F	99.37	0.06	93.00	2.50	4-35	2,052	F	Bracted plantain 27; buckhorn 1,260; common plantain 189; curled dock 306
6089	Bottorff, D. M., Columbus[77]	Bottorff, D. M.,	C	99.00		92.00		1-35		C	Buckhorn 90
	Medium Red Clover, Lot Wood	Columbus, Ind.	F	99.70	0.14	85.00	7.00	4-35	1,746	F	Buckhorn 441; common plantain 1,161; curled dock 18; wild carrot 36
5773	Brookston Grain Co., Brookston	Branch Grain & Seed Co.,	C	99.50		80.00		12-34		C	Buckhorn 360; common plantain 1,080
	Medium Red Clover, Lot Cook	Martinsville, Ind.	F	99.78	0.08	87.50	11.00	2-35	1,287	F	Buckhorn 207; common plantain 1,080
5971	Farmers Grain Co., Liberty Center	Burk Elevator Co.,	C	99.42		90.00		11-34		C	Common plantain 180
	Red Clover, Lot 67875	Decatur, Ind.	F	99.10	0.64	94.00	4.50	2-35	1,044	F	Buckhorn 36; common plantain 990; curled dock 9; wild carrot 9
6091	Busenbark Grain Co., Jamestown	Busenbark Grain Co.,	C	99.60		91.00		2-35		C	None
	Medium Clover, Lot C	Crawfordsville, Ind.	F	99.82	0.10	93.00	0.00	4-35	117	F	Buckhorn 18; curled dock 9
6096	Busenbark Grain Co., Jamestown	Busenbark Grain Co.,	C	99.50		91.00	3.00	2-35		C	None
	Medium Clover, Lot 1	Crawfordsville, Ind.	F	99.60	0.24	87.00	5.00	4-35	608	F	Buckhorn 36; common plantain 18; curled dock 9; dodder 5
6098	Busenbark Grain Co., Jamestown	Busenbark Grain Co.,	C	99.00		92.00		2-35		C	None
	Mammoth Clover	Crawfordsville, Ind.	F	99.02	0.78	91.00	5.00	4-35	108	F	Bracted plantain 9; buckhorn 27; common plantain 27; curled dock 45

6585	Byers Seed Co., Franklin	Byers Seed Co.,	C	99.00	.....	80.00	4.00	1-35	....	C Buckhorn 50; common plantain 45
	Red Clover, Lot AR	Franklin, Ind.	F	99.70	0.06	91.50	3.50	4-35	369	F Buckhorn 180; dodder 9
6211	Campbell & Co., Kendallville	Campbell & Co.,	C	98.54	......	88.00	8.50	1-35	....	C Buckhorn 630
	Medium Clover, Lot 6	Kendallville, Ind.	F	98.33	0.28	88.50	7.50	4-35	684	F Buckhorn 603; common plantain 81
5691	Carman Supply Co., Lynn	Carman Supply Co.,	C	98.52	.....	90.00	2.00	12-34	....	C Buckhorn 180
	Little English Clover, Lot L	Lynn, Ind.	F	98.78	0.26	88.50	9.50	2-35	819	F Buckhorn 198; common plantain 306; curled dock 126; wild carrot 9
5671	Crabbs Reynolds Taylor Co., Lafayette	Crabbs Reynolds Taylor Co.,	C	99.52	......	91.00	6.00	9-34	...	C None
	Mammoth Clover, Lot 1MO	Crawfordsville, Ind.	F	99.49	0.36	91.00	1.50	1-35	225	F Buckhorn 36; curled dock 90; red sorrel 9
5672	Crabbs Reynolds Taylor Co., Lafayette	Crabbs Reynolds Taylor Co.,	C	99.62	.....	90.00	4.00	10-34	.	C None
	Medium Clover, Lot 7RL	Crawfordsville, Ind.	F	99.53	0.39	96.50	1.50	1-35	18	F Curled dock 18
6510	Heise Bros. & Co., Mitchell	Crabbs Reynolds Taylor Co.,	C	99.56	. .	92.00	3.00	3-35	......	C None
	Medium Clover, Lot 2RO	Crawfordsville, Ind.	F	99.86	0.04	96.50	1.00	4-35	..	F None
5938	Newcastle Elevator Co., Newcastle	Crabbs Reynolds Taylor Co.,	C	99.62	....	90.00	4.00	10-34	....	C None
	Medium Clover, Lot 7RL	Crawfordsville, Ind.	F	99.54	0.40	93.00	2.50	3-35	36	F Buckhorn 36
5941	Newcastle Elevator Co., Newcastle	Crabbs Reynolds Taylor Co.,	C	99.64	..	92.00	2.00	1-34	......	C None
	Medium Clover, Lot 5RM	Crawfordsville, Ind.	F	99.86	0.02	97.50	0.50	3-35	9	F Buckhorn 9
5946	Newcastle Elevator Co., Newcastle	Crabbs Reynolds Taylor Co.,	C	99.52	.	90.00	2.00	1-35	. . .	C None
	Mammoth Clover, Lot 9MO	Crawfordsville, Ind.	F	99.34	0.18	95.50	1.00	3-35	81	F Buckhorn 27; curled dock 45; red sorrel 9
5979	Warren Elevator Co., Warren	Crabbs Reynolds Taylor Co.,	C	99.62	.....	90.00	4.00	10-34	....	C None
	Medium Clover, Lot 7RL	Crawfordsville, Ind.	F	99.68	0.10	94.00	2.50	3-35	50	F Buckhorn 45; dodder 5
6077	Westermeier Hardware Co., Columbus	Crabbs Reynolds Taylor Co.,	C	99.62		90.00	4.00	10-34	...	C None
	Medium Clover, Lot 7RL	Crawfordsville, Ind.	F	99.54	0.26	92.00	1.50	4-35	279	F Buckhorn 189
6111	Armstrong-Landon Co., Kokomo	Crawfordsville Seed Co.,	C	99.50	. .	90.00	5.00	1-35	.....	C None
	Medium Clover, Lot 150	Crawfordsville, Ind.	F	99.14	0.02	94.50	0.00	4-35	......	F None
6113	Armstrong-Landon Co., Kokomo	Crawfordsville Seed Co.,	C	98.00	.	80.00	12.00	12-34	. . .	C None
	Medium Clover, Lot 154	Crawfordsville, Ind.	F	98.42	0.00	93.50	2.00	4-35	918	F Curled dock 9; yellow trefoil 279
6044	Farm Bureau Elevator & Supply Co., Crawfordsville	Crawfordsville Seed Co.,	C	99.75	.. .	90.00	3.00	1-35	....	C None
	Medium Clover, Lot 163	Crawfordsville, Ind.	F	99.92	0.02	97.50	0.00	4-35	.... ..	F None
5695	Farmers Elevator Co., Oakville	Crawfordsville Seed Co.,	C	99.50	...	90.00	5.00	12-34	......	C None
	Medium Clover, Lot 167	Crawfordsville, Ind.	F	99.70	0.04	93.00	3.00	2-35	117	F Curled dock 18; yellow trefoil 9
5956	Haynes Milling Co., The, Portland	Crawfordsville Seed Co.,	C	99.75	. .	87.00	5.00	10-34	....	C None
	Medium Clover, Lot 132	Crawfordsville, Ind.	F	99.86	0.00	86.00	0.00	3-35	99	F Red sorrel 9
6094	New Ross Grain & Lumber Co., New Ross	Crawfordsville Seed Co.,	C	99.75	.....	87.00	5.00	10-34	.....	C None
	Medium Clover, Lot 132	Crawfordsville, Ind.	F	99.84	0.12	82.00	0.50	4-35	90	F None
6001	Peru Grain & Coal Co., Peru	Crawfordsville Seed Co.,	C	98.00	. .	80.00	12.00	2-35	.....	C None
	Medium Clover, Lot 154	Crawfordsville, Ind.	F	97.81	0.00	90.50	4.50	3-35	1,449	F Curled dock 9; yellow trefoil 900
5918	Decatur Co. Co-op. Co., Greensburg	Decatur Co. Co-op. Co.,	C	99.75	...	82.00	9.00	1-35	......	C None
	Medium Clover, Lot 2-1004	Greensburg, Ind.	F	99.90	0.06	89.50	7.50	3-35	.....	F None
5921	Decatur Co. Co-op. Co., Greensburg	Decatur Co. Co-op. Co.,	C	99.75	...	83.00	10.00	1-35	....	C None
	Mammoth Clover, Lot 2-933	Greensburg, Ind.	F	99.68	0.28	86.00	6.50	3-35	90	F Buckhorn 9; curled dock 81
6021	Bahler Grain & Feed Co., Galveston	Dickinson Co., The Albert,	C	97.80	.....	81.00	9.00	12-34	..	C Curled dock 32
	Medium Red Clover, Lot B86	Chicago, Ill.	F	98.55	0.08	86.50	4.00	4-35	2,619	F Curled dock 9
6437	Brown Supply Co., Valparaiso	Dickinson Co., The Albert,	C	99.62	....	94.00	.	1-35	. . .	C None
	Mammoth Red Clover, Lot 2-397	Chicago, Ill.	F	99.76	0.02	94.50	1.00	4-35	18	F Curled dock 18

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*Not labeled.
†Certified by Retailer.
C and F stands, respectively, for Claimed and Found.

[74] Sample secured from William Huffman, R. R. 4, Lafayette, Ind.

[75] Sample secured from Walter F. Knox, R. R. 4, Hartford City, Ind.

[76] Removed from sale. Misbranded. All sold.

[77] Removed from sale. Misbranded. All sold.

RED CLOVER—Continued

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, per cent	Inert Matter, per cent	Germination, per cent	Hard Seeds, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds		Number per Pound of each of the Noxious Weed Seeds Specified in the Law
6262	Home Grain Co., LaGrange	Dickinson Co., The Albert,	C	96.88	....	75.00	21.00	11-34	......	C	Yellow trefoil 768
	Medium Red Clover, Lot B125	Chicago, Ill.	F	98.58	0.28	92.00	2.50	4-35	1,602	F	Curled dock 9; yellow trefoil 243
5753	Knapp, C. E., South Bend	Dickinson Co., The Albert,	C	98.74	...	94.00		3-34		C	None
	Medium Red Clover, Lot B125	Chicago, Ill.	F	98.94	0.16	92.50	3.00	2-35	1,575	F	Curled dock 36; dodder 9; yellow trefoil 360
6263	Lima Elevator Co., Howe	Dickinson Co., The Albert,	C	98.74	.....	95.00	1.00	10-34	.....	C	Yellow trefoil 128
	Medium Red Clover, Lot B125	Chicago, Ill.	F	98.96	0.26	90.50	1.00	4-35	783	F	Curled dock 9; yellow trefoil 324
6337	Martin Seed Store, Elkhart	Dickinson Co., The Albert,	C	99.00	.....	71.00	26.00	11-34	.....	C	None
	Red Clover, Lot 241293	Chicago, Ill.	F	99.26	0.14	91.50	8.00	4-35	1,625	F	Dodder 5
5758	Milford Grain & Milling Co., Milford	Dickinson Co., The Albert,	C	99.00	......	81.00	12.00	1-35	....	C	None
	Medium Red Clover, Lot 247	Chicago, Ill.	F	99.74	0.00	96.50	2.00	2-35	279	F	Curled dock 9
5632	Riggs & Son, W. G., Sullivan	Dickinson Co., The Albert,	C	96.82	....	75.00	21.00	11-34	.....	C	Yellow trefoil 768
	Medium Red Clover, Lot O2411-X1150	Chicago, Ill.	F	95.51	0.14	76.50	20.50	1-35	6,719	F	Curled dock 45; dodder 5; prickly lettuce 9; yellow trefoil 1,620
5747	Rolling Prairie Lumber & Grain Co., Rolling Prairie *	Dickinson Co., The Albert,	C	99.78	.....	90.00	7.00	9-34	......	C	None
	Medium Red Clover, Lot O24965	Chicago, Ill.	F	99.94	0.06	92.00	5.50	2-35	....	F	None
6491	Eberts Grain Co., Scottsburg[78]	Eberts Grain Co.,	C	98.00	.....	90.00	5.00	12-33	......	C	None
	Sapling Clover, Lot 393	Louisville, Ky.	F	98.56	0.22	94.00	2.50	4-35	4,608	F	Buckhorn 3,060; common plantain 486; curled dock 18; dodder 180; horse nettle 18; red sorrel 9; yellow trefoil 27
6367	Etna Lumber & Elevator Co., Etna Green	Etna Lumber & Elevator Co.,	C	99.86	......	90.00	6.50	2-35	......	C	Buckhorn 270
	Medium Red Clover, Lot B	Etna Green, Ind.	F	99.86	0.04	90.50	4.00	4-35	333	F	Buckhorn 189; common plantain 54
6374	Etna Lumber & Elevator Co., Etna Green	Etna Lumber & Elevator Co.,	C	99.94	......	86.00	....	2-35	....	C	None
	Mammoth Red Clover, Lot M	Etna Green, Ind.	F	99.90	0.04	90.50	6.00	4-35	117	F	Red sorrel 27
6375	Etna Lumber & Elevator Co., Etna Green	Etna Lumber & Elevator Co.,	C	99.90	.....	86.00	....	2-35	......	C	None
	Medium Red Clover, Lot O	Etna Green, Ind.	F	99.86	0.02	93.50	4.50	4-35	......	F	None
6074	Farm Bureau Service, Columbus	Farm Bureau Service,	C	95.00	......	85.00	15.00	1-35	......	C	None
	Mammoth Clover, Lot 2-1010	Columbus, Ind.	F	99.80	0.12	94.00	2.00	4-35	27	F	Buckhorn 9; curled dock 18
5739	Farmers Co-operative Co., Cicero	Farmers Co-operative Co.,	C	99.40	......	88.00	6.00	12-34	......	C	Buckhorn 18; curled dock 9
	Medium Red Clover	Cicero, Ind.	F	99.18	0.40	88.00	8.00	2-35	963	F	Buckhorn 342; common plantain 603; curled dock 9; prickly lettuce 9
6053	Farmers Feed & Coal Co., Bloomington	Foster-Kendall Co.,	C	98.80	....	73.00	22.00	12-34	.....	C	None
	Medium Red Clover	Carmel, Ind.	F	99.54	0.20	86.50	11.00	4-35	531	F	Buckhorn 18; curled dock 63
6066	Farmers Feed & Coal Co., Bloomington	Foster-Kendall Co.,	C	99.12	......	85.00	10.00	12-34	......	C	Buckhorn 90; curled dock 150; red sorrel 200
	Mammoth Clover	Carmel, Ind.	F	99.02	0.14	90.50	2.50	5-35	630	F	Bracted plantain 9; buckhorn 99; common plantain 54; curled dock 378

6304	Markin Hardware, Eaton	Foster-Kendall Co.,	C	99.25	....	73.00	22.00	12-34	...	C	None
	Medium Red Clover	Carmel, Ind.	F	99.26	0.30	78.00	18.00	4-35	801	F	Buckhorn 9; curled dock 153; prickly lettuce 9
6513	Mulberry Grain Co., Mulberry	Foster-Kendall Co.,	C	99.50	....	84.00	9.00	12-34	...	C	None
	Medium Red Clover	Carmel, Ind.	F	99.31	0.22	96.00	2.50	4-35	108	F	Buckhorn 54; common plantain 45; curled dock 9
6162	Rush County Hatchery, Rushville	Foster-Kendall Co.,	C	99.50	....	84.00	9.00	12-34	...	C	None
	Mammoth Clover	Carmel, Ind.	F	99.56	0.12	90.00	5.00	4-35	207	F	Curled dock 27
5698	Shaw, W. R., Orestes	Foster-Kendall Co.,	C	99.60	....	85.00	7.00	12-34	...	C	None
	Medium Red Clover	Carmel, Ind.	F	99.88	0.12	89.00	2.00	2-35	9	F	Buckhorn 9
5744	Shaw, W. R., Orestes	Foster-Kendall Co.,	C	99.25	....	75.00	20.00	12-34	...	C	None
	Medium Red Clover	Carmel, Ind.	F	98.50	0.60	75.00	22.00	2-35	729	F	Curled dock 99
6291	Standard Elevator Co., Lapel	Foster-Kendall Co.,	C	99.50	....	89.00	6.00	12-34	...	C	None
	Mammoth Red Clover	Carmel, Ind.	F	99.62	0.14	92.00	5.00	4-35	...	F	None
6100	Wall, N. A., Pittsboro	Foster-Kendall Co.,	C	99.70	....	85.00	9.00	12-34	...	C	None
	Medium Red Clover	Carmel, Ind.	F	99.74	0.20	86.50	8.50	4-35	18	F	Buckhorn 18
6008	Walton Elevator Co., Walton	Foster-Kendall Co.,	C	99.58	....	70.00	25.00	12-34	...	C	None
	Medium Red Clover	Carmel, Ind.	F	99.94	0.04	94.00	4.50	4-35	108	F	Buckhorn 108
6012	Walton Elevator Co., Walton	Foster-Kendall Co.,	C	99.66	....	80.00	15.00	12-34	...	C	None
	Medium Red Clover	Carmel, Ind.	F	99.34	0.12	80.50	11.50	3-35	1,548	F	Curled dock 9; yellow trefoil 99
6132	Wellington Milling Co., Anderson	Foster-Kendall Co.,	C	98.88	....	73.00	20.00	12-34	...	C	None
	Medium Red Clover	Carmel, Ind.	F	98.79	0.65	83.50	14.00	3-35	1,026	F	Curled dock 288; prickly lettuce 18
6092	Wolfran Grain Co., Brownsburg	Foster-Kendall Co.,	C	99.60	....	84.00	10.00	12-34	...	C	None
	Medium Red Clover, Lot Brownsburg	Carmel, Ind.	F	99.88	0.04	89.00	7.00	4-35	72	F	Buckhorn 63; curled dock 9
6294	Goodrich Bros. Co., Westfield	Goodrich Bros. Co.,	C	99.32	....	94.00	2.00	1-35	...	C	Buckhorn 990; dodder 90
	Medium Clover, Lot 2	Westfield, Ind.	F	99.32	0.06	85.50	2.00	4-35	2,061	F	Buckhorn 1,530; common plantain 441
6295	Goodrich Bros. Co., Westfield[79]	Goodrich Bros. Co.,	C	99.66	....	94.00	2.00	1-35	...	C	Buckhorn 180
	Medium Clover, Lot 1	Westfield, Ind.	F	99.35	0.14	80.50	1.00	4-35	1,643	F	Buckhorn 1,080; dodder 23
5932	Chance Bros., Connersville	Goodrich Bros. Co.,	C	99.30	....	86.00	10.00	12-34	...	C	Buckhorn 180
	Red Clover, Lot 2265	Winchester, Ind.	F	98.75	0.26	91.50	4.00	3-35	1,296	F	Buckhorn 756; common plantain 153; curled dock 18; wild carrot 9
6152	Goodrich Bros. Co., Farmland	Goodrich Bros. Co.,	C	96.16	....	88.00	6.00	12-34	...	C	Buckhorn 180; common plantain 360; curled dock 270
	Red Clover, Lot Quail	Winchester, Ind.	F	94.91	0.56	83.50	3.00	3-35	3,240	F	Buckhorn 1,080; common plantain 171; curled dock 270; wild carrot 9
6014	Goodrich Bros. Co., Onward	Goodrich Bros. Co.,	C	99.00	....	90.00	6.00	11-34	...	C	Buckhorn 90
	Medium Clover, Lot 2274	Winchester, Ind.	F	99.48	0.04	89.50	3.50	4-35	585	F	Buckhorn 270; common plantain 27; curled dock 18
6158	Graft, C. V., Winchester	Graft, C. V.,	C	99.10	....	95.00	3.00	1-35	...	C	Buckhorn 116
	Medium Clover, Lot H	Winchester, Ind.	F	99.30	0.24	90.50	2.50	3-35	207	F	Buckhorn 9; common plantain 18
6660	Murphy & Co., Princeton	Heldt Co., The,	C	95.44	....	89.00	5.00	2-35	...	C	Buckhorn 14,220
	Red Clover, Lot 13675	Evansville, Ind.	F	97.22	1.00	85.50	3.50	5-35	6,264	F	Bracted plantain 9; buckhorn 6,210; common plantain 45

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*Not labeled.
†Certified by Retailer.
C and F stands, respectively, for Claimed and Found.

[78] Removed from sale. Misbranded. Returned to distributor.
[79] Removed from sale. Misbranded. Recleaned and retagged.

RED CLOVER—Continued

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, per cent	Inert Matter, per cent	Germination, per cent	Hard Seeds, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds	Number per Pound of each of the Noxious Weed Seeds Specified in the Law
6331	Martin Seed Store, Elkhart[80]	Hirsch & Sons, Henry,	C	87.69	......	83.00	10.00	12-34	....	C None
	Medium Red Clover, Lot 1447	Toledo, Ohio	F	84.44	0.42	90.00	1.50	4-35	5,945	F Buckhorn 189; common plantain 162; curled dock 1,440; dodder 5; horse nettle 9; mustard 27; red sorrel 477; wild carrot 27; yellow trefoil 9
6378	Holser & Co., B. I., Walkerton[81]	Holser & Co., B. I.,	C	99.30	....	92.00	.	2-35	....	C None
	Mammoth Clover, Lot 1	Walkerton, Ind.	F	98.21	0.16	87.00	5.50	3-35	4,977	F Buckhorn 3,960; common plantain 36; curled dock 333; red sorrel 360; yellow trefoil 18
5736	Atlanta Grain Co., Atlanta	Hooton-Davis Seed Corp.,	C	99.00	.....	85.00	10.00	1-35	....	C None
	Medium Clover, Lot 193	Lebanon, Ind.	F	99.36	0.18	93.50	4.00	2-35	765	F Buckhorn 180; common plantain 36; curled dock 9
6188	Farmers Supply Co., Danville	Hooton-Davis Seed Corp.,	C	99.50	..	85.00	5.00	1-35	....	C None
	Mammoth Clover, Lot F542	Lebanon, Ind.	F	99.29	0.19	94.00	2.50	4-35	351	F Buckhorn 81; curled dock 81; dodder 9
6189	Farmers Supply Co., Danville	Hooton-Davis Seed Corp.,	C	99.00	....	85.00	5.00	1-35	....	C None
	Medium Clover, Lot M175	Lebanon, Ind.	F	99.18	0.10	92.50	0.00	4-35	378	F Buckhorn 144; curled dock 27; dodder 9; wild carrot 9; yellow trefoil 9
6457	Sugar Creek Grain Co., Thorntown	Hooton-Davis Seed Corp.,	C	99.00	....	85.00	5.00	1-35	....	C None
	Medium Clover, Lot M75	Lebanon, Ind.	F	98.85	0.18	93.00	2.00	4-35	675	F Buckhorn 81; common plantain 117; curled dock 18; wild carrot 9
6137	Weer, F. W., Anderson	Hooton-Davis Seed Corp.,	C	99.50	....	85.00	5.00	1-35	....	C None
	Mammoth Clover, Lot E542	Lebanon, Ind.	F	99.20	0.32	95.50	1.50	3-35	171	F Buckhorn 135; curled dock 36
6236	Dekalb Co. Farm Bureau Co-op. Assn., Inc., Auburn	Indiana Farm Bureau Co-op. Assn., Inc.,	C	99.65	....	85.00	10.00	10-34	....	C None
	Medium Red Clover, Lot 2-828	Indianapolis, Ind.	F	99.48	0.26	86.50	8.50	4-35	90	F None
6326	Elkhart Co. Farm Bureau Co-op. Assn., Inc., Goshen	Indiana Farm Bureau Co-op. Assn., Inc.,	C	99.70	....	85.00	10.00	12-34	....	C None
	Medium Red Clover, Lot 2-1007	Indianapolis, Ind.	F	99.86	0.06	92.00	3.00	4-35	18	F Buckhorn 18
6257	Lagrange Co. Farm Bureau Co-op. Assn., Inc., Lagrange	Indiana Farm Bureau Co-op. Assn., Inc.,	C	99.70	.....	85.00	10.00	12-34	....	C None
	Medium Red Clover, Lot 2-994	Indianapolis, Ind.	F	99.38	0.20	91.00	2.50	4-35	216	F Buckhorn 36
6258	Lagrange Co. Farm Bureau Co-op. Assn., Inc., Lagrange	Indiana Farm Bureau Co-op. Assn., Inc.,	C	99.70	.	85.00	10.00	12-34	....	C None
	Mammoth Clover, Lot 2-999	Indianapolis, Ind.	F	99.39	0.12	94.00	2.50	4-35	63	F Buckhorn 9; curled dock 54
6266	Lagrange Co. Farm Bureau Co-op. Assn., Inc., Lagrange	Indiana Farm Bureau Co-op. Assn., Inc.,	C	99.50	....	85.00	10.00	12-34	....	C None
	Medium Clover, Lot 2-1007	Indianapolis, Ind.	F	99.92	0.04	91.00	2.00	4-35	9	F Buckhorn 9

5461	Ripley Co. Farm Bureau Co-op. Assn., Inc., Osgood	Indiana Farm Bureau Co-op. Assn., Inc.,	C	99 75	......	87.00	6.00	4-34	....	C	None
	Mammoth Clover, Lot MC280	Indianapolis, Ind.	F	99 12	0 08	87.00	8.00	9-34	639	F	Curled dock 18; red sorrel 252; yellow trefoil 9
5511	†Whitley Co. Farm Bureau Co-op. Assn., Inc., Columbia City	Indiana Farm Bureau Co-op. Assn., Inc.,	C	99 50	......	87.00	7.00	1-34	......	C	None
	Medium Red Clover, Lot 1	Indianapolis, Ind.	F	99.80	0 08	84 50	3 00	9-34	180	F	Buckhorn 81; curled dock 9
6206	Whitley Co. Farm Bureau Co-op. Assn., Inc., Columbia City	Indiana Farm Bureau Co-op. Assn., Inc.,	C	99 70	......	85 00	10 00	12-34	......	C	None
	Medium Red Clover, Lot 2-1007	Indianapolis, Ind.	F	99 64	0.12	92.00	2 00	3-35	18	F	Buckhorn 9; curled dock 9
6078	Bottorff, D. M., Columbus	Indiana Seed Co.,	C	99 40	......	84 00	7.00	12-34	......	C	None
	Medium Clover, I-99	Indianapolis, Ind.	F	99.50	0.02	87.50	4 50	4 35	1,643	F	Dodder 14; horse nettle 9
5377	Farmers Co-operative Elevator, Rochester	Indiana Seed Co.,	C	99.65	......	85 00	5 00	1-34	......	C	None
	Medium Clover, Lot B688-1	Indianapolis, Ind.	F	99.86	0.00	89.50	5.00	8-34	167	F	Buckhorn 27; curled dock 45; dodder 5
5901	Norman & Roberts, G. M., Bedford[82]	Indiana Seed Co.,	C	99 00	......	87.00	4 00	1-35	......	C	Buckhorn 360
	Medium Clover, Lot I-1362	Indianapolis, Ind.	F	98.54	0.06	93 00	3.50	3-35	5,922	F	Buckhorn 4,410; common plantain 702
5619	Riggs & Son, W. G., Sullivan	Indiana Seed Co.,	C	99.50	.....	85.00	5 00	9-34	......	C	None
	Medium Clover, Lot B698-1	Indianapolis, Ind.	F	99 78	0 08	91 00	6.50	12-34	545	F	Buckhorn 36; common plantain 315; dodder 14
6490	Sunshine Feed Store, Scottsburg	Indiana Seed Co.,	C	99 00	......	84.00	6 00	12-34	......	C	Buckhorn 90; common plantain 90
	Medium Clover, Lot I-1324	Indianapolis, Ind.	F	98 43	0 15	92 50	5.50	4 35	6,237	F	Buckhorn 171; horse nettle 36
5567	Kiefer Feed & Supply Co., Elwood	Kiefer Feed & Supply Co.,	C	99 25	......	85 00	11 00	3-33	....	C	Common plantain 630; curled dock 180; dodder 90
	Big English Clover, Lot 61096	Elwood, Ind.	F	98 58	0 78	85.50	10.00	10-34	3,186	F	Bracted plantain 63; buckhorn 423; common plantain 1,260; curled dock 81; dodder 36; red sorrel 36; wild carrot 27
6582	Bullock, F. L., Butlerville	Lewis Implement & Seed Co.,	C	99 34	......	90 00	.....	12-34	....	C	Buckhorn 40
	Red Clover, Lot Red Bird	Louisville, Ky.	F	99 44	0 08	94 50	3.00	4-35	720	F	Buckhorn 162; curled dock 18
5452	Hunter & Son, Wm., Versailles[83]	McCullough Seed Co., The J. Chas.,	C	99.00	......	......	.....	.....	.....	C	Buckhorn 90; curled dock 18; dodder 18; horse nettle 90; red sorrel 360
	Sapling Clover, Lot 1377	Cincinnati, Ohio	F	99.46	0 18	91 50	3 00	9-34	495	F	Buckhorn 126; curled dock 63; dodder 63; red sorrel 243
6530	Irwin Feed Store, Madison	McCullough Seed Co., The J. Chas.,	C	99 70	....	83.00	12 00	12-34	......	C	None
	Domestic Clover, Lot 1758	Cincinnati, Ohio	F	99.56	0.30	83 50	8 50	4-35	198	F	Bracted plantain 27; buckhorn 72; curled dock 9
5928	Schmocker, John, Batesville	McCullough Seed Co., The J. Chas.,	C	99.55	......	80 00	6.00	12-34	......	C	None
	Mammoth or Sapling Red Clover, Lot 1883	Cincinnati, Ohio	F	99.56	0.08	90.00	5.50	3-35	81	F	Buckhorn 36; common plantain 9; red sorrel 36
6551	Gaudin Hardware, Geo., Vevay	McCullough Sons Co., The J. M.,	C	99.66	......	91.50	3 00	2-35	......	C	Buckhorn 270
	Mammoth or Sapling Clover, Lot 1508	Cincinnati, Ohio	F	99.50	0.38	91 50	4 50	4-35	45	F	Buckhorn 45
6552	Gaudin Hardware, Geo., Vevay	McCullough Sons Co., The J. M.,	C	99 65	......	80.00	12 00	1-35	......	C	Buckhorn 100; curled dock 100
	Red Clover, Lot 1547	Cincinnati, Ohio	F	99 50	0 18	93 50	0 50	4-35	576	F	Buckhorn 486

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[81] Removed from sale. Misbranded. Retagged.
[82] Removed from sale. Misbranded. Returned to distributor.
[83] Tag incomplete.

RED CLOVER—Continued

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, per cent	Inert Matter, per cent	Germination, per cent	Hard Seeds, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds		Number per Pound of each of the Noxious Weed Seeds Specified in the Law
6429	McMahan Seed Co., Valparaiso[84]	McMahan Seed Co.,	C	99.25	......	89.00	4.00	2-35	......	C	None
	Medium Red Clover	Valparaiso, Ind.	F	95.28	1.19	76.00	1.50	4-35	10,431	F	Bracted plantain 117; buckhorn 297; chicory 9; common plantain 3,600; horse nettle 9; red sorrel 9; wild carrot 1,170
6439	McMahan Seed Co., Valparaiso	McMahan Seed Co.,	C	99.50	......	89.00	4.00	2-35	......	C	Common plantain 90; curled dock 90
	Red Clover, Lot EF	Valparaiso, Ind.	F	99.41	0.43	91.00	5.50	4-35	333	F	Buckhorn 108; common plantain 36; curled dock 45; red sorrel 117 wild carrot 27
6555	Krick & Sons Co., A., Milan	Market Gardeners' Seed Co.,	C	98.60	......	90.00	.....	11-33	......	C	Buckhorn 3,600; common plantain 180
	Red Clover, Lot 7738	Cincinnati, Ohio	F	98.82	0.26	77.50	3.00	4-35	3,254	F	Buckhorn 2,610; common plantain 27; curled dock 54; dodder 23
6187	Martin Hardware Co., Clayton	Martin Hardware Co.,	C	99.60	......	90.00	6.00	2-35	......	C	Buckhorn 222
	Medium Red Clover, Lot R66	Clayton, Ind.	F	99.90	0.10	87.50	10.00	4-35	90	F	Buckhorn 81; dodder 9
6194	Martin Hardware Co., Clayton	Martin Hardware Co.,	C	99.30	......	94.00	4.00	2-35	......	C	Buckhorn 181; curled dock 181
	Mammoth Clover, Lot M3	Clayton, Ind.	F	99.44	0.46	89.00	7.50	4-35	351	F	Buckhorn 189; curled dock 72
6197	Martin Hardware Co., Clayton	Martin Hardware Co.,	C	99.60	......	92.00	4.00	2-35	......	C	Buckhorn 635
	Medium Red Clover, Lot R70	Clayton, Ind.	F	99.90	0.02	92.50	6.50	4-35	324	F	Buckhorn 297; common plantain 27
6198	Martin Hardware Co., Clayton	Martin Hardware Co.,	C	99.60	......	94.00	4.00	2-35	......	C	None
	Mammoth Clover, Lot M5	Clayton, Ind.	F	99.56	0.40	91.50	6.50	3-35	189	F	Buckhorn 135; common plantain 45; curled dock 9
5485	Mayer Grain Co., Churubusco	Mayer Grain Co.,	C	99.75	......	86.00	6.00	1-34	......	C	None
	Medium Red Clover, Lot R	South Whitley, Ind.	F	99.44	0.20	93.00	1.50	9-34	108	F	Buckhorn 36; common plantain 45; curled dock 9; mustard 18
6002	Mayer Grain Co., Denver	Mayer Grain Co.,	C	99.60	......	88.00	6.00	1-35	......	C	None
	Mammoth Red Clover, Lot 410	South Whitley, Ind.	F	99.50	0.34	91.50	3.00	3-35	99	F	Buckhorn 9
6004	Mayer Grain Co., Denver	Mayer Grain Co.,	C	99.75	......	88.00	6.00	1-35	......	C	None
	Medium Red Clover, Lot Ret	South Whitley, Ind.	F	99.90	0.02	94.00	2.00	3-35	......	F	None
6046	Miller Grain Co., Greencastle	Miller Grain Co.,	C	99.00	......	86.00	6.00	1-35	......	C	Buckhorn 700
	Medium Clover, Lot 1	Bainbridge, Ind.	F	99.43	0.39	84.50	9.00	4-35	914	F	Buckhorn 837; common plantain 72; dodder 5
6494	Farmers Co-operative Elevator, Seymour	National Seed Co.,	C	99.25	......	92.00	.....	10-34	......	C	None
	Sapling Clover, Lot 1203	Louisville, Ky.	F	98.88	0.33	95.00	4.00	4-35	954	F	Buckhorn 189; curled dock 45
6154	†Carman Supply Co., Lynn[85]	New Paris Elevator Co.,	C	99.16	......	90.00	3.00	1-35	......	C	Buckhorn 270
	Little Red Clover, Lot 2	New Paris, Ohio	F	96.16	0.42	88.50	2.50	3-35	594	F	Buckhorn 549; common plantain 27; wild carrot 18
6562	Schlemmer Feed Store, Lawrenceburg[86]	Norton's Sons, C. C.,	C	99.20	......	93.00	.....	2-35	......	C	None
	Red Clover, Lot Benner	Greenfield, Ohio	F	98.85	0.67	88.50	7.00	4-35	1,674	F	Buckhorn 1,260; common plantain 117; curled dock 9; dodder 99; wild carrot 9

6545	Tuxedo Feed & Supply Co., Aurora[87] Mammoth Red Clover, Lot Truitt	Norton's Sons, C. C., Greenfield, Ohio	C	99.30	......	90.00	......	1-35	....	C None
			F	98 46	0 64	88 50	8 00	4-35	1,224	F Buckhorn 378; curled dock 270; dodder 9; horse nettle 18; wild carrot 9
6180	Orme, Arnold, Rushville[88] Red Clover, Lot 69457	Orme, Arnold, Rushville, Ind.	C	99 70	......	91.00	6.50	2-35	....	C Buckhorn 90
			F	99.48	0.14	93 50	5 50	4-35	3,375	F Buckhorn 1,035; common plantain 2,250; curled dock 18; dodder 45; wild carrot 27
6327	Wakarusa Milling Co., Wakarusa Mammoth Clover, Lot 67735	Pierceton Elevator Co., Pierceton, Ind.	C	98.41	......	83 50	13 00	9-34	....	C Bracted plantain 450; buckhorn 900; curled dock 360; red sorrel 2,790
			F	99 46	0.12	93.50	4 00	4-35	1,728	F Bracted plantain 171; buckhorn 333; common plantain 45; curled dock 9; red sorrel 1,080
6342	Wakarusa Milling Co., Wakarusa[89] Medium Red Clover, Lot 67734	Pierceton Elevator Co., Pierceton, Ind.	C	99.25	......	87.50	10.50	9-34	....	C None
			F	99.07	0.20	90 00	8.50	4-35	2,727	F Buckhorn 2,250; common plantain 225; curled dock 18; dodder 9; red sorrel 9; wild carrot 36
5541	Greenwood & Co., Washington Judge Red Clover, Lot 2652	Purcell Seed Co., Evansville, Ind.	C	99 12	......	83.50	5.00	7-34	....	C Buckhorn 2,070; common plantain 180; dodder 9
			F	99.18	0.12	84.50	10.50	9-34	2,115	F Bracted plantain 27; buckhorn 2,070; dodder 18
6404	Quinlan Seed Store, Terre Haute Red Clover, Lot 54256	Quinlan Seed Store, Terre Haute, Ind.	C	99.32	......	68.50	21.50	11-34	....	C Buckhorn 900
			F	99 16	0 48	86 00	5.00	4-35	1,143	F Bracted plantain 27; buckhorn 900; common plantain 36
5889	McCampbell, Ralph, French Lick Red Clover	Ross Seed Co., Louisville, Ky.	C	99.50	......	82.00	10.00	10-34	....	C Buckhorn 540
			F	99.36	0.48	91.00	4.50	3-35	630	F Buckhorn 630
6503	Paoli Hardware Co., Paoli Sapling Clover, Lot 6336	Ross Seed Co., Louisville, Ky.	C	99.50	......	87.00	9.00	12-34	....	C Buckhorn 90
			F	98 77	0 50	81 50	2 00	4 35	729	F Buckhorn 153; curled dock 81; red sorrel 27; yellow trefoil 18
6465	Batman, A. J., Marengo Red Clover, Lot 71	Scott Seed Co., New Albany, Ind.	C	99.00	......	80.10	10.00	8-34	....	C Buckhorn 360; red sorrel 90
			F	98 93	0.20	89 50	3 50	4-35	1,134	F Bracted plantain 9; buckhorn 720; common plantain 27; wild carrot 18
6478	James Seed Co., Jeffersonville Red Clover, Lot 71.	Scott Seed Co., New Albany, Ind.	C	99.18	......	80.00	10.00	8-34	....	C Buckhorn 360; red sorrel 90
			F	98 62	0 32	83 00	9 00	4 35	1,377	F Buckhorn 513; common plantain 54
5470	Linkhart & Son, North Vernon Sapling Red Clover, Lot 471	Scott Seed Co., New Albany, Ind.	C	99 50	......	80 00	17 00	1-34	....	C Buckhorn 180; curled dock 90
			F	99.26	0 32	86 00	5 50	9-34	1,575	F Bracted plantain 9; buckhorn 333; common plantain 63; curled dock 432; dodder 18
5471	†Linkhart & Son, North Vernon Medium Red Clover, Lot 70	Scott Seed Co., New Albany, Ind.	C	99.50	......	80.00	14.00	1-34	....	C Buckhorn 90
			F	99.80	0.08	77.50	18.50	9-34	243	F Buckhorn 243
6506	Paoli Hardware Co., Paoli Red Clover, Lot 7	Scott Seed Co., New Albany, Ind.	C	98 00	......	90 00	2 00	12 34	....	C Buckhorn 90; mustard 90; red sorrel 70
			F	96.95	1.14	93.50	1.00	4-35	990	F Buckhorn 180

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[86] Removed from sale. Misbranded. Returned to distributor.

[87] Removed from sale. Misbranded. Retagged.

[88] Removed from sale. Misbranded. All sold.

[89] Removed from sale. Misbranded. Retagged.

RED CLOVER—Continued

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor	Purity, per cent	Inert Matter, per cent	Germination, per cent	Hard Seeds, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds	Number per Pound of each of the Noxious Weed Seeds Specified in the Law
6472	Turley & Co., James E., English	Scott Seed Co., C	98.30	......	80.00	10.00	1-35	....	C Buckhorn 1,710; curled dock 220; dodder 540; red sorrel 360
	Sapling Clover, Lot 448	New Albany, Ind. F	98.28	0 42	87.00	6.00	3-35	5,031	F Buckhorn 2,610; common plantain 36; curled dock 117; dodder 990; horse nettle 9; red sorrel 549
6293	Standard Elevator Co., Lapel	Standard Elevator Co., C	99.26	......	93 00	2.00	1-35	....	C None
	Medium Red Clover	Lapel, Ind. F	99.48	0.14	93 00	2.50	4-35	198	F Buckhorn 18
6381	Protsman & Son, G. L., Plymouth	Standard Seed Co., C	98.50	......	82.00	10 00	3-34	....	C None
	Medium Red Clover, Lot 12365	Chicago, Ill. F	97.71	0.12	78 00	9.50	3 35	3,699	F Yellow trefoil 99
6424	Sommerfield & Swanson, LaPorte	Standard Seed Co., C	99.25	......	84.00	8 00	1-35	....	C None
	Medium Red Clover, Lot 12370	Chicago, Ill. F	98.72	0.16	80.50	9 50	3-35	1,368	F Buckhorn 9; curled dock 9
5656	Wynn, Arlie S., Rochester	Standard Seed Co., C	98.50	......	82 00	10.00	11-34	....	C None
	Medium Red Clover, Lot Fred 12365	Chicago, Ill. F	97.91	0.18	80 50	6.00	1-35	3,195	F Buckhorn 9; curled dock 18; yellow trefoil 18
6284	*Brown, Harlen M., Hagerstown[90]	Standard Seed Co., C	......	......	......	......	......	....	C
	Red Clover	Kansas City, Mo. F	85.45	2.52	69.00	2.00	3-35	19,423	F Bracted plantain 72; buckhorn 630; common plantain 360; curled dock 900; dodder 270; horse nettle 81; mustard 9; red sorrel 387; yellow trefoil 144
6333	Russell, J. A., Elkhart[91]	Standard Seed Co., C	95.00	......	80.00	2.00	1-35	....	C Buckhorn 1; curled dock 1
	Red Clover	Kansas City, Mo. F	87.92	3.06	75 50	4.00	3-35	18,036	F Bracted plantain 90; buckhorn 1,170; common plantain 1,440; curled dock 549; dodder 288; horse nettle 90; mustard 9; red sorrel 126; wild carrot 45; yellow trefoil 369
6352	Stauffer Grain Co., Nappanee	Stauffer Grain Co., C	98.88	......	75.50	19.50	1-35	....	C Buckhorn 90; curled dock 1,260; red sorrel 1,170
	Medium Red Clover, Lot 68906	Nappanee, Ind. F	99.10	0.16	92.50	3.50	4-35	1,242	F Buckhorn 900; common plantain 63; wild carrot 9
6359	Stauffer Grain Co., Nappanee	Stauffer Grain Co., C	99.34	......	93.50	3.00	1-35	....	C Buckhorn 360; curled dock 360
	Mammoth Clover, Lot 68905	Nappanee, Ind. F	99.09	0.14	93.50	3.00	4-35	3,510	F Buckhorn 2,970; wild carrot 540
6240	Steuben Co. Farm Bureau Co-op. Assn., Inc., Pleasant Lake	Steuben Co. Farm Bureau Co-op. Assn., Inc., C	99.72	......	82.00	17.00	12-34	....	C Buckhorn 27; common plantain 54; curled dock 9
	Medium Clover, Lot 8	Pleasant Lake, Ind. F	99 70	0.22	86.00	10.50	4-35	9	F Buckhorn 9
6245	Strock, Frank, Hudson	Strock, Frank, C	99.36	......	92.00	6.00	1-35	....	C Buckhorn 90; common plantain 180; wild carrot 270
	Medium Red Clover, Lot 69336	Hudson, Ind. F	99 34	0 56	91 00	3 50	3-35	135	F Common plantain 36; wild carrot 99

	cago, Ill. Medium Red Clover, Lot 12370	Sun-Field Seed Service, Chicago, Ill.	C	99.50	.....	82.00	10.00	1-35	....	C	None
			F	98.63	0.30	87.50	8.50	3-35	1,368	F	Buckhorn 18
6350	Syler & Syler, Nappanee [93] Medium Red Clover	Syler & Syler, Nappanee, Ind.	C	99.80	.....	90.00	.....	1-35	....	C	None
			F	99.10	0.14	77.50	19.50	4-35	621	F	Curled dock 45; yellow trefoil 36
6353	Syler & Syler, Nappanee[94] Mammoth Clover	Syler & Syler, Nappanee, Ind.	C	99.00	.....	90.00	.....	1-35	....	C	None
			F	98.60	0.39	86.50	7.00	4-35	819	F	Buckhorn 162; curled dock 162; red sorrel 306; wild carrot 9
6354	Syler & Syler, Nappanee [95] Medium Red Clover	Syler & Syler, Nappanee, Ind.	C	99.00	.....	90.00	.....	1-35	....	C	None
			F	97.96	1.04	87.00	8.00	4-35	3,681	F	Buckhorn 1,800; common plantain 144; wild carrot 27
6425	Syler & Syler, Nappanee [96] Medium Red Clover	Syler & Syler, Nappanee, Ind.	C	94.00	.....	88.00	.....	1-35	....	C	None
			F	89.28	0.52	85.50	5.50	3-35	4,797	F	Buckhorn 2,160; Canada thistle 9; curled dock 738
6392	Phillips, J. C., Star City Medium Red Clover	Syler & Syler, Plymouth, Ind.	C	99.50	.....	89.00	5.00	1-35	....	C	None
			F	99.24	0.20	71.50	24.50	4-35	189	F	Curled dock 99
6363	Syler & Syler, Plymouth Medium Red Clover, Lot 223	Syler & Syler, Plymouth, Ind.	C	99.77	.....	85.00	5.00	1-35	....	C	None
			F	99.68	0.20	90.50	5.50	3-35	243	F	Buckhorn 18; curled dock 27; red sorrel 18
6370	Syler & Syler, Plymouth Mammoth Clover, Lot 263	Syler & Syler, Plymouth, Ind.	C	99.59	.....	86.00	8.00	1-35	....	C	Buckhorn 207; red sorrel 27
			F	99.58	0.34	91.50	6.50	4-35	162	F	Buckhorn 135; curled dock 9; red sorrel 18
6376	Syler & Syler, Plymouth Idaho Red Clover, Lot H256	Syler & Syler, Plymouth, Ind.	C	99.34	.....	89.00	7.00	3-35	....	C	Curled dock 54
			F	98.97	0.18	77.00	19.00	3-35	747	F	Curled dock 36; yellow trefoil 81
6720	Syler & Syler, Plymouth Medium Red Clover, Lot 324	Syler & Syler, Plymouth, Ind.	C	98.49	.....	74.00	20.00	3-35	....	C	None
			F	98.66	0.10	64.50	32.00	6-35	3,690	F	None
6261	Lima Elevator Co., Howe Red Clover, Lot Badger Brand	Teweles Seed Co., L., Milwaukee, Wis.	C	99.25	.....	88.00	10.00	1-35	....	C	None
			F	99.28	0.20	92.00	4.00	4-35	1,485	F	Curled dock 27; yellow trefoil 18
6420	Sommerfield & Swanson, LaPorte[97] Mammoth Clover, Lot Badger Brand	Teweles Seed Co., L., Milwaukee, Wis.	C	99.50	.....	94.00	3.00	4-34	....	C	None
			F	98.47	0.14	95.00	3.00	4-35	1,980	F	Curled dock 18; yellow trefoil 72
6421	Sommerfield & Swanson, LaPorte Red Clover, Lot Owl Brand	Teweles Seed Co., L., Milwaukee, Wis.	C	99.00	.....	90.00	6.00	4-34	....	C	None
			F	98.41	0.07	94.50	0.50	4-35	4,176	F	Curled dock 9; yellow trefoil 27
5851	Tri-Co. Farm Bureau Co-op. Assn., Inc., Evansville Red Clover	Tri-Co. Farm Bureau Co-op. Assn., Inc., Evansville, Ind.	C	99.00	.....	83.00	12.00	2-34	....	C	Buckhorn 160
			F	99.72	0.20	88.50	2.50	2-35	198	F	Buckhorn 90; dodder 18
6345	Paxson, C. E., Elkhart Medium Clover	Troyer Seed Co., Goshen, Ind.	C	99.50	.....	88.00	7.00	2-35	....	C	Buckhorn 720
			F	99.92	0.02	87.00	7.00	4-35	270	F	Buckhorn 234; common plantain 36
5980	Warren Elevator Co., Warren Medium Clover, Lot 35W	Warren Elevator Co., Warren, Ind.	C	97.50	.....	90.00	3.00	12-34	....	C	Buckhorn 3
			F	99.14	0.40	90.50	3.50	4-35	270	F	Buckhorn 153; common plantain 90; curled dock 27
6084	Westermeier Hardware Co., Columbus[98] English Clover, Lot 1MO	Westermeier Hardware Co., Columbus, Ind.	C	99.52	.....	91.00	6.00	9-34	....	C	None
			F	99.50	0.30	87.00	5.50	3-35	1,026	F	Buckhorn 9; common plantain 990; curled dock 27
6031	Hillis Feed Store, Greencastle Mammoth Clover, Lot 3	Wilson, John, Roachdale, Ind.	C	99.50	.....	87.00	2.00	12-34	....	C	Buckhorn 360
			F	99.30	0.40	89.00	3.50	4-35	288	F	Buckhorn 171; curled dock 27
6035	Hillis Feed Store, Greencastle Mammoth Clover, Lot 2	Wilson, John, Roachdale, Ind.	C	99.30	.....	87.00	5.00	12-34	....	C	Buckhorn 540
			F	98.99	0.71	90.50	7.00	4-35	1,206	F	Buckhorn 540; common plantain 45; curled dock 333; horse nettle 18

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*Not labeled.

†Certified by Retailer.

C and F stands, respectively, for Claimed and Found.

[90] Sample secured from Earl Bookout, Hagerstown, Ind.

[91] Removed from sale. Misbranded. All sold.

[92] Sample secured from Wm. C. Thomas, Gaston, Ind.

[93] Removed from sale. Misbranded. Recleaned.

[94] Removed from sale. Misbranded. Recleaned.

[95] Removed from sale. Misbranded. Recleaned.

[96] Sample secured from Will H. Hews, R. R. 3, LaPorte, Ind., Contains 8.54% Alsike Clover with a germination of 87.50% and 6.00% Hard Seeds.

[97] Removed from sale. Misbranded. Retagged.

[98] Removed from sale. Misbranded. Retagged.

RED CLOVER—Continued

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor	Purity, per cent	Inert Matter, per cent	Germination, per cent	Hard Seeds, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds	Number per Pound of each of the Noxious Weed Seeds Specified in the Law
6045	Hillis Feed Store, Greencastle	Wilson, John, C	99.50	....	87.00	5.00	12–34	....	C Buckhorn 180
	Mammoth Clover, Lot 1	Roachdale, Ind. F	99.70	0.28	88.00	1.50	4–35	261	F Buckhorn 144; common plantain 9; curled dock 18
6504	Paoli Hardware Co., Paoli[99]	Wyatt Seed & Feed Store, C	98.00	....	90.00	....	2–35	....	C Bracted plantain 35; buckhorn 400; curled dock 32
	Mammoth Clover	Petersburg, Ind. F	97.23	0.16	94.50	2.50	4–35	9,630	F Bracted plantain 36; buckhorn 9,360; common plantain 27; curled dock 153; red sorrel 45; wild onion 9
6058	Pennington Feed Store, Bloomington[100]	Wyatt Seed & Feed Store, C	96.67	....	90.00	....	2–35	....	C Buckhorn 9,090; common plantain 360; curled dock 180; dodder 315
	Red Clover, Lot 1	Petersburg, Ind. F	96.93	0.75	89.50	5.00	3–35	9,144	F Buckhorn 7,920; common plantain 306; curled dock 90; dodder 108
6061	Pennington Feed Store, Bloomington[101]	Wyatt Seed & Feed Store, C	94.81	....	90.00	....	2–35	....	C Bracted plantain 45; buckhorn 13,005; common plantain 495; curled dock 360; dodder 135; horse nettle 45; red sorrel 45
	Mammoth Clover	Petersburg, Ind. F	95.51	0.56	82.50	5.00	3–35	15,705	F Buckhorn 15,030; common plantain 207; curled dock 135; dodder 54; red sorrel 9
6464	Tower & Merryman, Marengo[102]	Wyatt Seed & Feed Store, C	96.77	....	92.00	....	2–35	....	C Bracted plantain 256; buckhorn 6,272
	Red Clover	Petersburg, Ind. F	98.00	0.18	76.50	3.00	4–35	7,686	F Bracted plantain 9; buckhorn 6,930; common plantain 18; dodder 90; red sorrel 9
5827	Wyatt Seed & Feed Store, Petersburg[103]	Wyatt Seed & Feed Store, C	94.81	....	89.00	8.00	2–35	....	C Bracted plantain 45; buckhorn 13,005; common plantain 495; curled dock 360; dodder 135; horse nettle 45; red sorrel 45
	Mammoth Clover, Lot 13653	Petersburg, Ind. F	96.55	0.72	88.00	7.50	2–35	11,115	F Bracted plantain 18; buckhorn 10,440; common plantain 225; curled dock 90; dodder 144; horse nettle 9; red sorrel 9
5828	Wyatt Seed & Feed Store, Petersburg[104]	Wyatt Seed & Feed Store, C	96.67	....	90.00	6.00	2–35	....	C Buckhorn 9,090; common plantain 360; curled dock 180; dodder 315
	Red Clover, Lot 13652	Petersburg, Ind. F	97.49	0.74	93.50	3.50	2–35	7,389	F Buckhorn 5,490; common plantain 1,170; curled dock 36; dodder 207; horse nettle 9; red sorrel 18; wild carrot 9

*Not labeled.
†Certified by Retailer.
C and F stands, respectively, for Claimed and Found.

[99] Removed from sale. Misbranded. Retagged.

[100] Not tagged. Labels furnished.

[101] Not tagged. Labels furnished.

[102] Removed from sale. Misbranded. Returned to distributor.

[103] Not tagged. Labels furnished.

[104] Not tagged. Labels furnished.

SWEET CLOVER

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, per cent	Inert Matter, per cent	Germination, per cent	Hard Seeds, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds		Number per Pound of each of the Noxious Weed Seeds Specified in the Law
6383	Co-operative Elevator Co., Winamac	Allied Seed Co., Inc.,	C	99.60	......	88.00	3.00	1–35	....	C	None
	W. B. Sweet Clover, Lot B362	Fort Wayne, Ind.	F	99.84	0.12	91.50	2.00	4–35	189	F	Mustard 9
6301	Cowan Coal & Feed Co., Cowan[105]	Allied Seed Co., Inc.,	C	99.60	......	88.00	3.00	1–35	....	C	None
	W. B. Sweet Clover, Lot B362	Fort Wayne, Ind.	F	99.90	0.04	90.50	2.50	4–35	189	F	Buckhorn 9
6131	Depoy Feed Mill, Ben, Muncie[106]	Allied Seed Co., Inc.,	C	99.60	......	88.00	3.00	1–35	....	C	None
	W. B. Sweet Clover, Lot B362	Fort Wayne, Ind.	F	99.80	0.10	89.50	3.50	3–35	378	F	Mustard 9; red sorrel 9
6402	Farmers Grain & Supply Co., Thornhope	Allied Seed Co., Inc.,	C	99.60	......	88.00	3.00	1–35	....	C	None
	P. O., Oak										
	W. B. Sweet Clover, Lot B362	Fort Wayne, Ind.	F	99.44	0.20	94.50	1.50	4–35	198	F	Buckhorn 9; mustard 9
6020	Galveston Farmers Elevator Co., Galveston	Allied Seed Co., Inc.,	C	99.60	......	88.00	3.00	1–35	....	C	None
	W. B. Sweet Clover, Lot B362	Fort Wayne, Ind.	F	99.78	0.02	89.50	4.00	4–35	297	F	Buckhorn 9; wild carrot 9; yellow trefoil 9
6209	Kunberger, John, Columbia City	Allied Seed Co., Inc.,	C	99.60	......	87.00	3.00	12–34	....	C	None
	W. B. Sweet Clover, Lot B356	Fort Wayne, Ind.	F	99.76	0.02	93.00	4.00	4–35	207	F	Buckhorn 9; curled dock 9; mustard 9
6210	Kunberger, John, Columbia City	Allied Seed Co., Inc.,	C	99.50	......	84.00	6.00	12–34	....	C	None
	Y. B. Sweet Clover, Lot B280	Fort Wayne, Ind.	F	99.70	0.02	83.00	3.00	4–35	180	F	None
6256	Lima Elevator Co., Howe	Allied Seed Co., Inc.,	C	99.60	......	87.00	3.00	12–34	....	C	None
	W. B. Sweet Clover, Lot B356	Fort Wayne, Ind.	F	99.68	0.04	85.50	6.50	4–35	207	F	Buckhorn 27
5385	Phillips, J. C., Star City	Allied Seed Co., Inc.,	C	99.70	......	84.00	6.00	3–34	....	C	None
	W. B. Sweet Clover, Lot B329	Fort Wayne, Ind.	F	99.72	0.04	83.00	3.50	8–34	576	F	Mustard 36
6243	Strock, Frank, Hudson	Allied Seed Co., Inc.,	C	99.60	......	87.00	3.00	12–34	....	C	None
	W. B. Sweet Clover, Lot B356	Fort Wayne, Ind.	F	99.56	0.10	87.50	4.00	4–35	279	F	Wild carrot 9
5486	Trembly Co., S. F., Columbia City	Allied Seed Co., Inc.,	C	99.50	......	85.00	3.00	7–34	....	C	None
	W. B. Sweet Clover, Lot B346	Fort Wayne, Ind.	F	99.68	0.16	73.00	19.50	9–34	270	F	None
6151	Wayne Co. Farm Bureau Co-op. Assn., Inc.,										
	Richmond	Allied Seed Co., Inc.,	C	99.50	......	85.00	5.00	1–35	....	C	None
	Y. B. Sweet Clover, Lot B296	Fort Wayne, Ind.	F	99.64	0.10	90.50	0.00	4–35	279	F	Buckhorn 9
6159	Wayne Co. Farm Bureau Co-op. Assn., Inc.,										
	Richmond	Allied Seed Co., Inc.,	C	99.60	......	88.00	3.00	1–35	....	C	None
	W. B. Sweet Clover, Lot B362	Fort Wayne, Ind.	F	99.84	0.04	85.00	5.00	4–35	....	F	None
6259	Wolcottville Elevator Co., Wolcottville	Allied Seed Co., Inc.,	C	99.60	......	87.00	3.00	12–34	....	C	None
	W. B. Sweet Clover, Lot B356	Fort Wayne, Ind.	F	99.84	0.06	90.00	2.50	4–35	54	F	Buckhorn 36; mustard 9; wild carrot 9
5335	*American Field Seed Co., Chicago, Ill.[107]	American Field Seed Co.,	C	99.70	...	92.00	.....	2–34	....	C	None
	Sweet Clover, Lot 14551	Chicago, Ill.	F	99.85	0.10	89.00	8.50	7–34	99	F	Mustard 9

*Not labeled.
†Certified by Retailer.
C and F stands, respectively, for Claimed and Found.

[105] Distributed by O'Brien Milling Co., Greenville, Ohio.
[106] Distributed by O'Brien Milling Co., Greenville, Ohio.
[107] Sample secured from Coty Bros., R. R. 2, Remington, Ind.

SWEET CLOVER—Continued

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor	Purity, per cent	Inert Matter, per cent	Germination, per cent	Hard Seeds, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds	Number per Pound of each of the Noxious Weed Seeds Specified in the Law
5479	American Field Seed Co., Chicago, Ill.[108]	American Field Seed Co., C	99.70		92.00		8-34		C None
	W. B. Sweet Clover, Lot 14596	Chicago, Ill. F	99.72	0.10	90.00	2.00	9-34	549	F Mustard 9
5429	Riggs & Son, W. G., Sullivan[109]	American Field Seed Co., C	99.50		94.00		2-34		C None
	Biennial W. B. Sweet Clover, Lot 14516	Chicago, Ill. F	99.86	0.10	63.00	6.00	9-34	180	F None
6280	*Berry Seed Co., Chicago, Ill.[110]	Berry Seed Co., C	96.50		70.00		2-35		C None
	W. B. Sweet Clover, Lot 14631	Clarinda, Iowa F	96.12	2.52	50.00	3.50	3-35	6,174	F Bracted plantain 9; curled dock 63; red sorrel 72
6288	*Berry Seed Co., Clarinda, Iowa[111]	Berry Seed Co., C	99.20		86.00		1-35		C None
	Grundy Co. Sweet Clover, Lot 14300	Clarinda, Iowa F	99.50	0.30	74.00	5.00	3-35	639	F Mustard 9
6452	*Berry Seed Co., Clarinda, Iowa[112]	Berry Seed Co., C	95.00		72.00		3-35		C None
	W. B. Sweet Clover, Lot 14643	Clarinda, Iowa F	96.04	1.28	58.50	9.50	3-35	16,263	F Buckhorn 9; curled dock 27; mustard 99; red sorrel 99; wild carrot 9
6715	*Berry Seed Co., Clarinda, Iowa[113]	Berry Seed Co., C	96.54		69.00		3-35		C None
	White Sweet Clover, Lot 14314	Clarinda, Iowa F	96.00	1.96	69.50	1.00	6-35	7,335	F Curled dock 9; mustard 126
5684	Carman Supply Co., Lynn[114]	Carman Supply Co., C	96.20		84.00	7.00	12-34		C Buckhorn 270
	W. B. Sweet Clover, Lot W2	Lynn, Ind. F	95.90	2.92	72.00	1.50	2-35	3,069	F Buckhorn 900; curled dock 9; wild carrot 2,070
5686	Carman Supply Co., Lynn[115]	Carman Supply Co., C	99.00		90.00	2.00	10-34		C Curled dock 360
	Y. B. Sweet Clover, Lot M	Lynn, Ind. F	98.44	0.20	66.50	1.50	2-35	2,151	F Buckhorn 297; curled dock 315; prickly lettuce 9
5929	Chance Bros., Connersville	Chance Bros., C	99.00		89.00	2.00	1-35		C Curled dock 150
	Y. B. Sweet Clover	Connersville, Ind. F	98.97	1.03	77.50	3.50	3-35	36	F Buckhorn 9; curled dock 27
6435	McMahan Seed Co., Valparaiso	Courteen Seed Co., C	99.50		93.00	2.00	2-35		C None
	W. B. Sweet Clover, Lot Cream	Milwaukee, Wis. F	99.74	0.06	89.00	1.00	3-35	180	F None
5953	Anderson & Morgan, Dunkirk	Crabbs Reynolds Taylor Co., C	99.60		80.00	10.00	12-34		C None
	W. B. Sweet Clover, Lot 9SJ	Crawfordsville, Ind. F	99.88	0.02	83.00	5.50	3-35	576	F Mustard 36
6149	B. & B. Feed & Coal Co.; Farmland	Crabbs Reynolds Taylor Co., C	99.60		80.00	10.00	12-34		C None
	W. B. Sweet Clover, Lot 9SJ	Crawfordsville, Ind. F	99.74	0.02	77.00	11.00	3-35	765	F Mustard 45
5642	Clay Co. Farm Bureau Co-op. Assn., Inc.,								
	Clay City	Crabbs Reynolds Taylor Co., C	99.52		82.00	7.00	10-34		C None
	W. B. Sweet Clover, Lot 4SJ	Crawfordsville, Ind. F	99.77	0.14	92.50	4.50	1-35	450	F None
5673	Crabbs Reynolds Taylor Co., Lafayette	Crabbs Reynolds Taylor Co., C	99.58		85.00		9-34		C None
	W. B. Sweet Clover, Lot 3SJ	Crawfordsville, Ind. F	99.76	0.14	86.00	0.50	1-35	360	F None
5770	Crabbs Reynolds Taylor Co., Lafayette	Crabbs Reynolds Taylor Co., C	99.64		73.00	20.25	12-34		C None
	Y. B. Sweet Clover, Lot 5SK	Crawfordsville, Ind. F	99.88	0.06	69.00	22.00	2-35		F None
5623	Evans & Hedworth, Remington	Crabbs Reynolds Taylor Co., C	99.52		82.00	7.00	10-34		C None
	W. B. Sweet Clover, Lot 4SJ	Crawfordsville, Ind. F	99.88	0.06	87.00	5.50	1-35	360	F None
6397	Farmers Co-operative Co., Royal Center	Crabbs Reynolds Taylor Co., C	99.65		80.00	12.00	12-34		C None
	W. B. Sweet Clover, Lot 3SK	Crawfordsville, Ind. F	99.76	0.02	87.50	6.50	4-35	657	F Mustard 27

5984	Farmers Exchange, Warren	Crabbs Reynolds Taylor Co.,	C	99.60		80.00	10.00	12-34		C	None
	W. B. Sweet Clover, Lot 9SJ	Crawfordsville, Ind.	F	99.94	0.02	89.00	3.00	3-35	99	F	Mustard 9
5726	Farmers Grain & Coal Co., Frankton	Crabbs Reynolds Taylor Co.,	C	99.52		82.00	7.00	10-34		C	None
	W. B. Sweet Clover, Lot 4SJ	Crawfordsville, Ind.	F	99.72	0.12	85.50	7.00	2-35	540	F	None
5990	Huntington Equity Exchange, Huntington	Crabbs Reynolds Taylor Co.,	C	99.65		80.00	12.00	12-34		C	None
	W. B. Sweet Clover, Lot 3SK	Crawfordsville, Ind.	F	99.80	0.02	82.50	4.00	3-35	729	F	Mustard 9
6024	Miller Grain Co., Greencastle[116]	Crabbs Reynolds Taylor Co.,	C	99.60		80.00	10.00	12-34		C	None
	W. B. Sweet Clover, Lot 9SJ	Crawfordsville, Ind.	F	99.99	0.01	82.50	7.50	4-35		F	None
5942	Newcastle Elevator Co., Newcastle	Crabbs Reynolds Taylor Co.,	C	99.56		82.00	8.00	2-35		C	None
	W. B. Sweet Clover, Lot 6SJ	Crawfordsville, Ind.	F	99.62	0.02	79.00	7.00	4-35	990	F	None
5949	Newcastle Elevator Co., Newcastle	Crabbs Reynolds Taylor Co.,	C	99.62		65.00	20.00	1-35		C	None
	Grundy Co. Sweet Clover, Lot 6SK	Crawfordsville, Ind.	F	99.66	0.24	56.50	29.50	3-35	270	F	Curled dock 90
6023	Owen Farmers Supply Co., Spencer	Crabbs Reynolds Taylor Co.,	C	99.56		82.00	8.00	2-35		C	None
	W. B. Sweet Clover, Lot 6SJ	Crawfordsville, Ind.	F	99.86	0.08	77.50	11.50	4-35	279	F	Mustard 9
5792	Worthington Grain Co., Worthington	Crabbs Reynolds Taylor Co.,	C	99.60		80.00	10.00	12-34		C	None
	W. B. Sweet Clover, Lot 9SJ	Crawfordsville, Ind.	F	99.82	0.00	83.00	10.00	2-35	540	F	None
5944	Beach & Simmers, Albany	Crawfordsville Seed Co.,	C	99.50		82.00	8.00	1-35		C	None
	W. B. Sweet Clover, Lot 547	Crawfordsville, Ind.	F	99.78	0.20	85.50	5.00	3-35	189	F	Mustard 9
5948	Beach & Simmers, Albany	Crawfordsville Seed Co.,	C	99.75		82.00	10.00	1-35		C	None
	Y. B. Sweet Clover, Lot 541	Crawfordsville, Ind.	F	99.82	0.06	83.00	6.00	3-35		F	None
5697	Farmers Elevator Co., Oakville	Crawfordsville Seed Co.,	C	99.50		82.00	8.00	12-34		C	None
	W. B. Sweet Clover, Lot 547	Crawfordsville, Ind.	F	99.78	0.20	87.00	4.50	2-35	90	F	None
6431	Brown Supply Co., Valparaiso	Dickinson Co., The Albert,	C	99.00		82.00	9.00	8-34		C	None
	White Sweet Clover, Lot 25391	Chicago, Ill.	F	99.50	0.30	78.00	1.50	4-35	540	F	None
6441	Brown Supply Co., Valparaiso	Dickinson Co., The Albert,	C	99.72		86.00	4.00	1-35		C	None
	Yellow Sweet Clover, Lot 25434	Chicago, Ill.	F	99.76	0.18	89.50	6.50	4-35	270	F	None
6311	Knecht Milling Co., Hartford City	Dickinson Co., The Albert,	C	99.28		84.00	8.00	1-35		C	None
	W. B. Sweet Clover, Lot 25430	Chicago, Ill.	F	99.17	0.03	82.00	11.00	4-35	270	F	None
6314	Knecht Milling Co., Hartford City	Dickinson Co., The Albert,	C	99.72		86.00	4.00	1-35		C	None
	Y. B. Sweet Clover, Lot 2951-025546	Chicago, Ill.	F	99.86	0.12	86.50	6.00	4-35	90	F	None
5577	Protsman & Son, G. L., Plymouth	Dickinson Co., The Albert,	C	99.00		82.00	9.00	8-34		C	None
	W. B. Sweet Clover, Lot 25391	Chicago, Ill.	F	99.40	0.30	77.50	4.00	10-34	765	F	Mustard 45
5342	Wolf & Son, North Judson[117]	Dickinson Co., The Albert,	C	99.56		82.00	9.00	7-34		C	None
	W. B. Sweet Clover, Lot 025422-025515	Chicago, Ill.	F	99.04	0.06	93.00	3.00	7-34	108	F	Mustard 18
5394	Wynn, Arlie S., Rochester	Dickinson Co., The Albert,	C	99.56		82.00	9.00	7-34		C	None
	W. B. Sweet Clover, Lot 025513	Chicago, Ill.	F	99.78	0.02	93.00	5.00	9-34	396	F	Canada thistle 18; mustard 18
6196	Amo Milling Co., Amo	Foster-Kendall Co.,	C	99.60		86.00	7.00	12-34		C	None
	W. B. Sweet Clover	Carmel, Ind.	F	99.66	0.14	83.00	2.00	4-35	990	F	None
6112	Armstrong-Landon Co., Kokomo	Foster-Kendall Co.,	C	99.60		85.00	7.00	12-34		C	None
	W. B. Sweet Clover	Carmel, Ind.	F	99.94	0.04	85.50	10.50	4-35	180	F	None
6183	Central States Elevator Corp., Fountaintown	Foster-Kendall Co.,	C	99.54		60.00	23.00	12-34		C	None
	Y. B. Sweet Clover	Carmel, Ind.	F	99.64	0.20	77.00	4.00	4-35	306	F	Curled dock 36
5908	Central States Grain Assn., Shelbyville	Foster-Kendall Co.,	C	99.60		85.00	7.00	12-34		C	None
	W. B. Sweet Clover	Carmel, Ind.	F	99.84	0.08	94.50	4.00	3-35	486	F	Mustard 36

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*Not labeled.

†Certified by Retailer.

C and F stands, respectively, for Claimed and Found.

[108] Sample secured from William Huffman, R. R. 4, Lafayette, Ind.

[109] Distributed by Jas. R. Riggs, Sullivan, Ind.

[110] Sample secured from F. L. Crowe, R. R. 1, Pennville, Ind.

[111] Sample secured from W. Earl Rapp, R. R. 1, Etna Green, Ind.

[112] Sample secured from Leo Hood, R. R. 9, Lafayette, Ind.

[113] Sample secured from August Samuelson, R. R. 3, Plymouth, Ind.

[114] Removed from sale. Misbranded. Retagged.

[115] Removed from sale. Misbranded. Retagged.

[116] Distributed by Miller Grain Co., Inc., Bainbridge, Ind.

[117] Not tagged. Labels furnished.

SWEET CLOVER—Continued

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor	Purity, per cent	Inert Matter, per cent	Germination, per cent	Hard Seeds, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds	Number per Pound of each of the Noxious Weed Seeds Specified in the Law
6318	Cohee & Clark, Kempton	Foster-Kendall Co., C	99.60	......	90.00	1.00	12-34	......	C None
	W. B. Sweet Clover	Carmel, Ind. F	99.64	0.12	91.50	1.50	4-35	477	F Mustard 27
5734	Farmers Co-operative Co., Cicero	Foster-Kendall Co., C	99.60	......	78.00	10.00	12-34	......	C None
	W. B. Sweet Clover	Carmel, Ind. F	99.40	0.20	71.50	9.00	2-35	1,107	F Mustard 27
6125	Farmers Co-operative Co., Yorktown	Foster-Kendall Co., C	99.60	......	86.00	7.00	12-34	......	C None
	W. B. Sweet Clover	Carmel, Ind. F	99.70	0.24	81.00	1.00	3-35	360	F None
6060	Farmers Feed & Coal Co., Bloomington	Foster-Kendall Co., C	99.60	......	85.00	5.00	12-34	......	C Mustard 63
	W. B. Sweet Clover, Lot 26	Carmel, Ind. F	99.54	0.06	86.50	6.00	4-35	1,953	F Curled dock 9; mustard 54
5957	Haynes Milling Co., Portland	Foster-Kendall Co., C	99.58	......	80.00	9.00	12-34	......	C None
	Y. B. Sweet Clover	Carmel, Ind. F	99.14	0.12	75.50	9.00	3-35	405	F Curled dock 45
5721	Hobbs Grain Co., Hobbs	Foster-Kendall Co., C	99.25	......	85.00	10.00	12-34	......	C None
	W. B. Sweet Clover	Carmel, Ind. F	99.80	0.14	91.50	2.50	2-35	180	F None
6169	Rush Co. Hatchery, Rushville	Foster-Kendall Co., C	99.50	......	78.00	15.00	12-34	......	C None
	Y. B. Sweet Clover	Carmel, Ind. F	99.32	0.08	73.50	4.00	4-35	198	F Curled dock 18
5714	Sharpsville Elevator Co., Sharpsville	Foster-Kendall Co., C	99.25	......	80.00	9.00	12-34	......	C None
	W. B. Sweet Clover, Lot 55	Carmel, Ind. F	99.70	0.04	92.50	3.50	2-35	810	F None
5703	Shaw, W. R., Orestes	Foster-Kendall Co., C	99.60	......	85.00	10.00	12-34	......	C None
	W. B. Sweet Clover	Carmel, Ind. F	99.80	0.12	93.50	3.50	2-35	279	F Mustard 9
6134	Wellington Milling Co., Anderson	Foster-Kendall Co., C	99.60	......	80.00	16.00	12-34	......	C None
	W. B. Sweet Clover	Carmel, Ind. F	99.90	0.06	88.50	4.50	3-35	153	F Mustard 63
6195	Plainfield Mill, Plainfield	Garten Feed Co., The, C	99.60	......	80.00	12.00	1-34	......	C None
	W. B. Sweet Clover, Lot 1-207	Indianapolis, Ind. F	99.23	0.16	82.00	5.00	4-35	2,538	F Mustard 18
6135	Farmers Co-operative Co., Yorktown[118]	Goodrich Bros. Co., C	99.50	......	82.00	10.00	12-34	......	C None
	W. B. Sweet Clover, Lot Lark	Winchester, Ind. F	99.50	0.22	56.00	22.50	4-35	891	F Curled dock 261
6138	Farmers Co-operative Co., Yorktown	Goodrich Bros. Co., C	99.50	......	80.00	10.00	12-34	......	C None
	Y. B. Sweet Clover, Lot Lark 1851	Winchester, Ind. F	99.82	0.08	81.00	2.00	3-35	99	F Red sorrel 9
5972	Farmers Exchange, Warren	Goodrich Bros. Co., C	99.50	......	82.00	14.00	11-34	......	C None
	W. B. Sweet Clover, Lot Lark 2344	Winchester, Ind. F	99.38	0.06	85.50	9.00	3-35	1,674	F Mustard 54
5958	Geneva Milling & Grain Co., Geneva	Goodrich Bros. Co., C	99.50	......	85.00	10.00	11-34	......	C None
	W. B. Sweet Clover, Lot 2344	Winchester, Ind. F	99.74	0.04	85.50	3.50	3-35	387	F Curled dock 18; mustard 9
6308	Goodrich Bros. Co., Eaton	Goodrich Bros. Co., C	99.50	......	80.00	15.00	1-35	......	C None
	Y. B. Sweet Clover, Lot 1851	Winchester, Ind. F	99.48	0.10	85.50	5.00	4-35	99	F Curled dock 9
6018	Goodrich Bros. Co., Onward	Goodrich Bros. Co., C	99.50	......	85.00	8.00	11-34	......	C None
	W. B. Sweet Clover, Lot 2344	Winchester, Ind. F	99.72	0.04	88.50	7.50	4-35	918	F Mustard 18
6316	Hinshaw Grain Co., Summitville[119]	Goodrich Bros. Co., C	99.50	......	80.00	10.00	11-34	......	C None
	Y. B. Sweet Clover, Lot Lark	Winchester, Ind. F	97.27	0.34	74.00	7.00	4-35	855	F Common plantain 27; curled dock 9; mustard 9
6000	Santa Fe Elevator Co., Santa Fe, P. O., Peru	Goodrich Bros. Co., C	99.50	......	85.00	10.00	11-34	......	C None
	W. B. Sweet Clover, Lot Lark 2344	Winchester, Ind. F	99.50	0.02	83.50	8.50	3-35	1,476	F Mustard 36
6160	Graft, C. V., Winchester	Graft, C. V., C	99.86	......	80.00	13.00	1-35	......	C None
	Y. B. Sweet Clover, Lot H	Winchester, Ind. F	99.58	0.20	59.00	39.00	4-35	18	F Common plantain 9; curled dock 9

5583	**Klein, Burton, R. R. 1, Vincennes**[120] Grundy Co., Sweet Clover	Grathurhl. John M., Fairmount, Minn.	C	99.50	......	98.00	3.00	9-34	....	C	None
			F	99.90	0.10	84.50	3.50	11-34	....	F	None
5860	**Heldt Co., The, Evansville** Thelco W. B. Sweet Clover, Lot 3131	Heldt Co., The, Evansville, Ind.	C	99.53	......	85.00	10.00	2-35	....	C	None
			F	99.55	0.10	82.00	7.50	2-35	909	F	Mustard 99
6387	†Co-operative Elevator Co., Winamac W. B. Sweet Clover, Lot 7069	Hirsch & Sons, Henry, Toledo, Ohio	C	99.60	......	90.00	5.00	12-34	....	C	None
			F	99.58	0.08	88.50	5.00	3-35	1,368	F	Mustard 18
5759	Milford Grain & Milling Co., Milford W. B. Sweet Clover, Lot 7069	Hirsch & Sons, Henry, Toledo, Ohio	C	99.60	......	90.00	5.00	12-34	....	C	None
			F	99.60	0.40	88.00	5.50	2-35	1,503	F	Mustard 63
6121	Moore Bros., Kirklin W. B. Sweet Clover, Lot 7069	Hirsch & Sons, Henry, Toledo, Ohio	C	99.60	......	90.00	5.00	12-34	....	C	None
			F	99.48	0.14	85.00	8.50	3-35	1,557	F	Mustard 27
6123	Moore Bros., Kirklin Y. B. Sweet Clover, Lot 7049	Hirsch & Sons, Henry, Toledo, Ohio	C	99.55	......	83.00	12.00	12-34	....	C	None
			F	99.66	0.26	75.00	21.00	3-35	....	F	None
6317	†Naber, Chas. F., Alexandria W. B. Sweet Clover, Lot 7069	Hirsch & Sons, Henry, Toledo, Ohio	C	99.60	......	90.00	5.00	12-34	....	C	None
			F	99.66	0.02	88.00	7.50	4-35	1,287	F	Mustard 27
6133	Weer, F. W., Anderson W. B. Sweet Clover, Lot 7069	Hirsch & Sons, Henry, Toledo, Ohio	C	99.60	......	90.00	5.00	12-34	....	C	None
			F	99.57	0.14	88.00	6.50	3-35	1,206	F	Mustard 36
5793	Bloomfield Mill & Elevator Co., Bloomfield W. B. Sweet Clover, Lot W518	Hooton-Davis Seed Corp., Lebanon, Ind.	C	99.50	......	75.00	15.00	1-35	....	C	None
			F	99.82	0.10	84.50	6.50	2-35	549	F	Mustard 9
5637	Clay Co. Farm Bureau Co-op. Assn., Inc., Clay City W. B. Sweet Clover, Lot W517	Hooton-Davis Seed Corp., Lebanon, Ind.	C	99.50	......	80.00	10.00	8-34	....	C	None
			F	99.56	0.08	84.50	10.00	1-35	927	F	Common plantain 18; mustard 9
5694	Farmers Co-operative Co., Selma W. B. Sweet Clover, Lot W518	Hooton-Davis Seed Corp., Lebanon, Ind.	C	99.50	......	75.00	10.00	11-34	....	C	None
			F	99.84	0.12	82.00	7.50	2-35	180	F	None
5936	Frazier & Sanders, Newcastle W. B. Sweet Clover, Lot W518	Hooton-Davis Seed Corp., Lebanon, Ind.	C	99.50	......	85.00	5.00	1-35	....	C	None
			F	99.86	0.02	86.50	5.00	3-35	738	F	Mustard 18
5937	Frazier & Sanders, Newcastle Y. B. Sweet Clover, Lot Y519	Hooton-Davis Seed Corp., Lebanon, Ind.	C	98.50	......	75.00	15.00	1-35	....	C	None
			F	99.34	0.40	72.50	3.50	3-35	585	F	Curled dock 45
5997	Santa Fe Elevator Co., Santa Fe, P. O., Peru Y. B. Sweet Clover, Lot Y519	Hooton-Davis Seed Corp., Lebanon, Ind.	C	98.50	......	75.00	15.00	1-35	....	C	None
			F	99.06	0.52	81.00	3.00	3-35	1,377	F	Curled dock 18; mustard 9
5365	Swayzee Grain Co., Swayzee W. B. Sweet Clover, Lot W443	Hooton-Davis Seed Corp., Lebanon, Ind.	C	99.25	......	75.00	15.00	1-34	....	C	None
			F	99.78	0.14	72.00	4.00	8-34	459	F	Mustard 9
6126	Weer, F. W., Anderson Y. B. Sweet Clover, Lot Y519	Hooton-Davis Seed Corp., Lebanon, Ind.	C	98.50	......	75.00	15.00	1-35	....	C	None
			F	99.29	0.39	79.50	7.00	3-35	657	F	Curled dock 18; mustard 9
6139	Weer, F. W., Anderson W. B. Sweet Clover, Lot W520	Hooton-Davis Seed Corp., Lebano , Ind.	C	99.25	......	80.00	10.00	1-35	....	C	None
			F	99.94	0.00	84.00	12.00	3-35	234	F	Mustard 54
6127	Woodbury-Elliott Grain Co., Muncie W. B. Sweet Clover, Lot W520	Hooton-Davis Seed Corp., Lebanon, Ind.	C	99.25	......	80.00	10.00	1-35	....	C	None
			F	99.82	0.04	80.00	10.50	3-35	504	F	Mustard 54
5389	Wynn, Arlie S., Rochester W. B. Sweet Clover, Lot 443	Hooton Davis Seed Corp., Lebanon, Ind.	C	99.50	......	75.00	15.00	1-34	....	C	None
			F	99.66	0.28	59.50	16.00	8-34	315	F	Canada thistle 27; mustard 18
5382	Clinton Co. Farm Bureau Co-op. Assn., Inc., Frankfort W. B. Sweet Clover, Lot SC2396	Indiana Farm Bureau Co-op. Assn., Inc., Indianapolis, Ind.	C	99.60	......	86.00	7.00	4-34	....	C	None
			F	99.90	0.10	90.00	3.00	8-34	9	F	Mustard 9
5383	Clinton Co. Farm Bureau Co-op. Assn., Inc., Frankfort Y. B. Sweet Clover, Lot 2332	Indiana Farm Bureau Co-op. Assn., Inc., Indianapolis, Ind.	C	99.60	......	87.00	6.00	4-34	....	C	None
			F	99.70	0.16	86.00	0.00	8-34	108	F	Curled dock 18
6237	Dekalb Co. Farm Bureau Co-op. Assn., Inc., Auburn Y. B. Sweet Clover, Lot 3361	Indiana Farm Bureau Co-op. Assn., Inc., Indianapolis, Ind.	C	99.50	......	80.00	14.00	12-34	....	C	None
			F	99.58	0.06	95.50	2.00	4-35	1,200	F	None

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*Not labeled.
†Certified by Retailer.
C and F stands, respectively, for Claimed and Found.

[118] Removed from sale. Misbranded. All sold.
[119] Removed from sale. Misbranded. Returned to distributor.
[120] Removed from sale. Misbranded. Retagged.

SWEET CLOVER—Continued

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, per cent	Inert Matter, per cent	Germination, per cent	Hard Seeds, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds	Number per Pound of each of the Noxious Weed Seeds Specified in the Law
6336	Elkhart Co. Farm Bureau Co-op. Assn., Inc., Goshen W. B. Sweet Clover, Lot 3362	Indiana Farm Bureau Co-op. Assn., Inc., Indianapolis, Ind.	C	99.50	....	80.00	14.00	12-34	....	None
			F	99.76	0.04	89.00	4.00	4-35	630	None
6083	Farm Bureau Service, Columbus W. B. Sweet Clover, Lot 2-860	Indiana Farm Bureau Co-op. Assn., Inc., Indianapolis, Ind.	C	99.50	....	80.00	14.00	10-34	....	None
			F	99.82	0.02	84.50	10.00	4-35	720	None
5916	Farmers Supply Co., Shelbyville Y. B. Sweet Clover, Lot 3361	Indiana Farm Bureau Co-op. Assn., Inc., Indianapolis, Ind.	C	99.50	....	80.00	14.00	12-34	....	None
			F	99.70	0.02	92.50	1.50	3-35	1,080	None
5917	Farmers Supply Co., Shelbyville W. B. Sweet Clover, Lot 3228	Indiana Farm Bureau Co-op. Assn., Inc., Indianapolis, Ind.	C	99.50	....	80.00	14.00	12-34	....	None
			F	99.78	0.20	90.00	6.00	3-35	90	None
5923	Fayette Co. Farm Bureau Co-op. Assn., Inc., Connersville Y. B. Sweet Clover, Lot 3361	Indiana Farm Bureau Co-op. Assn., Inc., Indianapolis, Ind.	C	99.50	....	80.00	14.00	12-34	....	None
			F	99.70	0.06	95.00	0.50	3-35	810	None
5364	Grant Co. Farm Bureau Co-op. Assn., Inc., Marion[121] W. B. Sweet Clover, Lot CS2311	Indiana Farm Bureau Co-op. Assn., Inc., Indianapolis, Ind.	C	99.50	....	86.00	8.00	4-34	....	None
			F	99.90	0.02	71.00	9.50	8-34	180	None
6116	Howard Co. Farm Bureau Co-op. Assn., Inc., Kokomo Y. B. Sweet Clover, Lot 3361	Indiana Farm Bureau Co-op. Assn., Inc., Indianapolis, Ind.	C	99.50	....	80.00	14.00	12-34	....	None
			F	99.74	0.02	92.50	2.00	4-35	990	None
5823	Knox Co. Farm Bureau Co-op. Assn., Inc., Vincennes W. B. Sweet Clover, Lot 3227	Indiana Farm Bureau Co-op. Assn., Inc., Indianapolis, Ind.	C	99.50	....	80.00	14.00	12-34	....	None
			F	99.70	0.02	90.00	5.50	2-35	1,080	None
6047	Putnam Co. Farm Bureau Co-op. Assn., Inc., Greencastle W. B. Sweet Clover, Lot 3227	Indiana Farm Bureau Co-op. Assn., Inc., Indianapolis, Ind.	C	99.50	....	80.00	14.00	12-34	....	None
			F	99.94	0.04	86.50	5.50	4-35	90	None
5467	Ripley Co. Farm Bureau Co-op. Assn., Inc., Osgood W. B. Sweet Clover, Lot 2356	Indiana Farm Bureau Co-op. Assn., Inc., Indianapolis, Ind.	C	99.60	....	84.00	7.00	4-34	....	None
			F	99.88	0.06	85.50	5.50	9-34	189	Mustard 9
5607	Sullivan Co. Farm Bureau Co-op. Assn., Inc., Sullivan W. B. Sweet Clover, Lot CS	Indiana Farm Bureau Co-op. Assn., Inc., Indianapolis, Ind.	C	99.50	....	88.00	6.00	10-34	....	None
			F	99.66	0.06	81.50	5.50	12-34	360	None
5355	Tippecanoe Co. Farm Bureau Co-op. Assn., Inc., Lafayette W. B. Sweet Clover, Lot SC2311	Indiana Farm Bureau Co-op. Assn., Inc., Indianapolis, Ind.	C	99.50	....	86.00	8.00	4-34	....	None
			F	99.92	0.04	76.00	8.00	8-34	90	None
5403	Tippecanoe Co. Farm Bureau Co-op. Assn., Inc., Lafayette Y. B. Sweet Clover, Lot YC2332	Indiana Farm Bureau Co-op. Assn., Inc., Indianapolis, Ind.	C	99.50	....	85.00	10.00	1-34	....	None
			F	99.80	0.12	82.50	0.50	9-34	90	None
5733	Tippecanoe Co. Farm Bureau Co-op. Assn., Inc., Lafayette W. B. Sweet Clover, Lot 2361	Indiana Farm Bureau Co-op. Assn., Inc., Indianapolis, Ind.	C	99.50	....	84.00	11.00	12-34	....	None
			F	99.66	0.02	85.00	10.50	2-35	1,440	None
5476	Whitley Co. Farm Bureau Co-op. Assn., Inc., Columbia City W. B. Sweet Clover, Lot SC384	Indiana Farm Bureau Co-op. Assn., Inc., Indianapolis, Ind.	C	99.60	....	86.00	9.00	3-34	....	None
			F	99.82	0.08	71.50	12.50	9-34	189	Mustard 9

5510	Whitley Co. Farm Bureau Co-op. Assn., Inc., Columbia City[122]	Indiana Farm Bureau Co-op. Assn., Inc.,	C	99 50	...	85 00	10 00	1-34	...	C	None
	Y. B. Sweet Clover, Lot YC397	Indianapolis, Ind.	F	96 43	0 48	51 00	2 00	10-34	...	F	None
6203	Whitley Co. Farm Bureau Co-op. Assn., Inc., Columbia City	Indiana Farm Bureau Co-op. Assn., Inc.,	C	99 50	...	80 00	14 00	12-34	...	C	None
	W. B. Sweet Clover, Lot 3362	Indianapolis, Ind.	F	99 88	0 06	94 50	3 00	4 35	360	F	None
5841	Adams & Morrow, Inc., Princeton	Indiana Seed Co.,	C	99 60	...	82 00	13 00	12-34		C	None
	W. B. Sweet Clover, Lot I201	Indianapolis, Ind.	F	99 88	0 08	78 00	10 00	3-35	99	F	Mustard 9
5424	Allan, J. P., Farmersburg	Indiana Seed Co.,	C	99 60	...	84 00	7.00	7 34	...	C	None
	W. B. Sweet Clover, Lot L189	Indianapolis, Ind.	F	99 58	0 20	92 50	2 00	9 34	540	F	None
5710	Branch Grain & Seed Co., Martinsville	Indiana Seed Co.,	C	99 50	...	82 00	9 00	12 34	...	C	None
	W. B. Sweet Clover, Lot I202	Indianapolis, Ind.	F	99 76	0 04	83 00	10 50	2-35	720	F	None
6292	Farmers Elevator Co., Oakville	Indiana Seed Co.,	C	99 50		82 00	9 00	12-34	...	C	None
	W. B. Sweet Clover, Lot 1-204	Indianapolis, Ind.	F	99 74	0 10	86 50	5 50	4 35	810	F	None
5650	Garten Feed Co., Indianapolis	Indiana Seed Co.,	C	99 60		82 00	13 00	12-34	...	C	None
	W. B. Sweet Clover, Lot 1-201	Indianapolis, Ind.	F	99 78	0 02	78 50	10 00	1-35	1,080	F	None
5651	Garten Feed Co., Indianapolis	Indiana Seed Co.,	C	99 50		84 00	6 00	11 34	...	C	None
	Y. B. Sweet Clover, Lot B280	Indianapolis, Ind.	F	99 46	0 14	82 00	1 00	1-35	90	F	None
6320	Kiefer Feed & Supply Co., Elwood	Indiana Seed Co.,	C	99 60		85 00	5 00	2-35	...	C	None
	Y. B. Sweet Clover, Lot B296	Indianapolis, Ind.	F	99 38	0 16	84 50	1 50	4 35	450	F	None
5919	Moore & Son, F. A., Waldron	Indiana Seed Co.,	C	99 50	...	82 00	9 00	12-34	...	C	None
	W. B. Sweet Clover, Lot I202	Indianapolis, Ind.	F	99 82	0 12	78 00	10 00	3-35	270	F	None
5699	Naber, Chas. F., Alexandria	Indiana Seed Co.,	C	99 50		84 00	6 00	11 34	...	C	None
	Y. B. Sweet Clover, Lot B280	Indianapolis, Ind.	F	99 48	0 08	85 00	2 00	2 35	18	F	Curled dock 18
6520	Nading Grain Co., Wm., Greensburg	Indiana Seed Co.,	C	99 50	...	84 00	6 00	11-34	...	C	None
	Y. B. Sweet Clover, Lot B280	Indianapolis, Ind.	F	99 58	0 08	82 00	2 00	4 35		F	None
5801	Pioneer Elevator Co., Worthington	Indiana Seed Co.,	C	99 50		82 00	9 00	12-31		C	None
	W. B. Sweet Clover, Lot I202	Indianapolis, Ind.	F	99 82	0 02	83 50	7 50	2-35	540	F	None
5663	Straughn Grain, Inc., Straughn	Indiana Seed Co.,	C	99 60	...	82 00	13 00	12 34	...	C	None
	W. B. Sweet Clover, Lot I201	Indianapolis, Ind.	F	99 88	0 04	78 00	6 50	1-35	270	F	None
5666	Straughn Grain, Inc., Straughn	Indiana Seed Co.,	C	99 50		84 00	6 00	11-34		C	None
	Y. B. Sweet Clover, Lot B280	Indianapolis, Ind.	F	99 50	0 14	79 50	1 50	1 35	90	F	None
6179	Sunshine Feed Store, Rushville	Indiana Seed Co.,	C	99 60		85 00	5 00	1-35		C	None
	Y. B. Sweet Clover, Lot B296	Indianapolis, Ind.	F	99 58	0 06	84 50	0 50	4-35	360	F	None
6185	Sunshine Feed Store, Rushville	Indiana Seed Co.,	C	99 60		80 00	11 00	1-35		C	None
	W. B. Sweet Clover, Lot I204	Indianapolis, Ind.	F	99 74	0 12	89 50	4 50	4-35	630	F	None
5819	Weed Hardware, Vincennes	Indiana Seed Co.,	C	99 50		82 00	9 00	12 34	...	C	None
	W. B. Sweet Clover, Lot I202	Indianapolis, Ind.	F	99 92	0 00	81 50	14 00	2-35	270	F	None
6300	Wisehart, W. S., Millville	Indiana Seed Co.,	C	99 55	...	87 00	4 00	1 35	...	C	None
	Grundy Co. Sweet Clover, Lot P493	Indianapolis, Ind.	F	99 42	0 20	91 00	1 00	4-35	1,008	F	Mustard 18
5343	Knapp, C. E., South Bend	King & Sons, H. C.,	C	99 76		80 00	17 00	4 34	...	C	None
	W. B. Sweet Clover, Lot S2	Battle Creek, Mich.	F	99 54	0 14	86 50	5 50	7 34	504	F	Curled dock 9; mustard 45
6325	Wakarusa Milling Co., Wakarusa[123]	Kraus, Sam,	C	99 50	...	95 00	8 00	1-34	...	C	None
	W. B. Sweet Clover, Lot K	Fort Wayne, Ind.	F	98.34	1 40	91 50	3 00	3 35	270	F	None
6489	Farmers Co-operative Elevator, Seymour	Lewis Implement & Seed Co.,	C	99.50		85 00	12 00	12-34	...	C	None
	White Sweet Clover	Louisville, Ky.	F	99 64	0 00	88 00	5 00	4-35	1,278	F	Mustard 18
5858	McCarty Seed Co., J. A., Evansville	McCarty Seed Co., J. A.,	C	99 68	...	85 00	12 00	1 35	...	C	None
	Lucky Jim W. B. Sweet Clover, Lot 1167	Evansville, Ind.	F	99 44	0 14	82 50	6 00	3-35	1,170	F	None

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*Not labeled.
†Certified by Retailer.
C and F stands, respectively, for Claimed and Found.

[121] Removed from sale. Misbranded. Retagged.
[122] Removed from sale. Misbranded. Retagged.
[123] Removed from sale. Misbranded. Retagged.

SWEET CLOVER—Continued

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, per cent	Inert Matter, per cent	Germination, per cent	Hard Seeds, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds	Number per Pound of each of the Noxious Weed Seeds Specified in the Law
6174	Doerflein, Chas. E., Cedar Grove	McCullough Seed Co., The J. Chas.,	C	99.80	......	61.00	31.00	11-34	......	C None
	Y. B. Sweet Clover, Lot 1674	Cincinnati, Ohio	F	99.72	0.14	57.00	29.00	4-35	459	F Curled dock 9
5456	Hunter & Son, Wm., Versailles	McCullough Seed Co., The J. Chas.,	C	99.50	..	72.00	10.00	7-34	......	C None
	Hulled Yellow Sweet Clover, Lot 1590	Cincinnati, Ohio	F	99.60	0.22	56.50	31.50	9-34	387	F Buckhorn 9; curled dock 9; mustard 9
6560	*Schlemmer Coal & Feed Co., Lawrenceburg	Market Gardeners' Seed Co., The,	C	99.00	......	93.00	2.00	11-34	......	C None
	Yellow Sweet Clover, Lot 600	Cincinnati, Ohio	F	98.78	0.72	80.50	3.50	4-35	1,728	F Curled dock 18
6546	Tuxedo Feed & Supply Co., Aurora	Market Gardeners' Seed Co., The,	C	99.02	......	85.00	3.00	1-35	....	C None
	Yellow Sweet Clover, Lot 601	Cincinnati, Ohio	F	99.20	0.40	82.50	3.50	4-35	1,737	F Mustard 27
6547	Tuxedo Feed & Supply Co., Aurora	Market Gardeners' Seed Co., The,	C	99.40	....	92.00	4.00	11-34	....	C Mustard 270
	Yellow Sweet Clover, Lot 153A	Cincinnati, Ohio	F	99.64	0.16	92.50	2.00	4-35	837	F Mustard 27
5999	Mayer Grain Co., Denver	Mayer Grain Co.,	C	99.50	.....	80.00	12.00	1-35	....	C None
	W. B. Sweet Clover	South Whitley, Ind.	F	99.70	0.00	89.00	4.50	3-35	558	F Mustard 18
6006	Mayer Grain Co., Denver[124]	Mayer Grain Co.,	C	99.25	...	78.00	14.00	1-35	....	C None
	Y. B. Sweet Clover	South Whitley, Ind.	F	97.00	2.00	65.00	6.00	4-35	684	F Common plantain 18; curled dock 27; mustard 9
5368	Rochester Co-operative Elevator, Rochester	Mayer Grain Co.,	C	99.50	....	83.00	11.00	3-34	....	C None
	W. B. Sweet Clover	South Whitley, Ind.	F	99.70	0.08	92.50	5.50	8-34	369	F Mustard 9
6147	Young & Cox, Richmond[125]	New Paris Elevator Co.,	C	99.50	....	80.00	10.00	1-35	....	C None
	Y. B. Sweet Clover, Lot 1851	New Paris, Ohio	F	97.88	0.56	77.00	10.00	4-35	189	F Buckhorn 9
6157	Young & Cox, Richmond	New Paris Elevator Co.,	C	99.50	....	88.00	7.00	7-34	....	C None
	W. B. Sweet Clover, Lot Lark	New Paris, Ohio	F	99.22	0.44	75.00	4.00	4-35	459	F Buckhorn 36; curled dock 63
5500	†Morrow Grain Co., Wabash	Northern Field Seed Co.,	C	99.00	...	90.00	6.00	8-34	....	C None
	W. B. Sweet Clover, Lot LOW	Winona, Minn.	F	99.50	0.40	87.50	1.50	9-34	180	F None
5863	Purcell Seed Co., Evansville	Purcell Seed Co.,	C	98.38	......	88.50	8.00	12-34	....	C Mustard 90
	W. B. Sweet Clover, Lot 3411	Evansville, Ind.	F	99.54	0.06	80.50	8.00	3-35	1,332	F Mustard 252
5527	Saiter-Morgan Co., Vincennes	Purcell Seed Co.,	C	98.86	......	80.00	12.00	7-34	....	C Curled dock 90
	"Tru Val" W. B. Sweet Clover, Lot 3083	Evansville, Ind.	F	98.69	1.07	76.00	7.00	10-34	324	F Bracted plantain 18; mustard 18; red sorrel 18
6410	Criss Bros., Lewis	Quinlan Seed Store,	C	99.12	......	80.00	5.00	11-34	......	C None
	W. B. Sweet Clover, Lot 40-45	Terre Haute, Ind.	F	99.18	0.28	73.00	5.50	4-35	1,836	F Mustard 36
5616	Brownstown Feed Exchange, Brownstown	Ross Seed Co.,	C	99.50	......	60.00	25.00	10-34	....	C Mustard 180
	White Sweet Clover	Louisville, Ky.	F	99.52	0.14	88.50	8.50	12-34	1,197	F Mustard 27
6076	Records, James L., Edinburg	Ross Seed Co.,	C	99.50	.....	80.00	12.00	11-34	..	C None
	White Sweet Clover	Louisville, Ky.	F	99.76	0.12	85.50	8.00	3-35	567	F Mustard 27
6462	†McCarty Seed Co., J. A., Evansville	Schultz Seed Co., J. M.,	C	99.60	....	80.00	11.00	1-35	....	C None
	Lucky Jim W. B. Sweet Clover, Lot 20	Dieterich, Ill.	F	99.60	0.10	89.00	3.50	4-35	846	F Mustard 36
6468	Becker & Son, J. H., Corydon	Scott Seed Co.,	C	99.00		80.00	10.00	11-34	.. .	C Mustard 180
	Y. B. Sweet Clover, Lot 144	New Albany, Ind.	F	99.78	0.08	87.50	0.00	4-35	540	F Mustard 90

5449	Jefferson Co. Farm Bureau Co-op. Assn., Madison	Scott Seed Co.,	C	99.56	......	61.50	4.00	2 34	....	C	None
	W. B. Sweet Clover, Lot 108	New Albany, Ind.	F	99.60	0 10	58.00	4.50	9-34	180	F	None
6614	Koschnick & Co., Indianapolis	Scott Seed Co.,	C	99.40	......	82.00	9.00	10-34	....	C	Mustard 480
	A. B. W. B. Sweet Clover, Lot 140	New Albany, Ind.	F	99.76	0.02	89.50	6 00	4 35	729	F	Mustard 9
6473	Turley & Co., Jas. E., English	Scott Seed Co.,	C	98.50	.....	80.00	5.00	12-34	....	C	Mustard 180
	W. B. Sweet Clover, Lot 145	New Albany, Ind.	F	98.58	0 63	76 50	4.00	4-35	2,070	F	Mustard 90
5349	Menaugh, Will H., Osceola	Standard Seed Co.,	C	99.70	......	85.00	8.00	2-34	... ..	C	None
	W. B. Sweet Clover, Lot 14551	Chicago, Ill.	F	100.00	0 00	89.00	8 50	7-34	9	F	Mustard
5574	Protsman & Son, G. L., Plymouth	Standard Seed Co.,	C	99.50	....	82.00	10.00	8-34	.. ..	C	None
	W. B. Sweet Clover, Lot 14596	Chicago, Ill.	F	99 70	0.12	91 50	1.50	10 34	828	F	Mustard 18
6202	Trembly Co., S. F., Columbia City	Standard Seed Co.,	C	99.50	......	84 00	9 00	1-35	. ...	C	None
	W. B. Sweet Clover, Lot 14628	Chicago, Ill.	F	99 56	0 20	84 50	4 00	3-35	630	F	None
6207	Trembly Co., S. F., Columbia City	Standard Seed Co.,	C	99.50	..	82 00	10 00	1-35	....	C	None
	Y. B. Sweet Clover, Lot 14614	Chicago, Ill.	F	99.74	0 20	88 50	1 00	3-35	180	F	None
6283	*Standard Seed Co., Kansas City, Mo.[126]	Standard Seed Co.,	C	....	...	..	..	...	....	C	
	Biennial W. B. Sweet Clover	Kansas City, Mo.	F	89 41	7.92	34 50	9 00	3-35	13,302	F	Bracted plantain 81; buckhorn 36; Canada thistle 36; curled dock 450; dodder 9
6456	Sugar Creek Grain Co., Thorntown	Sugar Creek Grain Co.,	C	90 00	......	90 00	.. ...	1 35	....	C	None
	W. B. Sweet Clover	Thorntown, Ind.	F	99 80	0 04	84.00	2 00	4-35	18	F	Curled dock 18
6408	Graham Grain & Supply Co., Terre Haute[127]	Sunshine Feed Store,	C	99 50	.. ...	90 00	4 00	1-35	....	C	None
	W. B. Sweet Clover, Lot P	Terre Haute, Ind.	F	99.52	0 24	90.50	4 00	3 35	1,350	F	None
5508	Syler, Clay, North Manchester	Syler, Clay,	C	99.50	.. ..	85 00	5 00	3-34	.. . .	C	None
	W. B. Sweet Clover	North Manchester, Ind.	F	99.03	0 40	72 50	6 50	10-34	2,421	F	Mustard 81
6596	Kiefer Feed & Supply Co., Elwood[128]	Syler & Syler,	C	99 50	.. ..	82 12	..	2 35	... .	C	None
	W. B. Sweet Clover, Lot 3015	Plymouth, Ind.	F	99.84	0.14	51 50	42 50	4 35	180	F	None
6347	Syler & Syler, Nappanee[129]	Syler & Syler,	C	99.50	...	80 00	12 00	1-35	.. ...	C	None
	W. B. Sweet Clover, Lot 3015	Plymouth, Ind.	F	99 76	0 18	59.00	31 00	4-35	360	F	None
5992	Bash & Co., C. E., Huntington	Teweles Seed Co., L.,	C	99.63	. .	84.00	10 00	1 35	......	C	None
	Scarified Y. B. Sweet Clover, Lot Badger Brand	Milwaukee, Wis.	F	99.92	0 02	87 00	4 00	3 35	90	F	None
6372	Etna Lumber & Elevator Co., Etna Green	Teweles Seed Co., L.,	C	99.50	....	86 00	9.00	2 35	....	C	None
	Scarified W. B. Sweet Clover, Lot Badger Brand	Milwaukee, Wis.	F	99.86	0 02	77 50	16 50	4 35	90	F	None
6377	Etna Lumber & Elevator Co., Etna Green[130]	Teweles Seed Co., L.,	C	99.65	......	83 00	11.00	2-35	..... .	C	None
	Scarified Y. B. Sweet Clover, Lot Badger Brand	Milwaukee, Wis.	F	99.76	0 18	93 00	2 50	3-35	270	F	None
6228	Leas, D. L., Waterloo	Teweles Seed Co., L.,	C	99.50	.....	91.00	5 00	1-35	. .....	C	None
	Grundy Co. W. B. Sweet Clover, Lot Badger Brand	Milwaukee, Wis.	F	99.54	0 04	89 00	3 50	4-35	1,629	F	Mustard 9
6248	Strock, Frank, Hudson	Teweles Seed Co., L.,	C	99.50	...	84 00	6 00	11-34	....	C	None
	Y. B. Sweet Clover, Lot B280-2nd	Milwaukee, Wis.	F	99 41	0 16	85 50	2 00	4-35	279	F	Buckhorn 9
5964	Berne Grain & Hay Co., Berne	Wolf Seed Co.,	C	99.60	.....	90 00	5.00	12-34	. .	C	None
	W. B. Sweet Clover, Lot 7069	Fort Wayne, Ind.	F	99 60	0.04	92 00	4 50	2 35	1,836	F	Mustard 36

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*Not labeled.
†Certified by Retailer.
C and F stands, respectively, for Claimed and Found.
[124] Removed from sale. Misbranded. Retagged.
[125] Removed from sale. Misbranded. All sold.
[126] Sample secured from Harlen M. Brown, Newcastle, Ind.
[127] Distributed by Allied Mills, Inc., Peoria, Ill.
[128] Removed from sale. Misbranded. All sold.
[129] Removed from sale. Misbranded. Recleaned.
[130] Not tagged. Labels furnished.

SWEET CLOVER—Continued

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor	Purity, per cent	Inert Matter, per cent	Germination, per cent	Hard Seeds, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds	Number per Pound of each of the Noxious Weed Seeds Specified in the Law
5965	Berne Grain & Hay Co., Berne	Wolf Seed Co., C	99.50	......	85.00	9.00	1-35	....	C None
	Hy-Test Y. B. Sweet Clover, Lot 7076	Fort Wayne, Ind. F	99.18	0.26	76.50	12.00	2-35	513	F Curled dock 45; yellow trefoil 18
5757	Dembufsky Seed & Feed Co., Goshen	Wolf Seed Co., C	99.60	......	90.00	5.00	12-34	....	C None
	Hy-Test W. B. Sweet Clover, Lot 7069	Fort Wayne, Ind. F	99.54	0.14	84.00	9.50	2-35	927	F Mustard 27
5981	Farmers Exchange, Warren	Wolf Seed Co., C	99.60	......	90.00	5.00	12-34	....	C None
	Hy-Test W. B. Sweet Clover, Lot 7069	Fort Wayne, Ind. F	99.49	0.10	86.00	6.50	2-35	1,467	F Mustard 27
5978	Farmers Grain Co., Liberty Center	Wolf Seed Co., C	99.60	......	90.00	5.00	12-34	....	C None
	Hy-Test W. B. Sweet Clover, Lot 7069	Fort Wayne, Ind. F	99.56	0.12	91.00	3.50	2-35	1,269	F Mustard 99
5487	Kunberger, John, Columbia City[131]	Wolf Seed Co., C	99.50	......	82.00	11.00	7-34	....	C None
	Hy-Test Y. B. Sweet Clover, Lot 7039	Fort Wayne, Ind. F	99.28	0.12	50.00	46.00	9-34	....	F None
5516	Kunberger, John, Columbia City	Wolf Seed Co., C	99.50	......	81.00	12.00	4-34	....	C None
	Hy-Test W. B. Sweet Clover, Lot 542	Fort Wayne, Ind. F	99.40	0.38	73.00	11.00	9-34	765	F Mustard 45
6358	Warsaw Feed Store, Warsaw	Wolf Seed Co., C	99.60	......	90.00	5.00	12-34	....	C None
	Hy-Test W. B. Sweet Clover, Lot 7069	Fort Wayne, Ind. F	99.54	0.06	87.00	9.00	3-35	1,323	F Mustard 63

*Not labeled.
†Certified by Retailer.

C and F stands, respectively, for Claimed and Found.
[131] Removed from sale. Misbranded.

WHITE CLOVER

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor	Purity, per cent	Inert Matter, per cent	Germination, per cent	Hard Seeds, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds	Number per Pound of each of the Noxious Weed Seeds Specified in the Law
6628	Goldblatt Bros., Inc., Hammond[132]	Ostberg Seed Co., C	98.68	......	90.00	0.60	1–35	....	C None
	White Clover, Lot 2	Chicago, Ill. F	97.37	1.79	66.75	17.00	4–35	7,290	F Buckhorn 18; curled dock 18; dodder 9; yellow trefoil 270
6633	Goldblatt Bros., Inc., Hammond[133]	Ostberg Seed Co., C	99.07	......	92.00	0.45	1–35	....	C None
	White Clover, Lot 1	Chicago, Ill. F	98.71	0.20	82.00	8.25	4–35	1,044	F Buckhorn 54; mustard 36; red sorrel 918; yellow trefoil 36
6618	Ruff Hardware, Inc., J. J., Hammond[134]	Ostberg Seed Co., C	99.11	......	92.00	0.90	1–35	....	C None
	White Clover	Chicago, Ill. F	99.01	0.15	79.00	4.75	4–35	1,062	F Buckhorn 54; red sorrel 468; yellow trefoil 90
5815	Weed Hardware, Vincennes[135]	Teweles Seed Co., L., C	98.84	......	87.00	9.00	1–35	....	C None
	White Clover, Lot 4519	Milwaukee, Wis. F	98.66	0.25	80.00	11.75	2–35	11,079	F Curled dock 18; yellow trefoil 36

*Not labeled.
†Certified by Retailer.
C and F stands, respectively, for Claimed and Found.

[132] Removed from sale. Misbranded. Retagged.

[133] Removed from sale. Misbranded. Retagged.

[134] Removed from sale. Misbranded. Retagged.

[135] Not tagged. Labels furnished.

CORN

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, per cent	Inert Matter, per cent	Germination, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds		Number per Pound of each of the Noxious Weed Seeds Specified in the Law
6655	Ainsworth-Boone Co., Kentland	Ainsworth-Boone Co.,	C	99.00	.....	95.00	3-35	....	C	None
	Reid's Yellow Dent Corn, Lot 1933	Kentland, Ind.	F	99.98	0.02	92.00	5-35	....	F	None
6656	Ainsworth-Boone Co., Kentland	Ainsworth-Boone Co.,	C	99.00	.....	95.00	3-35	....	C	None
	Med. Reid's Yellow Dent Corn	Kentland, Ind.	F	99.93	0.07	93.00	5-35	....	F	None
6287	Berry Seed Co., Clarinda, Iowa[136]	Berry Seed Co.,	C	....	.....	91.00	1-35	....	C	None
	Hy-Bred Corn No. 1, Lot 430	Clarinda, Iowa	F	100.00	0.00	93.00	3-35	....	F	None
5756	Dembufsky Seed Co., Goshen	Dembufsky Seed Co.,	C	99.50	.....	95.00	12-34	....	C	None
	Yellow Dent Corn, Lot Napp JSY	Goshen, Ind.	F	99.89	0.11	96.00	2-35	....	F	None
5760	Dembufsky Seed Co., Goshen	Dembufsky Seed Co.,	C	99.40	.....	98.00	1-35	....	C	None
	Yellow Dent Corn, Lot B	Goshen, Ind.	F	99.98	0.02	95.00	2-35	....	F	None
5960	Ellis, R. W., R. R. 7, Lafayette	Ellis, R. W.,	C	95.00	.....	99.00	2-35	....	C	None
	100 Day Yellow Dent Corn, Lot 2	R. R. 7, Lafayette, Ind.	F	99.90	0.10	94.00	2-35	....	F	None
6726	Crum, H. H., Milan[137]	McCullough Seed Co., The J. Chas.,	C	....	.....	94.00	2-35	....	C	None
	Woodburn Yellow Dent Corn, Lot 1955	Cincinnati, Ohio	F	99.87	0.13	76.00	7-35	....	F	None
6728	Crum, H. H., Milan[138]	McCullough Seed Co., The J. Chas.,	C	....	.....	94.00	2-35	....	C	None
	Woodburn Yellow Dent Corn, Lot 1955	Cincinnati, Ohio	F	99.98	0.01	82.00	7-35	....	F	None
5962	Monon Valley Farm, Monon	Monon Valley Farm,	C	98.00	.....	98.00	1-35	....	C	None
	Yellow Dent Seed Corn, Lot 10	Monon, Ind.	F	99.85	0.15	97.00	2-35	....	F	None
6639	*Fretz Feed Co., R. C., Waterloo	Outland, T. W.,	C	....	.....	95.00	3-35	....	C	None
	Clarage Corn	Antwerp, Ohio	F	99.98	0.02	95.00	5-35	....	F	None
6640	*Fretz Feed Co., R. C., Waterloo	Outland, T. W.,	C	98.00	.....	95.00	3-35	....	C	None
	Woodburn Corn	Antwerp, Ohio	F	99.89	0.11	97.00	5-35	....	F	None
6399	Phillips, J. C., Star City[139]	Smith, W. B.,	C	....	.....	98.00	2-35	....	C	None
	100 Day Smith's Yellow Dent Corn, Lot Early	Logansport, Ind.	F	99.71	0.29	89.00	4-35	.....	F	None
6691	Whitsell, Earl, Oxford	Whitsell, Earl,	C	98.00	.....	95.00	3-35	.....	C	None
	Krug Corn	Oxford, Ind.	F	99.99	0.01	93.00	6-35	.....	F	None

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*Not labeled.
†Certified by Retailer.
C and F stands, respectively, for Claimed and Found.

[136] Tag incomplete. Sample secured from W. Earl Rapp, R. R. 1, Etna Green, Ind.

[137] Tag incomplete. Sample secured from The State Bank of Milan, Milan, Ind.

[138] Tag incomplete. Removed from sale. Misbranded. Returned to distributor.

[139] Tag incomplete.

LESPEDEZA (LARGELY KOREAN)

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, per cent	Inert Matter, per cent	Germination, per cent	Hard Seeds, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds		Number per Pound of each of the Noxious Weed Seeds Specified in the Law
5798	Bloomfield Mill & Elev. Co., Bloomfield[140] Korean Lespedeza, Lot Harrell	Adams & Morrow, Inc., Princeton, Ind.	C	98.00	.....	82.00	6.00	1-35	....	C	None
			F	95.90	0.78	86.00	8.50	2-35	9,963	F	Buckhorn 90; common plantain 5,490; curled dock 45; dodder 18
6313	Hartford City Milling Co., Hartford City Korean Lespedeza, Lot B6	Allied Seed Co., Inc., Fort Wayne, Ind.	C	99.00	...	75.00	17.00	1-35	....	C	None
			F	99.48	0.24	85.50	10.50	4-35	927	F	Bracted plantain 72; horse nettle 45
5520	Syler, Clay, North Manchester Korean Lespedeza, Lot 14	Allied Seed Co., Inc., Fort Wayne, Ind.	C	99.00	......	80.00	10.00	1-34	....	C	Bracted plantain 45
			F	99.13	0.63	89.00	7.00	10-34	837	F	Bracted plantain 144; common plantain 63; curled dock 90
5895	*Scarlett Feed Exchange, West Baden[141] Korean Clover	Andrews, Cecil, Shoals, Ind.	C	......	......	......	......	......	....	C	
			F	98.41	1.00	81.00	14.00	3-35	2,408	F	Bracted plantain 576; buckhorn 18; curled dock 9; dodder 5
6286	Berry Seed Co., Clarinda, Iowa[142] Korean Lespedeza, Lot 5477	Berry Seed Co., Clarinda, Iowa	C	99.75	......	91.00	....	12-34	....	C	None
			F	99.15	0.29	82.50	10.00	3-35	612	F	Common plantain 63; dodder 18; horse nettle 81
6406	Pentecost & Craft Co., Terre Haute Korean Lespedeza, Lot Jones	Cayce-Yost Co., Hopkinsville, Ky.	C	97.00	.....	68.00	24.00	1-35	....	C	None
			F	98.61	0.42	66.50	30.50	4-35	3,339	F	Dodder 9
5781	Chambers & Son, E. F., Lebanon[143] Korean Lespedeza, Lot K413	Chambers & Son, E. F., Lebanon, Ind.	C	98.00	....	94.00	..	1-33	.....	C	None
			F	98.00	1.92	75.00	8.50	3-35	180	F	None
6681	†McCarty Seed Co., J. A., Evansville[144] Kobe Lespedeza, Lot 1243	Cottingham Grain Co., Henderson, Ky.	C	93.30	......	50.00	34.00	2-35	......	C	None
			F	95.81	1.29	84.00	8.50	6-35	1,161	F	Bracted plantain 900; buckhorn 9; dodder 72
5769	Crabbs Reynolds Taylor Co., Lafayette Korean Lespedeza, Lot 3PG	Crabbs Reynolds Taylor Co., Crawfordsville, Ind.	C	99.10	......	80.00	10.00	1-35	....	C	None
			F	99.28	0.12	88.50	8.00	2-35	1,953	F	Bracted plantain 9; buckhorn 9; common plantain 126; dodder 9
5473	*Farmers Grain Co., Rensselaer[145] Lespedeza	Crabbs Reynolds Taylor Co., Crawfordsville, Ind.	C	......	......	......	......	.	....	C	
			F	99.68	0.14	89.00	5.50	9-34	261	F	Bracted plantain 225; buckhorn 9; curled dock 9; dodder 18
6029	Hillis Feed Store, Greencastle Korean Lespedeza, Lot 7PG	Crabbs Reynolds Taylor Co., Crawfordsville, Ind.	C	98.54	......	83.00	10.00	1-35	.....	C	Bracted plantain 63
			F	98.78	0.30	83.50	10.50	4-35	2,637	F	Bracted plantain 72; curled dock 18; horse nettle 9; red sorrel 18
5796	Worthington Grain Co., Worthington Korean Lespedeza, Lot 7PG	Crabbs Reynolds Taylor Co., Crawfordsville, Ind.	C	98.54	.....	83.00	10.00	12-34	....	C	Bracted plantain 63
			F	97.83	0.52	81.50	13.50	2-35	4,113	F	Bracted plantain 135; buckhorn 36; common plantain 108; curled dock 9; dodder 9; red sorrel 36
6438	Brown Supply Co., Valparaiso Korean Lespedeza, Lot 2061	Dickinson Co., The Albert, Chicago, Ill.	C	99.52	.....	81.00	12.00	3-35	......	C	None
			F	99.24	0.64	85.50	8.00	4-35	288	F	Bracted plantain 99; dodder 9

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*Not labeled.
†Certified by Retailer.
C and F stands, respectively, for Claimed and Found.
[140] Removed from sale. Misbranded. Returned to distributor.
[141] Used on own farm.
[142] Sample secured from W. Earl Rapp, R. R. 1, Etna Green, Ind.
[143] Removed from sale. Misbranded. All sold.
[144] Removed from sale. Misbranded. Retagged.
[145] Sample secured from James Amsler, R. R. 4, Rensselaer, Ind.

LESPEDEZA (LARGELY KOREAN)—Continued

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor	Purity, per cent	Inert Matter, per cent	Germination, per cent	Hard Seeds, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds	Number per Pound of each of the Noxious Weed Seeds Specified in the Law
6268	Home Grain Co., LaGrange	Dickinson Co., The Albert, C	99.64		74.00	18.00	2-35		C Horse nettle 128
	Korean Lespedeza, Lot 2057	Chicago, Ill. F	99.74	0.20	81.50	11.00	4-35	99	F Horse nettle 9
6597	Wellington Milling Co., Anderson	Foster-Kendall Co., C	99.25		83.00	7.00	1-35		C None
	Korean Lespedeza	Carmel, Ind. F	98.97	0.65	84.50	12.50	5-35	990	F None
5905	†Ragsdale & Co., Chas., Bedford[146]	Garrett Nurseries, C	97.65		90.00		1-35		C Bracted plantain 63; common plantain 63
	Korean Clover, Lot 68838	Burns City, Ind. F	95.80	2.67	61.00	33.00	3-35	11,961	F Bracted plantain 1,980; buckhorn 108; common plantain 486; dodder 36; horse nettle 216; wild carrot 135
6080	†Westermeier Hardware Co., Columbus[147]	Garth & Orr, C	99.00		97.00		1-35		C None
	Korean Clover, Lot KO	Trenton, Ky. F	99.34	0.28	85.50	12.00	3-35	1,143	F Curled dock 18; dodder 45
6533	*Irwin Feed Store, Madison	Giltner Seed Co., C	96.00		80.00		1-35		C None
	Korean Lespedeza, Lot WT	Eminence, Ky. F	97.95	0.54	73.00	25.50	4-35	5,535	F Buckhorn 72; curled dock 27; dodder 2,880; horse nettle 36
6532	Jefferson Co. Farm Bureau Co-op. Assn., Inc., Madison[148]	Hall Seed Co., C	96.00				12-34		C None
	Common Japan Clover, Lot 264	Louisville, Ky. F	98.16	0.60	86.50	11.00	4-35	4,050	F None
5836	Boonshot Hardware Co., Petersburg	Heldt Co., The, C	98.73		81.00	10.00	11-34		C Bracted plantain 657; buckhorn 27; curled dock 108
	Korean Lespedeza, Lot 3083	Evansville, Ind. F	98.17	0.97	75.50	12.50	3-35	2,448	F Bracted plantain 873; buckhorn 27; curled dock 45; dodder 45; horse nettle 18
5861	Heldt Co., The, Evansville[149]	Heldt Co., The, C	97.97		80.00	15.00	12-34		C Bracted plantain 674; common plantain 54; horse nettle 9
	Korean Lespedeza, Lot 3098	Evansville, Ind. F	97.91	0.48	84.50	10.50	3-35	4,689	F Bracted plantain 756; common plantain 54; curled dock 9
6502	Paoli Hardware Co., Paoli	Heldt Co., The, C	99.08		88.00	9.00	1-35		C Buckhorn 180; dodder 170
	Korean Clover	Evansville, Ind. F	98.83	1.17	93.00	4.00	4-35	135	F Bracted plantain 18; curled dock 27; dodder 81; horse nettle 9
6038	Hillis Feed Store, Greencastle[150]	Hooton-Davis Seed Corp., C	96.00		75.00	15.00	11-34		C None
	Korean Lespedeza, Lot 1824	Lebanon, Ind. F	98.86	0.04	89.50	6.50	4-35	1,449	F Bracted plantain 153; dodder 54; horse nettle 72
6514	Mulberry Grain Co., Mulberry	Hooton-Davis Seed Corp., C	98.00		80.00	11.00	12-34		C None
	Korean Lespedeza, Lot 1805	Lebanon, Ind. F	99.46	0.34	94.00	0.00	5-35	432	F Horse nettle 432
6594	Weer, F. W., Anderson[151]	Hooton-Davis Seed Corp., C	99.00		85.00	7.00	1-35		C None
	Korean Lespedeza	Lebanon, Ind. F	99.05	0.67	89.00	9.00	5-35	540	F Dodder 54; horse nettle 36
6232	Dekalb Co. Farm Bureau Co-op. Assn., Inc., Auburn	Indiana Farm Bureau Co-op. Assn., Inc., C	99.00		78.00	15.00	1-34		C None
	Certified Korean Lespedeza, Lot 2235	Indianapolis, Ind. F	99.49	0.39	81.50	12.50	4-35	351	F Bracted plantain 63; common plantain 54; horse nettle 54

6564	Farm Bureau Co-operative Co., Aurora	Indiana Farm Bureau Co-op. Assn., Inc.,	C	99.00	......	78.00	15 00	12-34	....	C	None
	Uncertified Korean Lespedeza, Lot 2-1067	Indianapolis, Ind.	F	98.58	0.46	87.50	11.00	5-35	2,917	F	Bracted plantain 108; buckhorn 54; curled dock 108; dodder 10; horse nettle 117
6088	Farm Bureau Service, Columbus[152]	Indiana Farm Bureau Co-op. Assn., Inc.,	C	99.00	.....	78.00	15.00	12-34	......	C	None
	Korean Lespedeza, Lot 2-1046	Indianapolis, Ind.	F	96 37	0 30	88 00	7 00	4 35	8,096	F	Bracted plantain 99; buckhorn 2,880; common plantain 18; dodder 14; horse nettle 45
5927	Fayette Co. Farm Bureau Co-op. Assn., Inc., Connersville	Indiana Farm Bureau Co-op. Assn., Inc.,	C	99.00	......	85 00	10.00	12-34	....	C	None
	Korean Lespedeza, Lot 2-992	Indianapolis, Ind.	F	99.06	0.24	95.00	3.00	3-35	1,476	F	Bracted plantain 108; common plantain 18; horse nettle 180
6172	Franklin Co. Farm Bureau Co-op. Assn., Inc., Brookville	Indiana Farm Bureau Co-op. Assn., Inc.,	C	99 00	......	78.00	15.00	12-34	.....	C	None
	Korean Lespedeza, Lot 2-992	Indianapolis, Ind.	F	98.45	0.59	85.50	6 50	4-35	2,399	F	Bracted plantain 9; buckhorn 27; common plantain 117; dodder 5; horse nettle 171
5824	Greene Co. Farm Bureau Co-op. Assn., Inc., Linton	Indiana Farm Bureau Co-op. Assn., Inc.,	C	98.56	......	90.00	......	12-34	....	C	None
	Korean Lespedeza, Lot 24012	Indianapolis, Ind.	F	98.19	0.15	74.00	21.00	3-35	4,392	F	Bracted plantain 144; common plantain 36; curled dock 72; horse nettle 90
5907	Lawrence Co. Farm Bureau Co-op. Assn., Inc., Bedford	Indiana Farm Bureau Co-op. Assn., Inc.,	C	98.50	......	90.00	......	12-34	....	C	None
	Korean Lespedeza, Lot 2-1012	Indianapolis, Ind.	F	98 86	0 06	88 50	9 00	3 35	2,849	F	Bracted plantain 333; curled dock 36; dodder 5; horse nettle 135
6401	Pulaski Co. Farm Bureau Co-op, Assn., Inc., Winamac	Indiana Farm Bureau Co-op. Assn., Inc.,	C	98 00	.....	78 00	15 00	12-34	..	C	None
	Certified Korean Lespedeza, Lot 3728	Indianapolis, Ind.	F	97 46	2 06	94.50	4 50	4 35	756	F	Curled dock 36
5481	Whitley Co. Farm Bureau Co-op. Assn., Inc., Columbia City[153]	Indiana Farm Bureau Co-op. Assn., Inc.,	C	98.00	......	84.00	10.00	3-33	....	C	None
	Korean Lespedeza, Lot 1494	Indianapolis, Ind.	F	96.72	2.48	70.00	5.50	9-34	2,529	F	Common plantain 9
5926	Chance Bros., Connersville	Indiana Seed Co.,	C	99.00	......	83.00	7.00	12-34	....	C	None
	Korean Lespedeza, Lot I1806	Indianapolis, Ind.	F	99 72	0.24	81.50	12.00	3-35	207	F	Bracted plantain 9; horse nettle 18
6054	Karsell Co., Inc., The, Bloomington	Indiana Seed Co.,	C	99 00	....	83 00	7.00	12-34	....	C	None
	Korean Lespedeza, Lot I1806	Indianapolis, Ind.	F	99.60	0.36	85.00	12.50	4-35	135	F	Buckhorn 18; horse nettle 27
5904	Norman & Roberts, G. M., Bedford	Indiana Seed Co.,	C	99.00	....	83 00	7 00	12 34	....	C	None
	Korean Lespedeza, Lot I1806	Indianapolis, Ind.	F	99 78	0 20	84.00	12.00	3-35	117	F	Buckhorn 18; common plantain 9
5799	Pioneer Elevator Co., Worthington	Indiana Seed Co.,	C	98.00	......	82.00	11.00	12-34	....	C	Common plantain 1,700
	Korean Lespedeza, Lot H805	Indianapolis, Ind.	F	98.87	0.83	95.00	4.00	2-35	909	F	Horse nettle 369
6540	Sample, John L., Madison	Indiana Seed Co.,	C	98.60	......	82.00	9.00	2-35	....	C	None
	Korean Lespedeza, Lot I1808	Indianapolis, Ind.	F	97.98	0 20	89.00	4 00	5 35	4,860	F	Bracted plantain 27; buckhorn 72; common plantain 108; horse nettle 63
5660	Straughn Grain, Inc., Straughn	Indiana Seed Co.,	C	99.25	......	83.00	7.00	12-34	....	C	None
	Korean Lespedeza, Lot I1806	Indianapolis, Ind.	F	99.78	0.14	83.50	13.00	2-35	176	F	Buckhorn 36; curled dock 9; dodder 14; horse nettle 27

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*Not labeled.

†Certified by Retailer.

C and F stands, respectively, for Claimed and Found.

[146] Removed from sale. Misbranded. All sold.

[147] Removed from sale. Misbranded. Retagged.

[148] Tag incomplete. Returned to distributor.

[149] Sample secured from Indiana State Highway Commission, Dale, Ind.

[150] Removed from sale. Misbranded. All sold.

[151] Removed from sale. Misbranded. Returned to distributor.

[152] Removed from sale. Misbranded. All sold.

[153] Removed from sale. Misbranded. Returned to distributor. Distributed by Korean Seed Growers Ass'n, Morganfield, Ky.

LESPEDEZA (LARGELY KOREAN)—Continued

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, per cent	Inert Matter, per cent	Germination, per cent	Hard Seeds, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds		Number per Pound of each of the Noxious Weed Seeds Specified in the Law
6495	Sunshine Feed Store, Scottsburg[154]	Indiana Seed Co.,	C	98.50	......	84.00	6.00	2-35	......	C	None
	Korean Lespedeza, Lot 11805	Indianapolis, Ind.	F	98.52	0.84	87.50	6.00	4-35	2,705	F	Common plantain 540; dodder 14; horse nettle 531
6553	Gaudin Hardware, Geo., Vevay[155]	Kentucky Lespedeza Growers Assn.,	C	99.00	......	90.00	8.00	2-35	......	C	None
	Korean Lespedeza, Lot T. Mont	Eminence, Ky.	F	97.66	1.66	88.50	7.50	4-35	1,607	F	Bracted plantain 207; buckhorn 27; curled dock 18; dodder 5; horse nettle 990
6064	Pennington Feed Store, Bloomington	Kentucky Lespedeza Growers Assn.,	C	98.28	......	75.00	21.00	1-34	......	C	None
	Korean Lespedeza, Lot W. E. Bu	Eminence, Ky.	F	99.16	0.38	83.50	7.00	3-35	1,179	F	Bracted plantain 153; common plantain 9; curled dock 63; dodder 387; horse nettle 117
6542	Hunger, C. G., Madison	Lewis Implement & Seed Co.,	C	99.73	......	80.00	12.00	12-34	......	C	None
	Korean Lespedeza, Lot RB	Louisville, Ky.	F	99.12	0.20	97.50	2.00	5-35	1,107	F	Bracted plantain 27
6538	Jefferson Co. Farm Bureau Co-op. Assn., Inc., Madison[156]	Lewis Implement & Seed Co.,	C	99.00	......	85.00	10.00	1-35	......	C	None
	Korean Lespedeza, Lot Red Bird	Louisville, Ky.	F	99.48	0.10	90.00	7.50	5-35	1,161	F	Dodder 18; horse nettle 693
6651	McCarty Seed Co., J. A., Evansville	McCarty Seed Co., J. A.,	C	96.50	......	87.00	10.00	2-35	......	C	None
	Serecia Lespedeza, Lot 1225	Evansville, Ind.	F	96.10	0.56	75.00	12.50	5-35	630	F	None
6565	Farm Bureau Feed Store, Milan	McCullough Seed Co., The J. Chas.,	C	99.10	......	84.00	11.00	12-34	......	C	None
	Korean Lespedeza, Lot 1879	Cincinnati, Ohio	F	98.45	0.48	81.50	14.00	5-35	3,254	F	Bracted plantain 234; buckhorn 18; common plantain 54; curled dock 36; dodder 14; horse nettle 198
6554	Gaudin Hardware, Geo., Vevay	McCullough Seed Co., The J. Chas.,	C	98.75	......	84.00	11.00	2-35	......	C	None
	Korean Lespedeza, Lot 2146	Cincinnati, Ohio	F	98.50	0.24	82.50	10.50	5-35	3,609	F	Bracted plantain 99; common plantain 126; curled dock 54; horse nettle 270
6531	Irwin Feed Store, Madison	McCullough Seed Co., The J. Chas.,	C	98.50	......	86.00	10.00	12-34	......	C	None
	Korean Lespedeza, Lot 1878	Cincinnati, Ohio	F	98.57	0.54	83.00	12.00	5-35	2,106	F	Bracted plantain 27; horse nettle 9
6556	Krick & Sons Co., A., Milan	McCullough Seed Co., The J. Chas.,	C	99.00	......	87.00	7.00	1-35	......	C	None
	Korean Lespedeza, Lot 2169	Cincinnati, Ohio	F	99.53	0.41	87.50	9.50	5-35	99	F	Horse nettle 9
5924	Schmocker, John., Batesville	McCullough Seed Co., The J. Chas.,	C	98.60	......	85.00	10.00	12-34	......	C	None
	Korean Clover, Lot 1878	Cincinnati, Ohio	F	98.36	0.48	87.50	8.00	3-35	3,447	F	Bracted plantain 18; buckhorn 18; common plantain 63; curled dock 27; horse nettle 261
6426	Tuholski, A. A., Michigan City[157]	McMahan Seed Co.,	C	99.50	......	93.00	......	2-34	......	C	None
	Korean Lespedeza	Valparaiso, Ind.	F	99.17	0.40	75.50	11.00	5-35	1,260	F	Horse nettle 270
6661	Gibson Co. Farm Bureau Co-op. Assn., Inc., Princeton[158]	Meacham, Jr., Chas. M.,	C	99.00	......	89.00	......	1-35	......	C	Horse nettle 10
	Korean Lespedeza, Lot JWB	Morganfield, Ky.	F	98.09	0.46	93.00	4.50	5-35	3,240	F	Bracted plantain 27; buckhorn 9; common plantain 36; horse nettle 18

6638	Sullivan Co. Farm Bureau Co-op. Assn., Inc., Sullivan	Meacham, Jr., Chas. M.,	C	99 00	...	89 00	8 00	1-35	.	C None
	Korean Lepedeza, Lot MM	Morganfield, Ky.	F	98 81	0.44	87 50	7 00	5-35	1,710	F Bracted plantain 189; common plantain 180; horse nettle 171
6055	Calvin Bros., Nashville[159]	National Seed Co.,	C	96.00	......	70 00	20 00	1-35	.....	C Dodder 1,000; horse nettle 90
	Korean Lespedeza, Lot K148-2	Louisville, Ky.	F	94.45	2.15	40 00	48 50	3-35	19,989	F Bracted plantain 9; dodder 9,360
6062	Calvin Bros., Nashville	National Seed Co.,	C	98.75	......	65 00	25.00	1-35	...	C Horse nettle 90
	Korean Lespedeza, Lot 123	Louisville, Ky.	F	99.07	0 61	89.50	9 00	3-35	482	F Bracted plantain 9; dodder 5; horse nettle 108
5934	Chance Bros., Connersville[160]	National Seed Co.,	C	98.50	......	90 00	......	10-34	....	C None
	Korean Lespedeza, Lot 123	Louisville, Ky.	F	98 70	0.80	90 00	8 00	3-35	1,323	F Bracted plantain 18; buckhorn 45; curled dock 9; horse nettle 522; wild carrot 9
6501	Hoosier Hdwe. Co., Paoli[161]	National Seed Co.,	C	99 25	......	80 00	12 00	......	......	C Horse nettle 90
	Korean Lespedeza, Lot 223	Louisville, Ky.	F	99.90	0 08	91.00	6 00	4-35	135	F Dodder 9; horse nettle 126
6382	Co-operative Elevator Co., Winamac	Ohio Valley Seed Co.,	C	99 50	......	82 00	11.00	2 35	....	C Bracted plantain 15
	Korean Lespedeza, Lot C92	Evansville, Ind.	F	99.09	0.65	82 00	9 00	4-35	729	F Bracted plantain 63; buckhorn 9; dodder 9; horse nettle 18
6430	McMahan Seed Co., Valparaiso	Ohio Valley Seed Co.,	C	99 50	......	83 00	6 00	1-35	..	C None
	Korean Lespedeza, Lot C106	Evansville, Ind.	F	99 06	0.44	90 50	1 00	4 35	657	F Bracted plantain 9; horse nettle 18
5869	Graves Implement Store, Tell City	Purcell Seed Co.,	C	99 50	......	88 00	4 00	12-34	...	C Horse nettle 180
	"Tru Val" Korean Lespedeza, Lot 3348	Evansville, Ind.	F	99 90	0.06	93 00	1 50	3-35	315	F Horse nettle 135
5852	Purcell Seed Co., Evansville[162]	Purcell Seed Co.,	C	96 00	......	70 00	20 00	12 34	......	C Bracted plantain 180; buckhorn 9,180; dodder 90; horse nettle 90
	Korean Lespedeza, Lot 3661	Evansville, Ind.	F	96 28	0 24	84.50	11 50	3 35	13,406	F Bracted plantain 522; buckhorn 8,460; dodder 5; horse nettle 99
5867	Purcell Seed Co., Evansville	Purcell Seed Co.,	C	98 96	......	85 50	8 50	2 35	.	C Dodder 9
	Korean Lespedeza, Lot 3681	Evansville, Ind.	F	99 14	0 36	82 00	10 50	3 35	3,258	F Horse nettle 18
6415	Criss Bros., Lewis[163]	Quinlan Seed Store,	C	95 00	....	75 00	10 00	1-35		C Buckhorn 360; dodder 180
	Korean Lespedeza, Lot I1812	Terre Haute, Ind.	F	95.91	2 46	56 00	29 00	5 35	6,471	F Bracted plantain 234; buckhorn 189; common plantain 1,080; curled dock 207; dodder 81; horse nettle 360
6065	Indiana State Highway Commission, Bloomington[164]	Ross Seed Co.,	C	98.00	. .	80 00	12 00	12-34	. ..	C Common plantain 90; horse nettle 270
	Korean Clover	Louisville, Ky.	F	98 70	0 55	95 50	1 50	3 35	1,409	F Common plantain 36; dodder 5; horse nettle 198
5415	Johnson & Chenoweth, Shoals[165]	Ross Seed Co.,	C	58.50	......	50.00	......	3-34	....	C None
	Korean Clover	Louisville, Ky.	F	98 26	0 89	77 00	9.50	9-34	2,520	F Bracted plantain 1,530; common plantain 315; curled dock 45
6521	Linkhart & Son, North Vernon[166]	Ross Seed Co.,	C	98 50	....	85 00	5 00	1-35	...	C Common plantain 360; curled dock 450; horse nettle 990
	Korean Clover	Louisville, Ky.	F	97 27	1 47	91 50	6 00	5-35	4,730	F Bracted plantain 9; buckhorn 27; common plantain 1,800; curled dock 99; dodder 5; horse nettle 1,890

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*Not labeled.

†Certified by Retailer.

C and F stands, respectively, for Claimed and Found.

[154] Removed from sale. Misbranded. All sold.

[155] Removed from sale. Misbranded. All sold.

[156] Removed from sale. Misbranded. All sold.

[157] Removed from sale. Misbranded. Retagged.

[158] Removed from sale. Misbranded. All sold.

[159] Removed from sale. Misbranded. Used on own farm.

[160] Removed from sale. Misbranded. Retagged.

[161] Tag incomplete.

[162] Sample secured from Boonshot Hardware Co., Petersburg, Ind.

[163] Removed from sale. Misbranded. Retagged.

[164] Distributed by The Karsell Co., Inc., Bloomington, Ind.

[165] Removed from sale. Misbranded. Retagged.

[166] Removed from sale. Misbranded. All sold.

LESPEDEZA (LARGELY KOREAN)—Continued

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, per cent	Inert Matter, per cent	Germination, per cent	Hard Seeds, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds	Number per Pound of each of the Noxious Weed Seeds Specified in the Law
6522	Linkhart & Son, North Vernon Korean Clover	Ross Seed Co., Louisville, Ky.	C	99.00	......	90.00	.....	2-35	......	C Common plantain 270
			F	98.83	0.40	94.50	0.50	5-35	1,773	F Common plantain 72; horse nettle 171
5794	Bloomfield Mill & Elev. Co., Bloomfield[167] Japan Lespedeza	Schultz Seed Co., J. M., Dieterich, Ill.	C	96.50		85.00	.....	11-34	......	C None
			F	94.55	3.90	90.50	2.50	3-35	6,273	F Bracted plantain 234; dodder 9
6471	Becker & Son, Inc., J. H., Corydon[168] Korean Lespedeza, Lot 394	Scott Seed Co., New Albany, Ind.	C	98.50	......	80.00	10.00	12-34	......	C Bracted plantain 90
			F	99.14	0.46	94.50	2.50	4-35	1,670	F Common plantain 900; dodder 50
6466	Bickel's Feed Store, Corydon Korean Lespedeza, Lot 393	Scott Seed Co., New Albany, Ind.	C	99.40		80.00	12.00	2-35	......	C Buckhorn 90
			F	99.62	0.24	90.50	3.00	4-35	198	F Bracted plantain 9; horse nettle 9
6475	Bornwasser-Gwin Implement Co., New Albany Korean Lespedeza, Lot 394	Scott Seed Co., New Albany, Ind.	C	99.00	......	80.00	10.00	1-35	......	C Bracted plantain 90
			F	99.64	0.08	95.00	0.50	4-35	860	F Buckhorn 9; common plantain 126; dodder 5
6581	Bullock, F. L., Butlerville Korean Clover, Lot 371	Scott Seed Co., New Albany, Ind.	C	98.50		80.00	10.00	1-35	......	C Bracted plantain 90
			F	99.20	0.42	77.50	21.00	4-35	891	F Bracted plantain 171
5925	Chance Bros., Connersville Korean Lespedeza, Lot 337	Scott Seed Co., New Albany, Ind.	C	98.50	......	80.00	10.00	10-34	......	C None
			F	98.38	0.69	74.00	20.00	3-35	2,097	F Bracted plantain 9; horse nettle 18
6509	Heise Bros. & Co., Mitchell Korean Lespedeza, Lot 363	Scott Seed Co., New Albany, Ind.	C	90.00	......	75.00	17.00	12-34	......	C Bracted plantain 180
			F	99.60	0.20	92.50	1.50	5-35	342	F Bracted plantain 54; buckhorn 18; common plantain 36; horse nettle 54
6483	James Seed Co., Jeffersonville Korean Lespedeza, Lot 336	Scott Seed Co., New Albany, Ind.	C	99.00	......	75.00	17.00	12-34	......	C Bracted plantain 90
			F	99.11	0.28	88.00	2.00	4-35	1,454	F Bracted plantain 81; common plantain 297; dodder 23; horse nettle 63
6535	Jefferson Co. Farm Bureau Co-op. Assn., Inc., Madison Korean Clover, Lot 340	Scott Seed Co., New Albany, Ind.	C	98.50	......	80.00	...	1-35	......	C Bracted plantain 90
			F	99.60	0.24	91.50	2.50	5-35	225	F Buckhorn 9; horse nettle 36
6536	Jefferson Co. Farm Bureau Co-op. Assn., Inc., Madison Korean Lespedeza, Lot 394	Scott Seed Co., New Albany, Ind.	C	98.50	......	80.00	10.00	12-34	......	C Bracted plantain 90
			F	99.04	0.20	90.50	6.50	5-35	2,034	F Common plantain 288; dodder 36
5620	Jennings Co. Farm Bureau Co-op. Assn., Inc., North Vernon Korean Lespedeza, Lot 290A	Scott Seed Co., New Albany, Ind.	C	98.50	......	75.00	17.00	10-34	......	C Bracted plantain 90
			F	98.90	0.70	84.00	12.50	1-35	1,017	F Bracted plantain 9; buckhorn 36; common plantain 54; curled dock 18
6470	Turley, James E., English	Scott Seed Co.,	C	95.00	......	80.00	10.00	12-34	......	C Bracted plantain 810; buckhorn 450; common plantain 180; dodder 4,500; red sorrel 180
	Korean Lespedeza, Lot 314	New Albany, Ind.	F	95.07	1.59	71.50	27.00	4-35	15,588	F Bracted plantain 1,080; buckhorn 1,170; common plantain 117; curled dock 117; dodder 6,120; horse nettle 144; wild carrot 90

5873	Wedeking & Co., C. W., Dale[169]	Scott Seed Co.,	C	98.50	......	80.00	14.00	8-34	....	C	None
	Korean Lespedeza, Lot 217	New Albany, Ind.	F	98.63	0.14	85.00	3.00	3-35	3,087	F	Bracted plantain 9; buckhorn 18; common plantain 63; dodder 45; horse nettle 432
5750	Knapp, C. E., South Bend	Syler & Syler,	C	99.00	......	78.00	16.00	12-33	....	C	Bracted plantain 95
	Korean Lespedeza, Lot 122A	Plymouth, Ind.	F	98 49	0.60	86.00	6.50	2-35	1,368	F	Bracted plantain 72; buckhorn 9; dodder 36; horse nettle 81
6718	Syler & Syler, Plymouth	Syler & Syler,	C	99 00	......	80.00	10.00	2-35	....	C	None
	Korean Lespedeza, Lot 299A	Plymouth, Ind.	F	99.09	0.48	96.50	2.50	7-35	995	F	Buckhorn 45; common plantain 54; dodder 14; horse nettle 72
6474	Tower & Merryman, Marengo	Wyatt Seed & Feed Store,	C	97.00	......	85.00	......	2-35	....	C	Bracted plantain 16; curled dock 16; dodder 34
	Korean Lespedeza	Petersburg, Ind.	F	99.27	0 37	93.50	13.50	4-35	1,530	F	Common plantain 1,080
5826	Wyatt Seed & Feed Store, Petersburg	Wyatt Seed & Feed Store,	C	96.00	......	85.00	......	1-35	....	C	Bracted plantain 512; buckhorn 64; curled dock 512
	Korean Lespedeza, Lot 12345	Petersburg, Ind.	F	97.20	0.60	86.00	8.00	2-35	4,716	F	Bracted plantain 270; buckhorn 720; common plantain 9; curled dock 108; dodder 189; horse nettle 81; red sorrel 9

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*Not labeled.
†Certified by Retailer.
C and F stands, respectively, for Claimed and Found.

[167] Removed from sale. Misbranded. All sold.
[168] Removed from sale. Misbranded. All sold.
[169] Removed from sale. Misbranded. All sold.

MILLET

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, per cent	Inert Matter, per cent	Germination, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds		Number per Pound of each of the Noxious Weed Seeds Specified in the Law
6586	Byers Seed Co., Franklin[170]	Byers Seed Co.,	C	98.00	.....	80.00	1-35	....	C	None
	Hungarian Millet, Lot Mill	Franklin, Ind.	F	93.85	5.39	65.50	5-35	7,209	F	Buckhorn 18; corn cockle 9; horse nettle 72
6733	Kiest Milling Co., Knox	Dickinson Co., The Albert,	C	99.48	.....	75.00	5-35	....	C	None
	German Type Millet, Lot 8214	Chicago, Ill.	F	99.90	0.08	81.50	7-35	90	F	None
6717	†Syler & Syler, Plymouth	Dickinson Co., The Albert,	C	99.50	.....	80.00	4-35	....	C	None
	German Type Golden Millet, Lot 829	Chicago, Ill.	F	98.96	0.60	77.50	6-35	1,710	F	None
6721	†Syler & Syler, Plymouth	Dickinson Co., The Albert,	C	98.76	.....	85.00	4-35	....	C	None
	Hungarian Millet, Lot 8312	Chicago, Ill.	F	99.20	0.50	92.50	6-35	324	F	Mustard 54
6685	Logansport Elevator Co., Logansport	Hooton-Davis Seed Corp.,	C	98.00	.....	80.00	3-35	....	C	None
	Hungarian Millet	Lebanon, Ind.	F	99.48	0.26	90.50	6-35	873	F	Common plantain 54; horse nettle 9
6690	Ellis Feed Co., Greencastle[171]	Indiana Seed Co.,	C	98.00	.....	90.00	4-35	....	C	None
	German Millet, Lot I1823	Indianapolis, Ind.	F	98.51	0.99	70.00	6-35	1,278	F	Buckhorn 9; curled dock 9
6680	Norman & Roberts, G. M., Bedford	Lewis Implement & Seed Co.,	C	99.25	.....	85.00	2-35	....	C	None
	Tennessee Cultivated Millet, Lot Red Bird	Louisville, Ky.	F	99.09	0.81	90.00	5-35	720	F	None
6683	Greenwood & Co., Washington	Purcell Seed Co.,	C	99.70	.....	90.00	3-35	....	C	None
	"Tru Val" Millet, Lot 3943	Evansville, Ind.	F	99.60	0.34	91.00	6-35	540	F	None
6615	Koschnick & Co., Indianapolis	Scott Seed Co.,	C	99.00	.....	90.00	1-35	....	C	None
	Tennessee German Millet, Lot 800	New Albany, Ind.	F	98.89	0.71	86.00	4-35	1,710	F	None
6577	Syler & Syler, Plymouth	Syler & Syler,	C	99.00	.....	85.00	2-35	....	C	None
	Hungarian Millet	Plymouth, Ind.	F	99.76	0.20	83.50	4-35	180	F	None

*Not labeled.
†Certified by Retailer.
C and F stands, respectively, for Claimed and Found.

[170] Removed from sale. Misbranded. Wholesaled.
[171] Removed from sale. Misbranded. All sold.

OATS

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, per cent	Inert Matter, per cent	Germination, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds	Number per Pound of each of the Noxious Weed Seeds Specified in the Law
6049	Busenbark Grain Co., Crawfordsville	Busenbark Grain Co.,	C	98.00		90.00	2-35		C None
	White Oats, Lot 1	Crawfordsville, Ind.	F	97.30	2.29	85.50	2-35	171	F Curled dock 27
6433	Brown Supply Co., Valparaiso	Dickinson Co., The Albert,	C	99.63		92.00	12-34		C None
	Silver Mine Oats, Lot 73192	Chicago, Ill.	F	99.53	0.19	90.00	4-35	81	F None
5652	Garten Feed Co., Indianapolis[172]	Garten Feed Co.,	C	99.00		98.00	12-34		C None
	Canadian Type Oats, Lot P	Indianapolis, Ind.	F	98.40	0.80	96.50	1-35	27	F None
6458	†Sugar Creek Grain Co., Thorntown	Gunson & Co., L. P.,	C	98.50		90.00	1-35		C None
	Oats	Rochester, N. Y.	F	98.10	0.66	96.50	4-35		F None
5963	Monon Valley Farms, Monon	Monon Valley Farms,	C	98.69		98.00	12-34		C Mustard 18
	Gopher Seed Oats, Lot 68200	Monon, Ind.	F	96.95	2.16	95.00	2-35	18	F Mustard 18
5879	Dubois Co. Farm Bureau Co-op. Assn., Inc.,								
	Huntingburg[173]	Sun-Field Seed Service,	C	99.50		95.00	1-35		C None
	New Victory Seed Oats, Lot 563	Chicago, Ill.	F	98.15	1.07	82.50	2-35	36	F None
5959	Finch & Weisel Elevator Co., Portland[174]	Sun-Field Seed Service,	C	99.50		95.00	1-35		C None
	New Victory Seed Oats, Lot 561	Chicago, Ill.	F	96.25	0.56	95.00	2-35	18	F None
6104	Lizton Grain & Lumber Co., Lizton[175]	Sun-Field Seed Service,	C	99.50		95.00	1-35		C None
	New Victory Seed Oats, Lot 563	Chicago, Ill.	F	96.89	2.27	82.50	3-35	27	F None
6050	Miller Grain Co., Inc., Greencastle	Sun-Field Seed Service,	C	99.50		92.00	1-35		C None
	Mammoth Cluster Seed Oats, Lot 557	Chicago, Ill.	F	99.02	0.66	95.50	2-35		F None
5883	Ragsdale & Co., Chas., Bedford	Sun-Field Seed Service,	C	99.50		95.00	1-35		C None
	New Victory Seed Oats, Lot 563	Chicago, Ill.	F	98.44	1.19	85.00	2-35	45	F None
5943	Red Key Grain Co., Red Key	Sun-Field Seed Service,	C	99.50		95.00	1-35		C None
	New Victory Seed Oats, Lot 561	Chicago, Ill.	F	98.77	0.29	96.50	2-35		F None
6587	Schaefer, John H., Columbus[176]	Sun-Field Seed Service,	C	99.50		95.00	1-35		C None
	New Victory Seed Oats, Lot 563	Chicago, Ill.	F	98.05	1.20	74.00	4-35	18	F None
6176	Springer, W. D., Gwynneville	Sun-Field Seed Service,	C	99.50		95.00	1-35		C None
	New Victory Seed Oats, Lot 561	Chicago, Ill.	F	96.27	1.18	96.00	3-35	45	F None
5558	Veedersburg Grain Co., Veedersburg[177]	Sun-Field Seed Service,	C	99.50		95.00	8-34		C None
	Mammoth Cluster Oats, Lot 559	Chicago, Ill.	F	99.64	0.29	79.00	10-34	45	F None
6645	Waterloo Mills, Waterloo[178]	Sun-Field Seed Service,	C	99.50		95.00	1-35		C None
	New Victory Seed Oats, Lot 561	Chicago, Ill.	F	96.29	0.44	94.00	5-35	54	F None
6432	McMahan Seed Co., Valparaiso	Teweles Seed Co., L.,	C	98.00		95.00	2-35		C None
	Swedish Type Oats	Milwaukee, Wis.	F	98.10	0.49	91.00	4-35	48	F None

*Not labeled.

†Certified by Retailer.

C and F stands, respectively, for Claimed and Found.

[172] Sample secured from Don Good, Clermont, Ind.

[173] Removed from sale. Misbranded.

[174] Removed from sale. Misbranded. Retagged.

[175] Removed from sale. Misbranded. Retagged.

[176] Removed from sale. Misbranded.

[177] Removed from sale. Misbranded. Retagged.

[178] Removed from sale. Misbranded.

ORCHARD GRASS

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, per cent	Inert Matter, per cent	Germination, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds		Number per Pound of each of the Noxious Weed Seeds Specified in the Law
6040	Owen Co. Farm Bureau Co-op. Assn., Inc., Spencer[179]	Indiana Farm Bureau Co-op. Assn., Inc.,	C	80.00	.....	80.00	12-34	....	C	None
	Orchard Grass, Lot 3708	Indianapolis, Ind.	F	82.53	16.72	88.00	4-35	1,971	F	Buckhorn 162; curled dock 540; ox-eye daisy 18; red sorrel 576
5887	Norman & Roberts, G. M., Bedford	Indiana Seed Co.,	C	83.00	.....	80.00	9-34	....	C	Curled dock 180
	Orchard Grass, Lot I1834	Indianapolis, Ind.	F	82.56	16.64	76.50	4-35	1,026	F	Buckhorn 36; curled dock 54; red sorrel 36
6037	Owen Farmers Supply Co., Spencer	Indiana Seed Co.,	C	83.00	.....	82.00	2-35	....	C	Curled dock 90
	Orchard Grass, Lot I1502	Indianapolis, Ind.	F	83.81	15.59	72.50	5-35	1,395	F	Bracted plantain 18; buckhorn 90; curled dock 90; ox-eye daisy 54; red sorrel 18
6063	Pennington Feed Store, Bloomington	Lewis Implement & Seed Co.,	C	85.00	.....	80.00	1-35	....	C	Buckhorn 200; red sorrel 100
	Orchard Grass, Lot Red Bird	Louisville, Ky.	F	84.64	14.68	92.00	3-35	5,184	F	Buckhorn 2,250; curled dock 216; red sorrel 2,475; wild onion 18
6497	Gregor, A. C., Brownstown	McCullough Seed Co., The J. Chas.,	C	87.55	.....	85.00	1-34	....	C	None
	Orchard Grass, Lot 2093	Cincinnati, Ohio	F	87.32	12.38	85.00	5-35	711	F	Curled dock 36
6069	Calvin Bros., Nashville	National Seed Co.,	C	82.25	.....	85.00	10-34	....	C	Buckhorn 280; curled dock 280; red sorrel 500
	Orchard Grass, Lot 209	Louisville, Ky.	F	84.13	14.02	87.00	4-35	5,121	F	Buckhorn 54; curled dock 576; ox-eye daisy 108; red sorrel 1,386; wild carrot 18; wild onion 54
6059	Farmers Feed & Coal Co., Bloomington[180]	Ross Seed Co.,	C	81.94	.....	81.00	11-34	....	C	Buckhorn 225; red sorrel 675
	Orchard Grass, Lot S6059	Louisville, Ky.	F	83.22	12.15	81.00	3-35	11,448	F	Curled dock 72; red sorrel 126
6508	Heise Bros. & Co., Mitchell[181]	Ross Seed Co.,	C	80.00	.....	85.00	1-35	....	C	Curled dock 225
	Orchard Grass, Lot 7393	Louisville, Ky.	F	84.78	11.65	82.00	5-35	3,753	F	Buckhorn 738; curled dock 2,700; red sorrel 90
6480	James Seed Co., Jeffersonville[182]	Ross Seed Co.,	C	82.47	.....	85.00	1-35	....	C	Curled dock 225
	Orchard Grass	Louisville, Ky.	F	86.53	9.98	83.50	5-35	3,924	F	Buckhorn 666; curled dock 2,925; red sorrel 108
6505	Paoli Hardware Co., Paoli[183]	Ross Seed Co.,	C	80.00	.....	85.00	1-35	....	C	Curled dock 225
	Orchard Grass, Lot 7394	Louisville, Ky.	F	86.05	11.42	82.00	5-35	2,448	F	Buckhorn 684; curled dock 1,386; red sorrel 360; yellow trefoil 18
5902	Ragsdale & Co., Chas., Bedford	Ross Seed Co.,	C	81.94	.....	81.50	11-34	....	C	Buckhorn 225; red sorrel 675
	Orchard Grass	Louisville, Ky.	F	78.81	16.19	79.50	4-35	12,960	F	Buckhorn 36; curled dock 180; red sorrel 144

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*Not labeled.
†Certified by Retailer.
C and F stands, respectively, for Claimed and Found.

[179] Removed from sale. Misbranded. All sold.

[180] Not tagged. Labels furnished.

[181] Removed from sale. Misbranded. Returned to distributor.

[182] Removed from sale. Misbranded. Retagged.

[183] Removed from sale. Misbranded. Retagged.

RAPE

Laboratory No. §	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, per cent	Inert Matter, per cent	Germination, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds		Number per Pound of each of the Noxious Weed Seeds Specified in the Law
6388	Co-operative Elevator Co., Winamac	Dickinson Co., The Albert,	C	99.85	......	98.00	1-35	....	C	None
	Dwarf Essex Rape, Lot 95375	Chicago, Ill.	F	99.97	0.02	99.00	4-35	45	F	None
5413	Brazil Hardware Co., Brazil	Indiana Seed Co.,	C	99.75	......	90.00	1-34	....	C	None
	Rape, Lot 11	Indianapolis, Ind.	F	99.93	0.01	82.50	9-34	....	F	None
5749	Knapp, C. E., South Bend	Teweles Seed Co., L.,	C	99.70	......	96.00	2-34	....	C	None
	Dwarf Essex Rape, Lot Badger Brand	Milwaukee, Wis.	F	99.87	0.10	92.50	2-35	44	F	None
6264	Wolcottville Elevator Co., Wolcottville	Teweles Seed Co., L.,	C	99.76		97.00	2-35	....	C	None
	Dwarf Essex Rape, Lot Badger Brand	Milwaukee, Wis.	F	99.67	0.25	98.00	4-35	225	F	Red sorrel 90

*Not labeled.
†Certified by Retailer.
C and F stands, respectively, for Claimed and Found.

RED TOP

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, per cent	Inert Matter, per cent	Germination, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds	Number per Pound of each of the Noxious Weed Seeds Specified in the Law
6498	Bolles Hardware Co., Brownstown[184] Red Top, Lot 806	Chambers Seed Co., Louisville, Ky.	C	91.38		92.00	1-35		None
			F	88.92	8.67	73.00	5-35	23,040	Buckhorn 45; common plantain 720; ox-eye daisy 180; red sorrel 45
6484	Eberts Grain Co., Scottsburg[185] Red Top, Lot 806	Chambers Seed Co., Louisville, Ky.	C	91.18		92.00	1-35		None
			F	90.01	7.34	80.50	5-35	24,705	Common plantain 720; ox-eye daisy 135
5434	Crabbs Reynolds Taylor Co., Crawfordsville[186] Red Top, Lot 6DB	Crabbs Reynolds Taylor Co., Crawfordsville, Ind.	C	97.00		92.00	1-34		None
			F	97.47	2.24	89.75	9-34	16,200	None
5800	Bloomfield Mill & Elevator Co., Bloomfield Red Top, Lot 4147	Dickinson Co., The Albert, Chicago, Ill.	C	91.20		90.00	1-35		White top 480
			F	88.09	9.65	90.25	2-35	170,100	Erigeron sp. 3,600
6362	Etna Lumber & Elevator Co., Etna Green Red Top, Lot 4154	Dickinson Co., The Albert, Chicago, Ill.	C	96.50		90.00	2-35		None
			F	99.23	0.57	95.75	4-35	8,640	Buckhorn 45; ox-eye daisy 45
6708	Gary Seed Store, Gary[187] Red Top, Lot 04140	Dickinson Co., The Albert, Chicago, Ill.	C	92.50		90.00	2-35		Buckhorn 96; ox-eye daisy 96
			F	93.46	4.95	77.00	6-35	91,350	None
6143	Weer, F. W., Anderson[188] Red Top, Lot 3084	Dickinson Co., The Albert, Chicago, Il	C	92.50		90.00	1-35		Buckhorn 96; ox-eye daisy 96
			F	88.18	11.13	85.25	4-35	52,785	Buckhorn 45; ox-eye daisy 90
6101	Lizton Grain & Lumber Co., Lizton[189] Red Top, Lot Lizton	Foster-Kendall Co., Carmel, Ind.	C	92.28		95.00	2-35		Common plantain 450
			F	91.43	8.18	79.75	3-35	17,190	Red sorrel 90
5832	Boonshot Hardware Co., Petersburg Red Top, Lot 2123	Heldt Co., The, Evansville, Ind.	C	86.10		88.00	1-35		None
			F	83.03	14.56	76.75	3-35	191,835	Buckhorn 45; common plantain 45; ox-eye daisy 45
5857	†Heldt & Voelker Co., Inc., Evansville[190] Thelco Red Top, Lot 2618	Heldt Co., The, Evansville, Ind.	C	94.23		90.00	1-35		None
			F	93.57	4.19	56.25	3-35	13,275	Bracted plantain 45; buckhorn 135; common plantain 405; ox-eye daisy 45; red sorrel 45
5865	Heldt Co., The, Evansville[191] Red Top, Lot 3123	Heldt Co., The, Evansville, Ind.	C	86.10		88.00	1-35		None
			F	83.28	14.33	67.75	3-35	202,185	Ox-eye daisy 135
5870	Kindermann & Sons, Wm., Boonville[192] Thelco Red Top, Lot 2618	Heldt Co., The, Evansville, Ind.	C	94.23		90.00	1-35		None
			F	94.57	4.17	57.25	3-35	11,925	Common plantain 90; ox-eye daisy 45; red sorrel 90
5522	McCarty Hardware Co., Fort Branch	Heldt Co., The,	C	92.32		80.00	8-34		Buckhorn 558; common plantain 360; red sorrel 360; white top 360
	Thelco Red Top, Lot 3033	Evansville, Ind.	F	93.97	5.14	88.75	9-34	10,845	Buckhorn 225; common plantain 450; ox-eye daisy 90; red sorrel 180
5530	Daviess Co. Farm Bureau Co-op. Assn., Inc., Washington Red Top, Lot 2355	Indiana Farm Bureau Co-op. Assn., Inc., Indianapolis, Ind.	C	95.00		90.00	4-34		None
			F	92.82	5.41	81.50	10-34	136,035	Red sorrel 135
6032	Owen Co. Farm Bureau Co-op. Assn., Inc., Inc., Spencer	Indiana Farm Bureau Co-op. Assn., Inc.,	C	94.00		92.00	12-34		None
			F	92.70	7.00	87.25	4-35	34,830	Buckhorn 45; common plantain 45;

	Red Top, Lot I650	Indiana Seed Co., Indianapolis, Ind.	C	92 00		90 00	9-34		C Ox-eye daisy 450
			F	93 74	4 97	85 50	3-35	55,575	F Common plantain 225
6601	Bash Seed Store, Indianapolis Red Top, Lot 1	Indiana Seed Co., Indianapolis, Ind.	C	91 20		90 00	9-34		C Red sorrel 450
			F	90 93	7 91	88.25	5-35	83,565	F Buckhorn 90; common plantain 45; ox-eye daisy 90; red sorrel 90
5903	Norman & Roberts, G. M., Bedford[193] Red Top, Lot 1651	Indiana Seed Co., Indianapolis, Ind.	C	95 68		90 00	9-34		C None
			F	93 92	5 69	76 25	3-35	45,855	F Buckhorn 45; common plantain 225; red sorrel 135
6034	Owen Farmers Supply Co., Spencer Red Top, Lot I650	Indiana Seed Co., Indianapolis, Ind.	C	92 00		90 00	9-34		C None
			F	93.41	5.69	81 00	4-35	50,760	F Bracted plantain 45; buckhorn 90; common plantain 135; red sorrel 90
6487	Sunshine Feed Store, Scottsburg Red Top, Lot 1	Indiana Seed Co., Indianapolis, Ind.	C	91.20		90 00	9-34		C Red sorrel 450
			F	90 84	7 88	85.50	5-35	90,945	F Buckhorn 45; common plantain 225; ox-eye daisy 45; red sorrel 630
6627	Minas, E. C., Hammond Fancy No. 1 Red Top, Lot 5889	Johnson, Inc., J. Oliver, Chicago, Ill.	C	90 00		90 00	1-35		C Common plantain 1,726; ox-eye daisy 545
			F	92.07	6 85	93 50	5-35	68,625	F Bracted plantain 45; buckhorn 135; red sorrel 45
5751	Knapp, C. E., South Bend Red Top, Lot 1	King & Sons, Inc., H. C., Battle Creek, Mich.	C	98 56		97 00	3-34		C None
			F	98 52	1.28	96 00	2-35	5,850	F None
6584	Bullock, F. L., Butlerville[194] Red Top, Lot Red Bird	Lewis Implement & Seed Co., Louisville, Ky.	C	92 00		90.00	1-35		C None
			F	92 05	6 67	66 25	5-35	73,620	F Buckhorn 315; common plantain 225; ox-eye daisy 180
6068	Farmers Feed & Coal Co., Bloomington[195] Red Top	Lewis Implement & Seed Co., Louisville, Ky.	C	91.50		85 00	12-34		C None
			F	92 73	5 08	53 75	3 35	141,390	F Common plantain 90
6525	Hallawells Feed Store, North Vernon[196] Red Top, Lot Red Bird	Lewis Implement & Seed Co., Louisville, Ky.	C	92 00		85 00	1-35		C None
			F	91 24	6 97	71.00	5-35	123,075	F Common plantain 90; ox-eye daisy 45; red sorrel 90
5533	Huebner Hardware Co., John, Loogootee[197] Red Top, Lot 600	Lewis Implement & Seed Co., Louisville, Ky.	C	92 80		90 00	8-34		C None
			F	89.70	7 33	65 75	10-34	212,220	F Bracted plantain 45; buckhorn 45; ox-eye daisy 135; red sorrel 45
5465	Hunger, C. G., Madison[198] Red Top, Lot 600	Lewis Implement & Seed Co., Louisville, Ky.	C	92 80		88 00	8-34		C None
			F	90 04	7 52	72.75	10-34	173,565	F Common plantain 135; ox-eye daisy 45; red sorrel 135
5885	Johnson & Chenoweth, Shoals[199] Red Top, Lot Red Bird	Lewis Implement & Seed Co., Louisville, Ky.	C	92 00		85 00	12-34		C None
			F	91.15	7 46	50 00	3-35	102,555	F Buckhorn 180; common plantain 180; ox-eye daisy 45
5460	Linkhart & Son, North Vernon Red Top, Lot 600	Lewis Implement & Seed Co., Louisville, Ky.	C	92 80		90.00	8-34		C None
			F	91 11	5 80	79 75	9-34	210,330	F Ox-eye daisy 90; red sorrel 90

*Not labeled.

†Certified by Retailer.

C and F stands, respectively, for Claimed and Found.

[184] Removed from sale. Misbranded. All sold.

[185] Removed from sale. Misbranded. Returned to distributor.

[186] Sample secured from Purdue University Poultry Farm.

[187] Removed from sale. Misbranded. All sold.

[188] Removed from sale. Misbranded. Retagged.

[189] Not tagged. Labels furnished.

[190] Removed from sale. Misbranded. Retagged.

[191] Removed from sale. Misbranded. Retagged.

[192] Removed from sale. Misbranded. Returned to distributor.

[193] Removed from sale. Misbranded. All sold.

[194] Removed from sale. Misbranded. All sold.

[195] Removed from sale. Misbranded. Part sold, part used on own farm.

[196] Removed from sale. Misbranded. Retagged.

[197] Removed from sale. Misbranded. Retagged.

[198] Removed from sale. Misbranded. All sold.

[199] Removed from sale. Misbranded. Returned to distributor.

RED TOP—Continued

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor	Purity, per cent	Inert Matter, per cent	Germination, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds	Number per Pound of each of the Noxious Weed Seeds Specified in the Law
6500	Lucas, Henry, Brownstown[200]	Lewis Implement & Seed Co., C	91.00	.....	85.00	12–34	....	C None
	Red Top, Lot Red Bird	Louisville, Ky. F	91.10	7.52	70.00	5–35	98,100	F Buckhorn 90; common plantain 90 ox-eye daisy 135; red sorrel 135
5432	Norman & Roberts, G. M., Bedford[201]	Lewis Implement & Seed Co., C	92.80	.....	90.00	8–34	....	C None
	Red Top, Lot 600	Louisville, Ky. F	89.58	7.50	71.50	10–34	194,535	F Red sorrel 135
6056	Pennington Feed Store, Bloomington[202]	Lewis Implement & Seed Co., C	92.00	.....	80.00	12–34	....	C None
	Red Top, Lot Red Bird	Louisville, Ky. F	92.45	6.36	57.75	3–35	75,150	F None
5458	Linkhart & Son, North Vernon	Linkhart & Son, C	92.10	.....	92.00	9–33	....	C None
	Red Top, Lot 030490	North Vernon, Ind. F	91.31	8.09	88.25	9–34	21,015	F Buckhorn 45; common plantain 90; ox-eye daisy 90; red sorrel 90
6539	Sample, John L., Madison	Louisville Seed Co., C	94.20	.....	90.00	3–35	....	C None
	Red Top	Louisville, Ky. F	94.75	4.96	92.25	5–35	21,195	F Ox-eye daisy 45
5539	Butler Feed Store, Oakland City	McCarty Seed Co., J. A., C	92.00	.....	91.00	3–34	....	C None
	Red Top, Lot 1110	Evansville, Ind. F	93.19	4.41	85.25	10–34	168,390	F Common plantain 45; red sorrel 45
5552	McCarty Seed Co., J. A., Evansville	McCarty Seed Co., J. A., C	92.00	.....	91.00	3–34	....	C None
	Red Top, Lot 1110	Evansville, Ind. F	93.97	3.46	81.50	10–34	175,500	F None
6529	Irwin Feed Store, Madison	McCullough Seed Co., The J. Chas., C	92.00	.....	90.00	9–34	....	C None
	Fancy Red Top, Lot 1726	Cincinnati, Ohio F	90.42	8.79	79.75	5–35	61,290	F Common plantain 45; ox-eye daisy 45
6524	Linkhart & Son, North Vernon	McCullough Seed Co., The J. Chas., C	92.00	.....	90.00	2–35	....	C None
	Fancy Red Top, Lot 1894	Cincinnati, Ohio F	90.50	8.51	91.75	5–35	76,635	F Ox-eye daisy 135
6434	McMahan Seed Co., Valparaiso	McCullough Seed Co., The J. Chas., C	90.50	.....	90.00	11–34	....	C None
	Fancy Red Top, Lot 1871	Cincinnati, Ohio F	91.21	7.69	86.25	4–35	81,225	F Common plantain 180; ox-eye daisy 45
5340	Whelan Feed & Seed Store, Richmond[203]	Market Gardeners' Seed Co., The, C	82.50	.....	88.00	10–33	....	C None
	Red Top, Lot 1404	Cincinnati, Ohio F	86.40	8.70	73.00	8–34	99,180	F Bracted plantain 90; buckhorn 270; common plantain 315; ox-eye daisy 450; red sorrel 360; wild carrot 45
5425	Baker, C. C., Odon[204]	Ohio Valley Seed Co., C	92.00	.....	90.00	2–34	....	C None
	Crown Red Top, Lot B414	Evansville, Ind. F	90.05	8.18	81.75	9–34	33,570	F Common plantain 90; ox-eye daisy 90; red sorrel 90
5818	Daviess Co. Farm Bureau Co-op. Assn., Inc., Washington	Ohio Valley Seed Co., C	92.00	.....	90.00	1–35	....	C None
	Red Top, Lot C37	Evansville, Ind. F	90.67	7.24	91.75	2–35	151,335	F Ox-eye daisy 135
5894	Dilly & Son, Phil, Huntingburg	Purcell Seed Co., C	93.00	.....	81.00	12–34	....	C White top 1,350
	"Tru Val" Fancy Red Top, Lot 3185	Evansville, Ind. F	93.34	.....	86.75	3–35	22,995	F Erigeron sp. 3,600; ox-eye daisy 45

5835	Kelle, E. C., Somerville	Purcell Seed Co.,	C	92.00	.....	80.00	12-34	....	C	White top 1,800
	"Tru Val" Fancy Red Top, Lot 3703	Evansville, Ind.	F	91.05	8.45	80.00	3-35	36,810	F	Bracted plantain 45; buckhorn 90; common plantain 90; erigeron sp. 5,850; ox-eye daisy 45; red sorrel 90
5866	Purcell Seed Co., Evansville	Purcell Seed Co.,	C	85.31	.....	84.00	10-34	....	C	White top 6,300
	Red Top, Lot 3147	Evansville, Ind.	F	85.60	13.70	82.75	3-35	54,180	F	Bracted plantain 45; buckhorn 45; common plantain 90; erigeron sp. 4,050
5896	Walker Co., W. A., Loogootee	Purcell Seed Co.,	C	92.00	.....	80.00	1-35	....	C	White top 1,800
	"Tru Val" Fancy Red Top, Lot 3703	Evansville, Ind.	F	91.32	8.38	86.00	3-35	33,300	F	Common plantain 315; erigeron sp. 4,050; ox-eye daisy 90; red sorrel 45
6523	Linkhart & Son, North Vernon	Ross Seed Co.,	C	93.68	.....	90.00	1-35	....	C	Buckhorn 450
	Red Top	Louisville, Ky.	F	92.37	7.33	92.00	5-35	16,695	F	Buckhorn 270; ox-eye daisy 90; red sorrel 135
5617	Ragsdale & Co., Chas., Bedford	Ross Seed Co.,	C	94.00	.....	90.00	9-34	....	C	None
	Red Top	Louisville, Ky.	F	95.48	4.23	88.00	12-34	20,250	F	None
5797	Bloomfield Mill & Elevator Co., Bloomfield[205]	Schultz Seed Co., J. M.,	C	90.95	.....	90.00	11-34	....	C	None
	Gold Standard Red Top, Lot 240	Dieterich, Ill.	F	90.41	7.29	75.00	2-35	62,865	F	Bracted plantain 45; buckhorn 90; common plantain 45; ox-eye daisy 90; red sorrel 45
5410	Linton Hardware Co., Linton	Schultz Seed Co., J. M.,	C	92.40	.....	92.00	8-34	....	C	None
	Reliable Red Top	Dieterich, Ill.	F	94.10	2.86	90.50	9-34	78,750	F	None
6461	†McCarty Seed Co., J. A., Evansville	Schultz Seed Co., J. M.,	C	92.00	.....	90.00	1-35	....	C	Common plantain 450
	Lucky Jim Red Top, Lot 21	Dieterich, Ill.	F	92.31	6.23	82.00	5-35	59,310	F	Bracted plantain 45; buckhorn 45; common plantain 180; ox-eye daisy 90
6613	†Koschnick & Co., Indianapolis	Scott Seed Co.,	C	92.00	.....	85.00	7-34	....	C	None
	Red Top, Lot 521	New Albany, Ind.	F	94.47	4.94	90.00	5-35	39,960	F	Buckhorn 90; common plantain 225; ox-eye daisy 45
5418	Ragsdale & Co., Chas., Bedford	Scott Seed Co.,	C	92.00	.....	85.00	7-34	....	C	None
	Red Top, Lot 521	New Albany, Ind.	F	93.58	5.75	87.75	9-34	40,500	F	None
5871	Wedeking & Co., C. W., Dale	Scott Seed Co.,	C	92.00	....	90.00	7-34	....	C	Common plantain 450
	Red Top, Lot 510	New Albany, Ind.	F	93.33	6.17	88.25	3-35	37,125	F	Common plantain 630; ox-eye daisy 45
6411	*Criss Bros., Lewis[206]	Shultz Seed Co.,	C	75.78	......	85.00	9-34	....	C	None
	Red Top, Lot Abel	Olney, Ill.	F	74.48	22.64	49.75	4-35	222,480	F	Common plantain 90; red sorrel 90
5898	Reynolds Brooks Hdwe. Co., Loogootee[207]	Shultz Seed Co.,	C	75.78	......	80.00	9-34	....	C	None
	Fancy Red Top, Lot 8831	Olney, Ill.	F	74.40	22.92	50.75	3-35	200,475	F	Common plantain 90; ox-eye daisy 135
5899	Reynolds Brooks Hdwe. Co., Loogootee	Shultz Seed Co.,	C	94.10	.....	90.00	1-35	....	C	None
	Fancy Red Top, Lot 8839	Olney, Ill.	F	94.88	3.19	87.00	3-35	66,150	F	None

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*Not labeled.

†Certified by Retailer.

C and F stands, respectively, for Claimed and Found.

[200] Removed from sale. Misbranded. All sold.

[201] Removed from sale. Misbranded. All sold.

[202] Removed from sale. Misbranded. Retagged.

[203] Removed from sale. Misbranded. Retagged.

[204] Not tagged. Labels furnished.

[205] Removed from sale. Misbranded. All sold.

[206] Removed from sale. Misbranded. Retagged.

[207] Removed from sale. Misbranded.

SOY BEANS

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, per cent	Inert Matter, per cent	Germination, per cent	Hard Seeds, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds	Number per Pound of each of the Noxious Weed Seeds Specified in the Law
6526	Jennings Co. Farm Bureau Co-op. Assn., Inc., North Vernon	Boonville Milling Co.,	C	94.00		94 00	4 00	2-35		C None
	Kingwa Soy Beans, Lot 6	Boonville, Ind.	F	99 79	0 17	91.00	0 00	4-35	5	F None
6528	Jennings Co. Farm Bureau Co-op. Assn., Inc., North Vernon[208]	Boonville Milling Co.,	C	94 00		95.00	4 00	2-35		C None
	Wilson Soy Beans, Lot 7	Boonville, Ind.	F	99.55	0.45	82 00	0 00	4-35		F None
6692	Busenbark Grain Co., New Market[209]	Busenbark Grain Co.,	C	99 00		95.00				C None
	Manchu Soy Beans	Crawfordsville, Ind.	F	99.73	0 27	93 00	0 00	6-35		F None
5337	*Cottrell Bros., Terre Haute[210]	Cottrell Bros.,	C							C
	Soy Beans	Terre Haute, Ind.	F	95 38	4.50	18 00	0.00	7-34	300	F None
6670	Milan Milling Co., Milan[211]	Early & Daniel Co., The,	C	98 00		92.00		3-35		C None
	Black Wilson Soy Beans	Cincinnati, Ohio	F	98 75	1.25	90.00	1.00	5-35		F None
6671	*Milan Milling Co., Milan[212]	Early & Daniel Co., The,	C	98 00		92 00		3 35		C None
	Manchu Soy Beans	Cincinnati, Ohio	F	93 59	6.05	91 00	0 00	6-35		F None
6672	Milan Milling Co., Milan	Early & Daniel Co., The,	C	98.00		92 00		1-35		C None
	Virginia Brown Soy Beans	Cincinnati, Ohio	F	99.88	0.12	88 00	0.00	5 35		F None
6673	†Tuxedo Feed & Supply Co., Aurora[213]	Early & Daniel Co., The,	C	98 00		92 00		3-35		C None
	Black Wilson Soy Beans	Cincinnati, Ohio	F	99.62	0.38	84.00	0 00	6 35		F None
6568	†Versailles Feed Co., Versailles	Early & Daniel Co., The,	C	98 00		92.00		1-35		C None
	Black Wilson Soy Beans	Cincinnati, Ohio	F	99.40	0.33	87 00	0.00	4-35	5	F None
5914	Decatur Co. Co-op. Co., Greensburg[214]	Foster-Kendall Co.,	C	98 00		90 00		12-34		C None
	Dunfield Soy Beans	Carmel, Ind.	F	99.24	0 48	74.00	0.00	3-35		F None
6527	Jennings Co. Farm Bureau Co-op. Assn., Inc., North Vernon[215]	Foster-Kendall Co.,	C	98.00		90.00		10-34		C None
	Manchu Soy Beans	Carmel, Ind.	F	98.21	1 63	77.00	1.00	4-35		F None
6569	Ripley Co. Farm Bureau Co-op. Assn., Inc., Osgood	Foster-Kendall Co.,	C	99.00		90.00		12-34		C None
	Black Wilson Soy Beans	Carmel, Ind.	F	99.15	0.81	83 00	1 00	4-35	5	F None
6570	Ripley Co. Farm Bureau Co-op. Assn., Inc., Osgood	Foster-Kendall Co.,	C	98.00		90.00		1-35		C None
	Kingwa Soy Beans	Carmel, Ind.	F	99 43	0.15	96 00	0.00	4-35	48	F None
6571	Ripley Co. Farm Bureau Co-op. Assn., Inc., Osgood[216]	Foster-Kendall Co.,	C	98 00		90.00		1-35		C None
	Virginia Brown Soy Beans	Carmel, Ind.	F	98 87	1 08	85.00	0 00	5-35	10	F None
6724	Harr, C. H., Cory[217]	Graham Grain & Supply Co.,	C	98.00		90 00		3-35		C None
	Manchu Soy Beans, Lot I	Terre Haute, Ind.	F	99 12	0.87	88.00	0.00	6-35	12	F None
6519	Nading Grain Co., Wm., Greensburg	Indiana Seed Co.,	C	98 00		90 00		1-35		C None
	Kingwa Soy Beans, Lot 12002A	Indianapolis, Ind.	F	99 39	0 52	97 00	0.00	4 35	8	F None
6344	Wakarusa Milling Co., Wakarusa[218]	Kraus, Sam,	C	99 00		97 00		11-34		C None
	Manchu Soy Beans	Fort Wayne, Ind.	F	95.53	4.20	82.00	0 00	4-35	5	F None
6666	Farm Bureau Feed Store, Milan	McCullough Seed Co., The J. Chas.,	C	99.65		90.00		2-35		C None
	Kingwa Soy Beans, Lot 1982	Cincinnati, Ohio	F	99.23	0.76	87.00	0.00	6-35	4	F Yellow trefoil 4

6668	Farm Bureau Feed Store, Milan[219]	McCullough Seed Co., The J. Chas.,	C	99.00		93.00		2-35		C	None
	Manchu Soy Beans, Lot 2323	Cincinnati, Ohio	F	98.13	1.87	81.00	0.00	6-35		F	None
6557	Farm Bureau Co-operative Co., Aurora[220]	Market Gardeners' Seed Co., The,	C	98.00		90.00		11-34		C	None
	Wilson Soy Beans	Cincinnati, Ohio	F	99.06	0.90	75.00	4.00	5-35	20	F	None
6674	Milan Milling Co., Milan[221]	Market Gardeners' Seed Co., The,	C	98.00		90.00		11-34		C	None
	Kingwa Soy Beans	Cincinnati, Ohio	F	99.20	0.80	72.00	1.00	6-35		F	None
6675	Milan Milling Co., Milan	Market Gardeners' Seed Co., The,	C	98.00		94.00		12-34		C	None
	Manchu Soy Beans	Cincinnati, Ohio	F	98.93	1.07	85.00	0.00	6-35		F	None
6730	Young & Cox, Richmond[222]	New Paris Elevator Co.,	C	98.50		95.00		5-35		C	None
	Manchu Soy Beans	New Paris, Ohio	F	99.68	0.32	78.00	0.00	7-35		F	None
6731	Young & Cox, Richmond	New Paris Elevator Co.,	C	99.00		95.00		5-35		C	None
	Dunfield Soy Beans	New Paris, Ohio	F	99.81	0.19	90.00	0.00	7-35		F	None
6463	*Ridenour, Robert, R. R. 1, English[223]	Ridenour, Robert,	C							C	
	Black Sooty Soy Beans	R. R. 1, English, Ind.	F	99.26	0.69	83.00	0.00	3-35	12	F	None
6541	Hunger, C. G., Madison	Ross Seed Co.,	C	98.00		85.00		11-34		C	None
	Indiana Hollybrook Soy Beans	Louisville, Ky.	F	97.06	2.82	89.00	0.00	4-35	10	F	None
6669	†Schlemmer Coal & Feed Co., Lawrenceburg[224]	Schlemmer Coal & Feed Co.,	C	98.00		94.00		11-34		C	None
	Manchu Soy Beans	Elizabethtown, Ohio	F	96.35	3.44	86.00	0.00	6-35		F	None
6676	Farm Bureau Co-op. Co., Aurora	Scott Seed Co.,	C	98.00		90.00		3-35		C	None
	Wilson Soy Beans, Lot 701	New Albany, Ind.	F	99.57	0.43	86.00	1.00	5-35		F	None
6517	Hunger, C. G., Madison	Wyatt Seed & Feed Store,	C	98.00		90.00		2-35		C	None
	Black Wilson Soy Beans	Petersburg, Ind.	F	99.23	0.68	89.00	0.00	4-35	10	F	None
6518	Hunger, C. G., Madison[225]	Wyatt Seed & Feed Store,	C	99.00		92.00		2-35		C	None
	Kingwa Soy Beans	Petersburg, Ind.	F	99.69	0.31	76.00	1.00	5-35		F	None
6677	Hunger, C. G., Madison[226]	Wyatt Seed & Feed Store,	C	98.00		90.00		2-35		C	None
	Black Wilson Soy Beans	Petersburg, Ind.	F	98.45	1.41	90.00	0.00	5-35	16	F	None

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*Not labeled.

†Certified by Retailer.

C and F stands, respectively, for Claimed and Found.

[208] Removed from sale. Misbranded. All sold.

[209] Tag incomplete. Not tagged. Labels furnished.

[210] Sample secured from Chas. Montgomery, R. R. 3, Terre Haute, Ind. Refund.

[211] Not tagged. Labels furnished.

[212] Removed from sale. Misbranded. Retagged.

[213] Not tagged. Labels furnished.

[214] Removed from sale. Misbranded. Returned to distributor.

[215] Removed from sale. Misbranded. Retagged. Refund.

[216] Removed from sale. Misbranded. Retagged.

[217] Not tagged. Labels furnished.

[218] Removed from sale. Misbranded. Retagged.

[219] Removedf rom sale. Misbranded. Retagged.

[220] Removed from sale. Misbranded. Retagged.

[221] Removed from sale. Misbranded. Retagged.

[222] Removed from sale. Misbranded. Returned to distributor.

[223] Sold for feed. Sample secured from Oris Tower, R. R. 1, Milltown, Ind.

[224] Removed from sale. Misbranded. Returned to distributor.

[225] Removed from sale. Misbranded. Returned to distributor.

[226] Distributed by Bundy Bros., Medora, Ind.

SUDAN GRASS

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, per cent	Inert Matter, per cent	Germination, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds	Number per Pound of each of the Noxious Weed Seeds Specified in the Law
6455	*Berry Seed Co., Clarinda, Iowa[227]	Berry Seed Co.,	C	98.50		85.00	12-34		C None
	Sudan Grass, Lot 319	Clarinda, Iowa	F	98.53	0.56	96.00	3-35	1,044	F None
6687	Crabbs Reynolds Taylor Co., Lafayette[228]	Crabbs Reynolds Taylor Co.,	C	95.28		90.00	3-35		C None
	Sudan Grass, Lot 5GQ	Crawfordsville, Ind.	F	97.42	2.05	82.00	6-35	504	F None
6346	Elkhart Co. Farm Bureau Co-op. Assn., Inc., Goshen[229]	Indiana Farm Bureau Co-op. Assn., Inc.,	C	99.00		90.00	12-34		C None
	Sudan Grass, Lot 3726	Indianapolis, Ind.	F	97.21	2.47	86.00	4-35	108	F None
6168	Franklin Co. Farm Bureau Co-op. Assn., Inc., Brookville[230]	Indiana Farm Bureau Co-op. Assn., Inc.,	C	99.00		90.00	12-34		C None
	Sudan Grass, Lot 3726	Indianapolis, Ind.	F	97.96	1.61	86.50	4-35	162	F None
6662	Adams & Morrow, Inc., Princeton[231]	Indiana Seed Co.,	C	98.00		90.00	2-35		C None
	Sudan Grass, Lot SC176	Indianapolis, Ind.	F	96.11	3.37	76.50	5-35	54	F None
6679	Norman & Roberts, G. M., Bedford	Lewis Implement & Seed Co.,	C	98.96		86.00	1-35		C None
	Sudan Grass, Lot Red Bird	Louisville, Ky.	F	98.89	0.96	86.50	5-35	270	F None
6548	Tuxedo Feed & Supply Co., Aurora	McCullough Seed Co., The J. Chas.,	C	97.00		88.00	12-34		C None
	Sudan Grass, Lot 2039	Cincinnati, Ohio	F	98.79	1.15	83.50	4-35	108	F Horse nettle 18
6738	McMahan Seed Co., Valparaiso[232]	Nebraska Seed Co.,	C	98.29		84.00			C None
	Sudan Grass, Lot Selby	Omaha, Neb.	F	97.83	1.81	82.00	7-35	144	F None
6595	Weer, F. W., Anderson	Ross Seed Co.,	C	97.84		85.00	12-34		C None
	Sudan Grass	Louisville, Ky.	F	98.90	1.04	74.50	4-35	90	F Horse nettle 18
6678	Greenwood & Co., Washington	Scarlet & Co., Wm. G.,	C	97.00		80.00	5-35		C None
	Sudan Grass, Lot 13173	Baltimore, Md.	F	96.17	3.26	83.00	6-35	1,818	F Curled dock 18
6722	†Syler & Syler, Plymouth	Scarlet & Co., Wm. G.,	C	97.00		80.00	5-35		C None
	Sudan Grass, Lot 3052	Baltimore, Md.	F	99.14	0.84	83.00	6-35	72	F None
6427	Sommerfield & Swanson, LaPorte	Standard Seed Co.,	C	98.00		85.00	1-35		C None
	Sudan Grass, Lot 319	Chicago, Ill.	F	98.81	0.41	94.50	4-35	918	F None
6735	Hagerman & Co., H. J., South Bend	Syler & Syler,	C	97.00		80.00	6-35		C None
	Sudan Grass	Plymouth, Ind.	F	98.72	1.27	77.50	7-35	18	F None

*Not labeled.
†Certified by Retailer.
C and F stands, respectively, for Claimed and Found.

[227] Sample secured from Leo Hood, R. R. 9, Lafayette, Ind.

[228] Sample secured from Henry W. Gilbert, Conservation Department, Auburn, Ind.

[229] Removed from sale. Misbranded. Returned to distributor.

[230] Removed from sale. Misbranded. Returned to distributor.

[231] Removed from sale. Misbranded. Retagged.

[232] Tag incomplete.

TIMOTHY

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, per cent	Inert Matter, per cent	Germination, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds		Number per Pound of each of the Noxious Weed Seeds Specified in the Law
6396	Farmers Grain & Supply Co., Thornhope P. O., Oak	Allied Seed Co., Inc.,	C	99.50	.....	90.00	1-35	....	C	Red sorrel 90
	Timothy, Lot 333	Fort Wayne, Ind.	F	99.61	0.19	90.00	4-35	594	F	Buckhorn 54; common plantain 36; curled dock 18; red sorrel 36
5488	Kunberger, John, Columbia City	Allied Seed Co., Inc.,	C	98.00	.....	90.00	3-34	... ...	C	Buckhorn 675; common plantain 900; red sorrel 2,700
	Timothy, Lot B448	Fort Wayne, Ind.	F	98.44	0.68	92.50	9-34	4,644	F	Buckhorn 342; common plantain 792; curled dock 90; red sorrel 2,070
6398	Phillips, J. C., Star City	Allied Seed Co., Inc.,	C	99.50	....	90.00	12-34	....	C	None
	Timothy, Lot 333	Fort Wayne, Ind.	F	99.41	0.29	93.00	4-35	1,737	F	Buckhorn 90; common plantain 36; red sorrel 36
6249	Strock, Frank, Hudson	Allied Seed Co., Inc.,	C	99.50	.	90.00	9-34	......	C	Red sorrel 90
	Timothy	Fort Wayne, Ind.	F	99.65	0.15	89.00	4-35	576	F	Buckhorn 54; common plantain 18; curled dock 18; red sorrel 36
5507	Trembly & Co., S. F., Columbia City	Allied Seed Co., Inc.,	C	99.00	.....	90.00	7-34	....	C	None
	Timothy, Lot 318	Fort Wayne, Ind.	F	99.31	0.30	93.00	9-34	......	F	None
6103	Busenbark Grain Co., Jamestown	Busenbark Grain Co.,	C	99.50	...	92.00	1-34	....	C	None
	Timothy, Lot H	Crawfordsville, Ind.	F	99.26	0.49	90.50	4-35	2,601	F	Common plantain 54; red sorrel 72
5830	Daviess Co. Farm Bureau Co-op. Assn., Inc., Washington	Corneli Seed Co.,	C	90.00	. .	90.00	1-35	......	C	None
	Timothy, Lot 107	St. Louis, Mo.	F	99.21	0.69	88.75	2-35	972	F	Common plantain 54; red sorrel 18
5813	Weed Hardware, Vincennes	Corneli Seed Co.,	C	99.00	. .	90.00	1-35	......	C	None
	Timothy, Lot 107	St. Louis, Mo.	F	98.81	0.99	86.75	2-35	1,440	F	Common plantain 36; curled dock 36; prickly lettuce 18
5771	Crabbs Reynolds Taylor Co., Lafayette	Crabbs Reynolds Taylor Co.,	C	99.55	...	90.00	1-35	....	C	None
	Timothy, Lot 6TY	Crawfordsville, Ind.	F	99.21	0.64	82.75	2-35	198	F	Buckhorn 18; common plantain 36; curled dock 18; red sorrel 126
5737	Farmers Co-operative Co., Cicero	Crabbs Reynolds Taylor Co.,	C	99.65	. .	96.00	10-34	....	C	None
	Timothy, Lot 1TY	Crawfordsville, Ind.	F	99.70	0.20	93.50	2-35	522	F	Bracted plantain 18; buckhorn 18; red sorrel 18; wild carrot 18
5386	Farmers Co-op. Elevator, Royal Center	Crabbs Reynolds Taylor Co.,	C	99.70	..	88.00	8-34	....	C	None
	Timothy, Lot 2TX	Crawfordsville, Ind.	F	99.80	0.05	88.75	9-34	1,008	F	Buckhorn 72; common plantain 36
5951	Newcastle Elevator Co., Newcastle	Crabbs Reynolds Taylor Co.,	C	99.50	. . .	90.00	1-35	....	C	None
	Timothy, Lot 6TY	Crawfordsville, Ind.	F	99.55	0.35	84.25	4-35	351	F	Buckhorn 54; red sorrel 72
5501	Peru Grain & Coal Co., Peru	Crabbs Reynolds Taylor Co.,	C	99.70	.	88.00	8-34	.... .	C	None
	Timothy, Lot 2TX	Crawfordsville, Ind.	F	99.75	0.15	87.25	9-34	297	F	Buckhorn 54; common plantain 18

*Not labeled.
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C and F stands, respectively, for Claimed and Found.

TIMOTHY—Continued

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, per cent	Inert Matter, per cent	Germination, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds		Number per Pound of each of the Noxious Weed Seeds Specified in the Law
5380	Brookston Grain Corp., Brookston	Crawfordsville Seed Co.,	C	99 60		88.00	7-34		C	None
	Timothy, Lot T47	Crawfordsville, Ind.	F	99 65	0 15	88 50	9-34	225	F	None
5357	Lafayette Co-op. Elevator Co., Lafayette	Crawfordsville Seed Co.,	C	99 60		90 00	5-34		C	None
	Timothy, Lot T47	Crawfordsville, Ind.	F	99.50	0 25	85 25	8-34	243	F	Common plantain 18
5402	Lafayette Co-op. Elevator Co., Lafayette	Crawfordsville Seed Co.,	C	99.60		90 00	8-34		C	None
	Timothy, Lot T53	Crawfordsville, Ind.	F	99 75	0 20	84 75	9 34		F	None
6109	Armstrong-Landon Co., Kokomo	Dickinson Co., The Albert,	C	99 70		95.00	2-35		C	None
	Timothy, Lot 69204	Chicago, Ill.	F	99.94	0.04	93 25	4-35	900	F	None
6576	Bremen Elevator Co., Bremen[233]	Dickinson Co., The Albert,	C	99 65		94 00	3 35		C	None
	Timothy, Lot 69237	Chicago, Ill.	F	99 65	0 15	93 00	4-35	1,800	F	None
6364	Etna Lumber & Elevator Co., Etna Green	Dickinson Co., The Albert,	C	99 65		94 00	2-35		C	None
	Timothy, Lot 69214	Chicago, Ill.	F	99.75	0 15	91 50	4-35	1,161	F	Common plantain 18; red sorrel 18
6366	Etna Lumber & Elevator Co., Etna Green	Dickinson Co., The Albert,	C	99 65		94 00	2-35		C	None
	Timothy, Lot 69208	Chicago, Ill.	F	99 55	0 25	96 50	4-35	1,350	F	None
6391	Farmers Co-op. Co., Royal Center	Dickinson Co., The Albert,	C	99 60		94 00	2 35		C	None
	Timothy, Lot 69210	Chicago, Ill.	F	99 90	0 05	94 75	4-35	1,800	F	None
6705	Gary Seed Store, Gary	Dickinson Co., The Albert,	C	99 70		95 00	2-35		C	None
	Timothy, Lot 69204	Chicago, Ill.	F	99 70	0 15	95 25	6-35	522	F	Common plantain 36; red sorrel 36
5955	Haynes Milling Co., Portland	Dickinson Co., The Albert,	C	99 70		95 00	2-35		C	None
	Timothy, Lot 69204	Chicago, Ill.	F	99.75	0 15	93 50	3-35	693	F	Red sorrel 18
5503	Hirsch Bros. Co., Clymers, P. O., Logansport	Dickinson Co., The Albert,	C	99 60		90.00	3-34		C	None
	Timothy, Lot 69084	Chicago, Ill.	F	99 55	0.25	84 25	10-34	486	F	Common plantain 18; red sorrel 18
5519	†Syler, Clay, North Manchester	Dickinson Co., The Albert,	C	99 65		92 00	8-34		C	None
	Timothy, Lot 69143	Chicago, Ill.	F	99 40	0 35	85 75	10-34	126	F	Ox-eye daisy 18; red sorrel 108
5886	Victoria Mill & Elevator Co., Jasper	Dickinson Co., The Albert,	C	99.65		90 00	1-35		C	None
	Timothy, Lot 69202	Chicago, Ill.	F	99 95	0 05	84 00	3-35	18	F	Red sorrel 18
6260	Wolcottville Elevator Co., Wolcottville	Dickinson Co., The Albert,	C	99 70		95 00	2-35		C	None
	Timothy, Lot 69204	Chicago, Ill.	F	99.85	0 05	95.75	4-35	1,044	F	Canada thistle 36; curled dock 18; red sorrel 18; wild carrot 72
6298	Standard Elevator Co., Lapel	Foster-Kendall Co.	C	99.50		91.00	12-34		C	Ox-eye daisy 450; red sorrel 540
	Timothy	Carmel, Ind.	F	99.85	0.10	91 00	4-35	1,854	F	Ox-eye daisy 198; prickly lettuce 54; red sorrel 252
5837	Boonshot Hardware Co., Petersburg	Heldt Co., The,	C	96.65		90.00	1-35		C	Red sorrel 1,800
	Timothy, Lot 2122	Evansville, Ind.	F	97 88	0.74	80 50	3-35	3,717	F	Buckhorn 306; common plantain 36; red sorrel 2,700
5525	Heldt & Voelker Co., Evansville[234]	Heldt Co., The,	C	99 00		80 00	9-34		C	None
	Timothy, Lot 3021	Evansville, Ind.	F	99 95	0 05	61 00	10-34	18	F	Red sorrel 18
5853	†Heldt & Voelker Co., Evansville	Heldt Co., The,	C	99 50		90 00	1-35		C	None
	Thelco Timothy, Lot 3133	Evansville, Ind.	F	99.55	0 25	86 75	3-35	423	F	Buckhorn 18; ox-eye daisy 36; red sorrel 144

5553	Heldt Co., The, Evansville[235] Thelco Timothy, Lot 3046	Heldt Co., The, Evansville, Ind.	C F	99.57 99.66	.... 0.24	89.00 89.75	9-34 10-34	 18	C F	None Red sorrel 18
5537	Kell, R. C., Oakland City Thelco Timothy, Lot 3038	Heldt Co., The, Evansville, Ind.	C F	99.50 99.65	.... 0.10	84.00 79.00	6-34 10-34	 747	C F	Red sorrel 450 Common plantain 54; red sorrel 18
6190	Farmers Supply Co., Danville Timothy, Lot T544	Hooton-Davis Seed Corp., Lebanon, Ind.	C F	98.00 98.70	.... 1.00	80.00 82.50	1-35 4-35	 4,806	C F	None Buckhorn 54; common plantain 126; ox-eye daisy 18; red sorrel 90; wild carrot 18
6515	Mulberry Grain Co., Mulberry[236] Timothy, Lot 1552	Hooton-Davis Seed Corp., Lebanon, Ind.	C F	98.00 98.49	.... 0.78	80.00 87.50	3-35 4-35	 2,664	C F	None Bracted plantain 18; buckhorn 360; common plantain 72; curled dock 36; red sorrel 828
5998	Santa Fe Elevator Co., Santa Fe P. O., Peru Timothy, Lot T527	Hooton-Davis Seed Corp., Lebanon, Ind.	C F	99.50 99.56	.... 0.29	85.00 81.50	1-35 4-35	 270	C F	Red sorrel 180 Common plantain 54; red sorrel 216
6129	Woodbury-Elliott Grain Co., Muncie Timothy, Lot T544	Hooton-Davis Seed Corp., Lebanon, Ind.	C F	98.00 98.81	.... 0.69	80.00 78.00	1-35 3-35	 4,131	C F	None Buckhorn 90; common plantain 144; curled dock 36; red sorrel 36
5654	Wynn, Arlie S., Rochester[237] Timothy	Hooton-Davis Seed Corp., Lebanon, Ind.	C F	99.00 99.45	.... 0.25	88.00 78.25	9-34 1-35	 2,844	C F	Curled dock 72 Buckhorn 18; curled dock 108; prickly lettuce 18; red sorrel 2,250
5920	Decatur Co. Co-op. Co., Greensburg Timothy, Lot 3717	Indiana Farm Bureau Co-op. Assn., Inc., Indianapolis, Ind.	C F	99.50 99.40	.... 0.50	90.00 79.25	12-34 4-35	 513	C F	None Buckhorn 72; common plantain 90; red sorrel 126
6335	Elkhart Co. Farm Bureau Co-op. Assn., Inc., Goshen Timothy, Lot 3766	Indiana Farm Bureau Co-op. Assn., Inc., Indianapolis, Ind.	C F	98.00 99.16	.... 0.54	92.00 85.25	12-34 4-35	 567	C F	None Common plantain 108; red sorrel 234
5534	Adams & Morrow, Inc., Princeton[238] Timothy, Lot P587	Indiana Seed Co., Indianapolis, Ind.	C F	99.50 98.56	.... 0.50	90.00 87.75	5-34 10-34	 990	C F	None Buckhorn 18; common plantain 36; red sorrel 36
5843	Adams & Morrow, Inc., Princeton Timothy, Lot 124	Indiana Seed Co., Indianapolis, Ind.	C F	99.60 99.61	.... 0.29	90.00 88.00	9-34 2-35	 504	C F	None Buckhorn 18; red sorrel 36
5420	Farmers Co-op. Elevator Co., Clay City Timothy, Lot P587	Indiana Seed Co., Indianapolis, Ind.	C F	99.60 99.51	.... 0.29	90.00 92.25	7-34 9-34	 342	C F	None Buckhorn 18; common plantain 108; red sorrel 216
5679	Indiana Seed & Plant Co., Richmond Timothy, Lot P564	Indiana Seed Co., Indianapolis, Ind.	C F	99.70 99.55	.... 0.10	97.00 93.25	12-33 2-35	 297	C F	None Buckhorn 72
5906	Norman & Roberts, G. M., Bedford Timothy, Lot 1347	Indiana Seed Co., Indianapolis, Ind.	C F	99.75 99.90	.... 0.05	90.00 93.50	1-35 3-35	 1,179	C F	Common plantain 180 Canada thistle 18; common plantain 18; red sorrel 18
5457	†Rush Service Co., Inc., Rushville Timothy, Lot P586	Indiana Seed Co., Indianapolis, Ind.	C F	99.50 99.80	.... 0.20	90.00 80.50	5-34 9-34	 18	C F	None Common plantain 18
6181	Springer, W. D., Gwynneville Timothy, Lot 1347	Indiana Seed Co., Indianapolis, Ind.	C F	99.75 99.90	.... 0.05	90.00 95.75	1-35 4-35	 450	C F	None None

*Not labeled.

†Certified by Retailer.

C and F stands, respectively, for Claimed and Found.

[233] Not tagged. Labels furnished.

[234] Removed from sale. Misbranded. All sold.

[235] Not tagged. Labels furnished.

[236] Removed from sale. Misbranded. All sold.

[237] Removed from sale. Misbranded. Retagged.

[238] Removed from sale. Misbranded. All sold.

TIMOTHY—Continued

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor	Purity, per cent	Inert Matter, per cent	Germination, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds	Number per Pound of each of the Noxious Weed Seeds Specified in the Law
6321	Kiefer Feed & Supply Co., Elwood	Kiefer Feed & Supply Co., C	98.58	...	82.50	11-34	...	C Curled dock 225; prickly lettuce 225
	Timothy, Lot 68119	Elwood, Ind. F	99.00	0.60	90.00	4-35	2,160	F Buckhorn 90; prickly lettuce 234; red sorrel 36
6575	Lakeville Elevator Co., Lakeville[239]	Kraus, Sam, C	97.24	...	80.00	3-35	...	C None
	Timothy, Lot Bow	Fort Wayne, Ind. F	96.56	1.79	83.50	4-35	10,890	F Buckhorn 18; common plantain 36; red sorrel 36
5437	Lafayette Co-op. Elevator Co., Lafayette[240] Timothy	Lafayette Co-op. Elevator Co., C	99.60	...	80.00	8-34	...	C None
		Lafayette, Ind. F	99.47	0.24	81.25	9-34	468	F Red sorrel 18
5555	†Heldt Co., The, Evansville[241]	Lewis Implement & Seed Co., C	99.06	...	88.00	9-34	...	C Buckhorn 225; common plantain 450; red sorrel 1,800
	Comet Timothy, Lot 3045	Louisville, Ky. F	98.30	0.75	70.75	10-34	6,273	F Buckhorn 144; common plantain 198; curled dock 18; red sorrel 2,088
5538	Huebner Hardware Co., John, Loogootee Timothy, Lot 1304	Lewis Implement & Seed Co., C	99.50	...	85.00	8-34	...	C None
5445	Jefferson Co. Farm Bureau Co-op. Assn., Inc., Madison	Louisville, Ky. F	99.56	0.29	74.25	10-34	18	F Common plantain 18
	Timothy, Lot Red Bird	Lewis Implement & Seed Co., C	92.41	...	87.00	11-33	...	C None
6537	Jefferson Co. Farm Bureau Co-op. Assn., Inc., Madison[242]	Louisville, Ky. F	99.31	0.49	79.00	9-34	...	F None
		Lewis Implement & Seed Co., C	99.25	...	96.00	1-35	...	C Bracted plantain 100; buckhorn 90; red sorrel 100.
	Timothy, Lot Red Bird	Louisville, Ky. F	98.90	0.55	93.00	4-35	4,761	F Buckhorn 468; ox-eye daisy 18; red sorrel 4,275
5433	Norman & Roberts, G. M., Bedford[243] Timothy, Lot 1304	Lewis Implement & Seed Co., C Louisville, Ky. F	99.50 99.42	... 0.29	90.00 75.75	1-34 10-34	... 36	C None F Common plantain 36
6070	Pennington Feed Store, Bloomington[244] Timothy, Lot Lisco	Lewis Implement & Seed Co., C Louisville, Ky. F	96.00 94.62	... 3.04	90.00 72.25	12-34 3-35	... 22,257	C None F Buckhorn 198; common plantain 828; red sorrel 252; wild carrot 54
5540	Pike Co. Farm Bureau Co-op. Assn., Inc., Petersburg Lot 1105	McCarty Seed Co., J. A., C Evansville, Ind. F	99.50 99.31	... 0.34	89.00 80.25	6-34 9-34	... 297	C None F Common plantain 36; red sorrel 36
5834	Pike Co. Farm Bureau Co-op. Assn., Inc., Petersburg Lucky Jim Timothy, Lot 1166	McCarty Seed Co., J. A., C Evansville, Ind. F	99.50 99.85	... 0.15	92.00 95.00	1-35 2-35	... 144	C None F Common plantain 126; red sorrel 18
6583	Bullock, F. L., Butlerville Timothy, Lot 1070	McCullough Seed Co., The J. Chas., C Cincinnati, Ohio F	99.60 99.61	... 0.24	93.00 88.50	12-34 4-35	... 765	C None F Bracted plantain 18; red sorrel 72
6166	Doerflein, Chas. E., Cedar Grove	McCullough Seed Co., The J. Chas., C	98.00	...	90.00	1-35	...	C Buckhorn 225; common plantain 900; red sorrel 45
	Timothy, Lot 2004	Cincinnati, Ohio F	97.97	0.74	81.75	4-35	2,880	F Buckhorn 540; common plantain 144; curled dock 18; red sorrel 360; wild carrot 18

6167	Masters, Chas. L., Brookville Timothy, Lot 1070	McCullough Seed Co., The J. Chas., Cincinnati, Ohio	C	99.60		93.00	12-34		C	None
			F	99.50	0.20	91.25	4-35	423	F	Bracted plantain 18; buckhorn 36; common plantain 36; red sorrel 108
5931	Schmocker, John, Batesville Timothy, Lot 1748	McCullough Seed Co., The J. Chas., Cincinnati, Ohio	C	99.60		91.00	12-34		C	None
			F	99.75	0.15	89.50	3-35	387	F	Buckhorn 54; common plantain 72; red sorrel 36
6566	Eckert & Palmer Hardware, Osgood Timothy, Lot 825	Market Gardeners' Seed Co., The, Cincinnati, Ohio	C	94.00		80.00	12-34		C	Buckhorn 4; common plantain 558; curled dock 25; red sorrel 4
			F	95.61	0.89	66.50	4-35	6,579	F	Common plantain 2,466; curled dock 252; red sorrel 36
6558	Farm Bureau Co-op. Co., Aurora Timothy, Lot 817	Market Gardeners' Seed Co., The, Cincinnati, Ohio	C	99.20		85.00	10-34		C	Buckhorn 603; common plantain 18; red sorrel 288
			F	99.46	0.30	90.25	4-35	2,664	F	Buckhorn 612; curled dock 18; red sorrel 234
6561	Schlemmer Feed Store, Lawrenceburg[245] Timothy, Lot 625	Market Gardeners' Seed Co., The, Cincinnati, Ohio	C	94.00		80.00	12-34		C	Bracted plantain 550; buckhorn 436; curled dock 25; red sorrel 36
			F	95.00	0.99	62.25	4-35	7,281	F	Buckhorn 90; common plantain 2,592; curled dock 252; red sorrel 72
5483	Mayer Grain Co., Churubusco Timothy, Lot A	Mayer Grain Co., South Whitley, Ind.	C	99.50		92.00	7-34		C	None
			F	99.55	0.35	86.75	10-34	36	F	Buckhorn 18; red sorrel 18
5512	Mayer Grain Co., South Whitley Timothy	Mayer Grain Co., South Whitley, Ind.	C	99.50		92.00	7-34		C	None
			F	99.36	0.25	93.25	9-34	774	F	Buckhorn 90; common plantain 126; curled dock 36; red sorrel 54; wild carrot 18
6025	Miller Grain Co., Greencastle Timothy, Lot NA	Miller Grain Co., Bainbridge, Ind.	C	99.50		91.00	10-34		C	Buckhorn 450
			F	99.65	0.15	93.50	4-35	2,016	F	Buckhorn 1,080; curled dock 18; wild carrot 18
5490	Mutual Grain Co., Urbana Timothy, Lot 17	Mutual Grain Co., Urbana, Ind.	C	98.16		85.00	8-34		C	None
			F	98.49	0.73	88.50	9-34	297	F	Buckhorn 36; common plantain 18; wild carrot 18
5831	Wyatt Seed & Feed Store, Petersburg[246] Timothy, Lot 539	National Seed Co., Louisville, Ky.	C	99.50		85.00	10-34		C	None
			F	99.75	0.15	53.00	3-35	243	F	Common plantain 18
6641	Wyatt Seed & Feed Store, Petersburg[247] Timothy, Lot 832	National Seed Co., Louisville, Ky.	C	99.50		90.00	1-35		C	None
			F	99.85	0.10	72.50	4-35		F	None
5690	†Carman Supply Co., Lynn Timothy, Lot 333	New Paris Elevator Co., New Paris, Ohio	C	99.50		90.00	7-34		C	None
			F	99.25	0.25	92.00	2-35	612	F	Buckhorn 72; common plantain 18; curled dock 18; red sorrel 54
5498	Farmers Elevator Co., South Whitley[248] Timothy, Lot W	Northern Field Seed Co., Winona, Minn.	C	99.50		94.00	6-34		C	None
			F	99.51	0.29	83.75	9-34	405	F	Red sorrel 180
5336	Noragon & Son, Butler[249] Timothy, Lot 1603	Northern Field Seed Co., Winona, Minn.	C	99.50		95.00	6-34		C	None
			F	99.41	0.39	74.25	8-34	954	F	Common plantain 36; red sorrel 18

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*Not labeled.

†Certified by Retailer.

C and F stands, respectively, for Claimed and Found.

[339] Distributed by Northern Field Seed Co., Winona, Minn.

[240] Sample secured from Purdue University Poultry Farm.

[241] Removed from sale. Misbranded. All sold.

[242] Removed from sale. Misbranded. All sold.

[243] Removed from sale. Misbranded. All sold.

[244] Removed from sale. Misbranded. Retagged.

[245] Removed from sale. Misbranded. Returned to distributor.

[246] Removed from sale. Misbranded. Returned to distributor.

[247] Removed from sale. Misbranded. Returned to distributor.

[248] Distributed by Sam Kraus, Fort Wayne, Ind.

[249] Distributed by Sam Kraus, Fort Wayne, Ind.

TIMOTHY—Continued

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, per cent	Inert Matter, per cent	Germination, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds	Number per Pound of each of the Noxious Weed Seeds Specified in the Law
5524	Ballard & Morganheimer, Haubstadt	Purcell Seed Co.,	C	99.21	.....	61.50	7-34	.....	C Common plantain 450; red sorrel 225
	Tru Val Timothy, Lot 3104	Evansville, Ind.	F	99.12	0.40	88.50	9-34	3,699	F Buckhorn 162; common plantain 90; curled dock 18; red sorrel 54
5855	Purcell Seed Co., Evansville	Purcell Seed Co.,	C	99.40	...	83.00	1-35	.....	C Buckhorn 18; common plantain 72; ox-eye daisy 9; red sorrel 225
	Tru Val Timothy, Lot 3699	Evansville, Ind.	F	99.20	0.50	84.25	3-35	3,195	F Buckhorn 36; common plantain 36; curled dock 36; red sorrel 162
6477	James Seed Co., Jeffersonville	Ross Seed Co.,	C	99.50	.....	90.00	1-35	.....	C Buckhorn 225; red sorrel 225
	Timothy, Lot RS	Louisville, Ky.	F	98.96	0.35	93.25	4-35	7,875	F Bracted plantain 18; buckhorn 378; ox-eye daisy 54; red sorrel 6,075
5438	Linkhart & Son, North Vernon[250]	Ross Seed Co.,	C	99.50	.....	90.00	2-34	.....	C None
	Timothy	Louisville, Ky.	F	99.46	0.15	75.25	10-34	522	F Common plantain 18; red sorrel 54
5462	Sample, John L., Madison	Ross Seed Co.,	C	99.50	.....	90.00	4-34	.....	C None
	Timothy	Louisville, Ky.	F	99.56	0.29	83.25	10-34	405	F Common plantain 162; red sorrel 18
5428	Linton Hardware Co., Linton	Schultz Seed Co., J. M.,	C	99.50	.....	90.00	8-34	.....	C Bracted plantain 450; buckhorn 225; red sorrel 675
	Reliable Timothy	Dieterich, Ill.	F	99.40	0.30	94.00	9-34	2,817	F Buckhorn 900; ox-eye daisy 18; red sorrel 774
6414	Linton Hardware Co., Linton	Schultz Seed Co., J. M.,	C	99.50	.....	94.00	11-34	.....	C None
	Reliable Timothy	Dieterich, Ill.	F	99.61	0.29	95.25	3-35	837	F Buckhorn 72; red sorrel 90
6459	†McCarty Seed Co., J. A., Evansville	Schultz Seed Co., J. M.,	C	99.50	.....	94.00	11-34	.....	C None
	Lucky Jim Timothy, Lot 16	Dieterich, Ill.	F	99.25	0.35	88.00	4-35	3,123	F Buckhorn 18; common plantain 72; red sorrel 108
6407	Pentecost & Craft Co., Terre Haute[251]	Schultz Seed Co., J. M.,	C	98.15	.....	92.00	11-34	.....	C None
	Sho-Me Timothy, Lot 25	Dieterich, Ill.	F	97.33	0.94	83.25	4-35	20,844	F Bracted plantain 72; buckhorn 666; curled dock 18; ox-eye daisy 288; red sorrel 17,775
5431	Lemon Milling Co., Bedford	Scott Seed Co.,	C	99.00	.....	90.00	7-34	.....	C None
	Timothy, Lot 810	New Albany, Ind.	F	99.45	0.40	92.50	9-34	441	F Buckhorn 18; common plantain 126; red sorrel 72
5414	Ragsdale & Co., Chas., Bedford	Scott Seed Co.,	C	99.40	.....	90.00	6-34	.....	C Common plantain 180
	Timothy, Lot 806	New Albany, Ind.	F	98.72	0.88	91.75	9-34	1,530	F Buckhorn 54; common plantain 414; ox-eye daisy 18; red sorrel 144
6443	Roper & Brown, Hobart[252]	Standard Seed Co.,	C	99.50	.....	92.00	1-35	.....	C None
	Timothy, Lot 15349	Chicago, Ill.	F	99.50	0.30	60.00	3-35	243	F Common plantain 18
6736	St. Joseph Co. Farm Bureau Co-op. Assn., Inc., South Bend[253]	Standard Seed Co.,	C	99.00	.....	90.00	3-35	.....	C None
	Timothy, Lot 15361	Chicago, Ill.	F	98.78	0.88	87.25	7-35	2,313	F Buckhorn 234; common plantain 468; prickly lettuce 18; red sorrel 18

5358	Seberger Seed Co., Crown Point	Standard Seed Co.,	C	99.50	......	92.00	4-34	....	C	None
	Timothy, Lot 15326	Chicago, Ill.	F	99.11	0.49	93.00	8-34	1,017	F	Common plantain 306; red sorrel 36
6201	Trembly Co., S. F., Columbia City[254]	Standard Seed Co.,	C	99.50	......	92 00	1-35	....	C	None
	Timothy, Lot 15349	Chicago, Ill.	F	99.35	0.40	65.25	3-35	261	F	Common plantain 36
6281	*Brown, Harlen M., Newcastle, R. R. 3	Standard Seed Co.,	C	....	......	......	......	....	C	
	Timothy	Kansas City, Mo.	F	93.53	3.28	44.25	3-35	16,272	F	Bracted plantain 54; buckhorn 234; common plantain 396; curled dock 288; red sorrel 8,100
6271	Sun-Field Seed Service, Chicago, Ill.[255]	Sun-Field Seed Service,	C	95.00	......	78.00	1-35	....	C	None
	Timothy, Lot 15355	Chicago, Ill.	F	93.21	3.82	83.00	3-35	41,940	F	Buckhorn 468; common plantain 1,206; ox-eye daisy 108; red sorrel 1,008
6348	Syler & Syler, Nappanee[256]	Syler & Syler,	C	98.00	......	88.00	1-35	....	C	None
	Timothy	Nappanee, Ind.	F	94.45	3.41	75.00	4-35	28,152	F	Bracted plantain 18; buckhorn 216; common plantain 1,296; curled dock 36; red sorrel 36
6373	Syler & Syler, Plymouth	Syler & Syler,	C	99.50	......	90.00	2-35	....	C	None
	Timothy	Plymouth, Ind.	F	99.55	0.25	79.00	4-35	1,233	F	Common plantain 36; red sorrel 72
5390	Wynn, Arlie S., Rochester	Syler & Syler,	C	99 70	....	93.00	7-34	....	C	None
	Timothy, Lot 69134	Plymouth, Ind.	F	99.85	0.10	85.75	9-34	....	F	None
6341	Martin Seed Store, Elkhart	Teweles Seed Co., L.,	C	99 60	..	94 00	2-35	......	C	None
	Timothy, Lot Badger Brand	Milwaukee, Wis.	F	99.70	0.20	83.00	4-35	333	F	Common plantain 108
5505	Smock & Co., W. C., Burrows	Teweles Seed Co., L.,	C	99.65	....	95 00	2-34	....	C	None
	Timothy, Lot Badger Brand	Milwaukee, Wis.	F	99.80	0.15	87.00	9-34	243	F	Common plantain 18

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*Not labeled.

†Certified by Retailer.

C and F stands, respectively, for Claimed and Found.

[250] Removed from sale. Misbranded. All sold.

[251] Removed from sale. Misbranded. All sold.

[252] Removed from sale. Misbranded. Returned to distributor.

[253] Removed from sale. Misbranded. Retagged.

[254] Removed from sale. Misbranded. Returned to distributor.

[255] Sample secured from Wm. C. Thomas, Gaston, Ind.

[256] Removed from sale. Misbranded. Recleaned.

MIXTURES

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity per cent	Inert Matter per cent	Germination, per cent	Hard Seeds, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds	Number per Pound of each of the Noxious Weed Seeds Specified in the Law
6279	*Berry Seed Co., Chicago, Ill.[257] Permanent Pasture Mixture, Lot 4237	Berry Seed Co., Clarinda, Iowa	C	95.00		83.00		12-34		C None
			Red Clover F	15.43		71.50	2.00	4-35		
			Timothy F	15.03		83.50		4-35		
			Ky. Blue Grass F	12.23	13.63	58.50		4-35		
			Orchard Grass F	11.12		84.50		4-35		
			Meadow Fescue F	7.52		91.50		4-35		
			Sweet Clover F	6.01		52.50	6.50	4-35		
			Rye Grass F	5.01		93.00		4-35	31,905	F Bracted plantain 45; buckhorn 1,080; common plantain 1,260; curled dock 270; small-seeded alfalfa dodder 270; horse nettle 45; ox-eye daisy 45; red sorrel 990
6289	*Berry Seed Co., Clarinda, Iowa[258] Red Clover and Alfalfa Mix, Lot 12202	Berry Seed Co., Clarinda, Iowa	Red Clover C	68.49		89.00		2-35		C None
			Alfalfa C	26.76		83.00		2-35		
			Red Clover F	74.60		86.00	4.50	3-35		
			Alfalfa F	19.90	3.05	54.00	7.00	3-35	7,405	F Bracted plantain 18; buckhorn 72; common plantain 54; curled dock 54; dodder 70; wild carrot 18; yellow trefoil 9
6449	*Berry Seed Co., Clarinda, Iowa[259] Rye Grass, Alsike Clover, Red Clover, Alfalfa and Timothy, Lot 4082	Berry Seed Co., Clarinda, Iowa	Rye Grass C	40.00		85.00				
			Alsike Clover C	6.50		85.00				
			Red Clover C	8.00		85.00				
			Alfalfa C	10.00		85.00				
			Sweet Clover C	23.50		85.00				
			Timothy C	9.00		85.00				C None
			Rye Grass F	33.30		74.00		3-35		
			Alsike Clover F	9.92	1.91	54.50	5.25	3-35		
			Red Clover F	9.31		61.50	0.00	3-35		
			Alfalfa F	11.41		40.00	3.50	3-35		
			Sweet Clover F	22.32		54.00	4.50	3-35		
			Timothy F	8.68		85.75		3-35	11,516	F Buckhorn 99; Canada thistle 9; common plantain 81; curled dock 162; dodder 23; horse nettle 9; mustard 36; red sorrel 558; yellow trefoil 279

6450	*Berry Seed Co., Clarinda, Iowa[260] Rye Grass, Korean Clover and Sweet Clover, Lot 4240	Berry Seed Co., Clarinda, Iowa	Rye Grass	C	49 00		82.00		1-35		
			Korean Clover	C	25 00		90.00		1-35		
			Sweet Clover	C	25 00		90 00		1-35		C None
			Rye Grass	F	45 76		83 50		4-35		
			Korean Clover	F	25.97	0.56	84.00	7.00	4-35		
			Sweet Clover	F	26.43		51.00	3.00	4-35	4,451	F Bracted plantain 36; buckhorn 18; curled dock 9; dodder 5; horse nettle 36; mustard 18; red sorrel 9
6451	*Berry Seed Co., Clarinda, Iowa[261] Korean Clover and Domestic Rye Grass Mix, Lot 4238	Berry Seed Co., Clarinda, Iowa	Korean Clover	C	51.00		90 00		1-35		
			Rye Grass	C	48 80		90 00		1-35		C None
			Korean Clover	F	51 21		79 00	9 00	4-35		
			Rye Grass	F	47 59	0 54	89 00		4 35	1,643	F Bracted plantain 63; buckhorn 9; dodder 23; horse nettle 207; red sorrel 441
6454	*Berry Seed Co., Clarinda, Iowa[262] Rye Grass, Korean Clover and Sweet Clover Mixture, Lot 4240	Berry Seed Co., Clarinda, Iowa	Rye Grass	C	49 00		82 00		1-35		
			Korean Clover	C	25 00		90 00		1-35		
			Sweet Clover	C	25 00		90 00		1-35		C None
			Rye Grass	F	43 03		81 50		4-35		
			Korean Clover	F	25.68	0.38	89.00	5.50	4-35		
			Sweet Clover	F	30.22		68.50	5.50	4-35	1,755	F Buckhorn 18; curled dock 9; horse nettle 45; red sorrel 63
6699	Calumet Feed Co., Hammond American Shore Lawn Seed	Consolidated Seed Co., Chicago, Ill.	Ky. Blue Grass	C	23 56		80 00		1-33		
			Red Top	C	21 35		85 00		1-33		
			Rye Grass	C	24 75		90 00		1-33		
			Timothy	C	17.97		90 00		1 33		
			White Clover	C	1.00		85.00		1-33		C Buckhorn 160; ox-eye daisy 48; red sorrel 336
			Ky. Blue Grass	F	13 11		73 00		7-35		
			Red Top	F	36.21		92 75		7-35		
			Rye Grass	F	11 01	17.63	79 50		7-35		
			Timothy	F	12.45		70 75		7-35		
			Meadow Fescue	F	7.00		80.00		7-35	53,415	F Bracted plantain 90; buckhorn 90; common plantain 720; ox-eye daisy 45; red sorrel 270
6698	Indiana Harbor Feed Store, Indiana Harbor[263] American Shore Lawn Seed	Consolidated Seed Co., Chicago, Ill.	Ky. Blue Grass	C	21.16		81 00		1-35		
			Red Top	C	25 95		91 00		1-35		
			Poa Trivialis	C	12 75		85 00		1-35		
			Rye Grass	C	29 23		90 00		1-35		C Buckhorn 16; curled dock 48; dodder 64; mustard 16; quack grass 48; red sorrel 32
			Ky. Blue Grass	F	16 58		69 00		7-35		
			Red Top	F	22.78	14.85	50.00		7-35		
			Rye Grass	F	40.79		68.00		7-35	12,780	F Buckhorn 135; common plantain 225; ox-eye daisy 90; red sorrel 630

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*Not labeled.

†Certified by Retailer.

C and F stands, respectively, for Claimed and Found.

[257] Sample secured from F. L. Crowe, R. R. 1, Pennville, Ind.

[258] Sample secured from W. Earl Rapp, R. R. 1, Etna Green, Ind.

[259] Sample secured from Boone Serum Co., Thorntown, Ind. Returned to distributor and purchase price refunded.

[260] Sample secured from Boone Serum Co,. Thorntown, Ind. Seed returned to distributor and purchase price refunded.

[261] Sample secured from Boone Serum Co., Thorntown, Ind. Seed returned to distributor and purchase price refunded.

[262] Sample secured from Leo Hood, R. R. 9, Lafayette, Ind.

[263] Removed from sale. Misbranded. Retagged.

MIXTURES—Continued

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, per cent	Inert Matter, per cent	Germination, per cent	Hard Seeds, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds	Number per Pound of each of the Noxious Weed Seeds Specified in the Law
6704	Sternberg Feed Store, East Chicago[264] American Shore Lawn Seed	Consolidated Seed Co., Chicago, Ill.	Ky. Blue Grass C	18.28		81.00		1-35		
			Red Top C	30.63		91.00		1-35		
			Rye Grass C	37.16		90.00		1-35		
			White Clover C	1.00		90.00		1-35		C Buckhorn 16; curled dock 48; dodder 64; mustard 16; quack grass 48; red sorrel 32
6578	Farmers Grain & Supply Co., Oak[265] Pasture Mixture, Lot 36495	Dickinson Co., The Albert, Chicago, Ill.	Ky. Blue Grass F	5.80		32.00		7-35		
			Red Top F	20.29	25.41	65.75		7-35		
			Rye Grass F	46.38		85.50		7-35		
			White Clover F	1.83				7-35	6,750	F None
			Orchard Grass C	8.30		80.00		3-35		
			Red Top C	17.68		90.00		3-35		
			Timothy C	24.67		85.00		3-35		
			Dom. Rye Grass C	19.91		90.00		3-35		
			Ky. Blue Grass C	12.24		65.00		3-35		
			Red Clover C	4.97		90.00		3-35		
			Alsike Clover C	4.90		90.00		3-35		C Buckhorn 32; common plantain 64; red sorrel 324
			Timothy F	28.07		73.25		5-35		
			Red Top F	18.62	6.23	90.00		5-35		
			Rye Grass F	16.67		78.00		5-35		
			Ky. Blue Grass F	10.72		49.50		5-35		
			Alsike Clover F	6.82		89.50	7.50	5-35		
			Orchard Grass F	6.43		82.50		5-35		
			Red Clover F	5.95		90.50	4.50	5-35	15,750	F Buckhorn 135; curled dock 45; ox-eye daisy 45; red sorrel 630; yellow trefoil 45
6697	†Burke Bros. Hardware, Gary[266] West Side Park	Johnson, Inc., J. Oliver. Chicago, Ill.	Rye Grass C	49.00		90.00		1-35		
			Red Top C	24.47		70.00		1-35		
			White Clover C	1.00		90.00		1-35		C None
			Rye Grass F	51.86		72.00		6-35		
			Red Top F	17.88	20.63	87.00		6-35		
			Timothy F	6.88		72.75		6-35	20,745	F Buckhorn 1,260; common plantain 45; ox-eye daisy 360; red sorrel 630

6701	Kaufman & Co., Indiana Harbor Lincoln Park Mixed Lawn Seed	Johnson, Inc., J. Oliver, Chicago, Ill.	Ky. Blue Grass	C	16.00		60 00		1-35		
			Fancy Red Top	C	35.00		90 00		1 35		
			White Clover	C	1.00		90 00		1-35		
			Rye Grass	C	27.38		95 00		1-35		C Bracted plantain 1,350; common plantain 450; curled dock 450; red sorrel 6,300; white top 1,800
			Ky. Blue Grass	F	14 96		78 50		7-35		
			Fancy Red Top	F	38.55	13.41	87.25		7-35		
			Rye Grass	F	30.33		90.50		7-35	20,295	F Bracted plantain 630; buckhorn 450; common plantain 180; ox-eye daisy 135; red sorrel 1,350
6625	Minas, E. C., Hammond Lincoln Park Mixed Lawn Seed	Johnson, Inc., J. Oliver, Chicago, Ill.	Ky. Blue Grass	C	16.00		60.00		1-35		
			Fancy Red Top	C	35.90		90.00		1 35		
			White Clover	C	1.00		90.00		1-35		
			Rye Grass	C	27 38		95 00		1-35		C None
			Ky. Blue Grass	F	15 79		47 00		6 35		
			Fancy Red Top	F	33.50	19.64	94.25		6-35		
			Rye Grass	F	26.52		84.50		6-35	29,160	F Buckhorn 990; ox-eye daisy 540; red sorrel 1,080
6626	Minas, E. C., Hammond[267] Central Park Mixed Lawn Seed	Johnson, Inc., J. Oliver, Chicago, Ill.	Fancy Red Top	C	24.00		70 00		1-35		
			Fancy Timothy	C	14 00		90.00		1 35		
			Dom. Rye Grass	C	36 00		95 00		1-35		
			Ky. Blue Grass	C	4.00		60.00		1-35		
			White Clover	C	1.00		90.00		1-35		C None
			Fancy Red Top	F	13.27		79.75		5-35		
			Fancy Timothy	F	16.49	21.99	71.50		5-35		
			Dom. Rye Grass	F	38.20		88.00		5-35	37,170	F Bracted plantain 45; buckhorn 405; common plantain 720; curled dock 90; ox-eye daisy 135; red sorrel 630; yellow trefoil 45
6702	Minas, E. C., Hammond[268] Lincoln Park Mixed Lawn Seed	Johnson, Inc., J. Oliver, Chicago, Ill.	Ky. Blue Grass	C	16.00		60.00		1-35		
			Fancy Red Top	C	35 90		90 00		1-35		
			White Clover	C	1 00		90 00		1-35		
			Rye Grass	C	27 33		95.00		1-35		C Bracted plantain 1,350; common plantain 450; curled dock 450; red sorrel 6,300; white top 1,800
			Ky. Blue Grass	F	14 76		43.50		7-35		
			Fancy Red Top	F	38 31	19.63	73.00		7-35		
			Rye Grass	F	24.43		79.00		7-35	42,795	F Buckhorn 450; common plantain 45; curled dock 90; ox-eye daisy 270; red sorrel 990

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*Not labeled.
†Certified by Retailer.
C and F stands, respectively, for Claimed and Found.
[264] Not tagged. Labels furnished. Removed from sale. Misbranded. Retagged.
[265] Not tagged. Labels furnished.
[266] Removed from sale. Misbranded. Retagged.
[267] Removed from sale. Misbranded. Returned to distributor.
[268] Removed from sale. Misbranded. Retagged.

MIXTURES—Continued

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, per cent	Inert Matter, per cent	Germination, per cent	Hard Seeds, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds	Number per Pound of each of the Noxious Weed Seeds Specified in the Law
6703	Minas, E. C., Hammond[269]	Johnson, Inc., J. Oliver,	Fancy Red Top C	24.00		70.00		1-35		
	Central Park Mixed Lawn Seed	Chicago, Ill.	Fancy Timothy C	14.00		90.00		1-35		
			Dom. Rye Grass C	36.00		95.00		1-35		
			Ky. Blue Grass C	4.00		60.00		1-35		
			White Clover C	1.00		90.00		1-35		C None
			Fancy Red Top F	12.53		74.25		6-35		
			Dom. Rye Grass F	69.13	9.86	77.50		6-35	13,320	F Bracted plantain 45; buckhorn 900; common plantain 45; curled dock 45; ox-eye daisy 135; red sorrel 900
6635	Maginot Bros., Hammond[270]	Kahn Bros. Hay & Grain Co.,	Ky. Blue Grass C	28.00		80.00		1-35		
	Hillside Lawn Seed, Lot 64521	Chicago, Ill.	Red Top C	20.00		82.00		1-35		
			Rye Grass C	29.00		80.00		1-35		
			White Clover C	5.00		90.00		1-35		C None
			Ky. Blue Grass F	24.92		60.50		6-35		
			Red Top F	22.65	11.22	48.50		6-35		
			Rye Grass F	33.30		81.00		6-35		
			White Clover F	6.43		67.25	27.25	6-35	23,580	F Bracted plantain 1,350; buckhorn 225; ox-eye daisy 45; red sorrel 1,710
6659	*Tomchak, Clem, Michigan City[271]	Kunin & Sons, Inc., Samuel,	Ky. Blue Grass C	8.00						
	Special Lawn Grass Seed	Chicago, Ill.	Red Top C	17.00						
			Rye Grass C	49.00						
			White Clover C	1.00						C
			Red Top F	11.54	13.11	72.75		5-35		
			Rye Grass F	70.22		79.50		5-35	22,320	F Buckhorn 90; common plantain 45; curled dock 90; red sorrel 45
5453	Eckert & Palmer, Osgood	Market Gardeners' Seed Co.,	Red Top C	88.00		88.00		11-33		C None
	Mixture, Lot 1402	The, Cincinnati, Ohio	Timothy C	6.00		90.00		11-33		
			Red Top F	87.80	6.94	81.75		9-34	40,410	F Buckhorn 45; common plantain 270; curled dock 45
5545	Moore & Kemple, Lafayette	Moore & Kemple,	Ky. Blue Grass C	56.00		75.00		1-30		
	Chicago Park Mixture	Lafayette, Ind.	Red Top C	27.00		80.00		7-32		
			White Clover C	4.08		65.00		2-34		C Common plantain 150; red sorrel 150
			Ky. Blue Grass F	68.33		66.50		10-34		
			Red Top F	12.94	15.78	66.50		10-34	5,535	F Buckhorn 45; red sorrel 90

5546	Moore & Kemple, Lafayette[272] Columbia Mixture	Moore & Kemple, Lafayette, Ind.	Ky. Blue Grass	C	22.00		75.00		1-33	
			Red Top	C	25.00		80.00		1-33	
			Rye Grass	C	9.50		80.00		1-33	
			White Clover	C	3.50					
			Chewing Fescue	C	16.50		80.00			C Buckhorn 180; common plantain 270; ox-eye daisy 180
			Ky. Blue Grass	F	52.75		70.00		10-34	
			Red Top	F	13.95	12.77	84.00		10-34	
			Chewing Fescue	F	17.88		88.50		10-34	6,435	F Red sorrel 135
6611	*Grant Co., W. T., Indianapolis[273] Homelawn Seed	Northrup, King & Co., Minneapolis, Minn.	Dom. Rye Grass	C	27.20		94.00		1-35	
			Timothy	C	17.35		90.00		1-35	
			Red Top	C	15.50		87.00		1-35	
			Ky. Blue Grass	C	9.60		65.00		1-35	
			White Clover	C	1.55					C None
			Dom. Rye Grass	F	33.76		87.50		5-35	
			Timothy	F	19.11	27.13	74.50		5-35	
			Red Top	F	17.62		73.75		5-35	
			Ky. Blue Grass	F	10.55		56.00		5-35	27,540	F Curled dock 450; red sorrel 90
6706	Burke Bros. Hardware, Gary[274] Shady Place Lawn Seed	Ostberg Seed Co., Chicago, Ill.	Ky. Blue Grass	C	26.40		80.00		1-34	
			Red Top	C	46.80		90.00		1-34	
			Poa Trivialis	C	5.60		80.00		1-34	
			Chewing Fescue	C	4.95		70.00		1-34	
			White Clover	C	2.90		86.00		1-34	C Buckhorn 64; curled dock 70; quack grass 112; red sorrel 160
			Ky. Blue Grass	F	2.07				7-35	
			Rye Grass	F	40.20		79.50		7-35	
			Fescue	F	15.76	18.71	1.00		7-35	
			Red Top	F	13.60		56.25		7-35	
			Timothy	F	5.22		21.50		7-35	
			White Clover	F	2.27				7-35	45,090	F Buckhorn 315; common plantain 4,680; curled dock 45; ox-eye daisy 90; red sorrel 2,430; wild carrot 45; yellow trefoil 135
6629	Goldblatt Bros., Inc., Hammond[275] Town Park Lawn Seed, Lot 3	Ostberg Seed Co., Chicago, Ill.	Ky. Blue Grass	C	27.06		80.00		1-35	
			Red Top	C	20.54		90.00		1-35	
			Rye Grass	C	36.84		90.00		1-35	
			White Clover	C	2.88		90.00		1-35	C Buckhorn 64; dodder 32; horse nettle 16; prickly lettuce 16; red sorrel 32
			Red Top	F	31.68	17.03	60.50		5-35	
			Rye Grass	F	43.96		92.00		5-35	18,450	F Buckhorn 45; common plantain 720; red sorrel 135

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*Not labeled.

†Certified by Retailer.

C and F stands, respectively, for Claimed and Found.

[269] Removed from sale. Misbranded. Returned to distributor.

[270] Removed from sale. Misbranded. Returned to distributor.

[271] Used on own farm. Distributed by Geo. Granberry, Michigan City, Ind.

[272] Tag incomplete.

[273] Seed replaced.

[274] Not tagged. Labels furnished.

[275] Removed from sale. Misbranded. Retagged.

MIXTURES—Continued

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, per cent	Inert Matter, per cent	Germination, per cent	Hard Seeds, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds	Number per Pound of each of the Noxious Weed Seeds Specified in the Law
6630	Goldblatt Bros., Inc., Hammond	Ostberg Seed Co.,	Ky. Blue Grass C	27.88		80.00		1-35		
	Green Hill Lawn Seed, Lot 4	Chicago, Ill.	Red Top C	29.70		70.00		1-35		
			Rye Grass C	26.19		70.00		1-35		
			White Clover C	3.36		90.00		1-35		C Buckhorn 64; dodder 54; horse nettle 16; prickly lettuce 72; red sorrel 50
			Ky. Blue Grass F	22.96		70.50		6-35		
			Red Top F	29.44	16.47	56.25		6-35		
			Rye Grass F	28.24		87.00		6-35	17,640	F Buckhorn 360; common plantain 180; ox-eye daisy 45; red sorrel 810; wild carrot 45
6631	Goldblatt Bros., Inc., Hammond[276]	Ostberg Seed Co.,	Ky. Blue Grass C	30.45		80.00		1-35		
	Perennial Green Lawn Seed, Lot 5	Chicago, Ill.	Red Top C	39.58		90.00		1-35		
			Rye Grass C	16.85		90.00		1-35		
			White Clover C	3.84		90.00		1-35		C Buckhorn 64; quack grass 64; red sorrel 176
			Ky. Blue Grass F	7.91		68.50		6-35		
			Red Top F	39.62	13.74	74.25		6-35		
			Rye Grass F	34.68		88.00		6-35	16,470	F Buckhorn 180; common plantain 630; ox-eye daisy 90; red sorrel 270
6632	Goldblatt Bros., Inc., Hammond[277]	Ostberg Seed Co.,	Ky. Blue Grass C	15.89		80.00		1-35		
	No. 1 Grass Matt Lawn Seed, Lot 1	Chicago, Ill.	Red Top C	31.20		90.00		1-35		
			Rye Grass C	36.84		90.00		1-35		
			White Clover C	1.92		90.00		1-35		C Buckhorn 64; curled dock 64; dodder 32; quack grass 16; red sorrel 64
			Ky. Blue Grass F	5.77		37.50		6-35		
			Red Top F	28.83	13.98	85.00		6-35		
			Rye Grass F	47.90		88.00		6-35	77,175	F Buckhorn 45; ox-eye daisy 45; red sorrel 135
6634	Goldblatt Bros., Inc., Hammond[278]	Ostberg Seed Co.,	Ky. Blue Grass C	17.60		80.00		1-35		
	Let It Grow Lawn Seed, Lot 2	Chicago, Ill.	Red Top C	30.02		90.00		1-35		
			Rye Grass C	37.35		90.00		1-35		
			White Clover C	1.48		90.00		1-35		C Buckhorn 64; curled dock 64; dodder 18; quack grass 16; red sorrel 24
			Ky. Blue Grass F	5.70		69.00		6-35		
			Red Top F	36.74	14.93	65.75		6-35		
			Rye Grass F	41.45		91.00		6-35	18,270	F Buckhorn 450; common plantain 585; red sorrel 135

6619	Ruff Hardware, Inc., J. J., Hammond[279] Shady Lawn Grass Seed	Ostberg Seed Co., Chicago, Ill.	Ky. Blue Grass	C	21.16		85.00		1-35		
			Red Top	C	25.95		90.00		1-35		
			Rye Grass	C	29.23		90.00		1-35		
			Poa Trivialis	C	12.75		80.00		1-35		C None
			Ky. Blue Grass	F	10.48		55.00		6-35		
			Red Top	F	20.37	9.80	50.75		6-35		
			Rye Grass	F	49.75		88.50		6-35		
			Poa Trivialis	F	9.21		54.50		6-35	10,395	F Buckhorn 45; common plantain 90; curled dock 90; red sorrel 270
6620	Ruff Hardware, Inc., J. J., Hammond[280] Parkway Lawn Grass Seed	Ostberg Seed Co., Chicago, Ill.	Ky. Blue Grass	C	18.28		85.00		1-35		
			Red Top	C	30.63		80.00		1-35		
			Rye Grass	C	31.16		90.00		1-35		
			White Clover	C	1.00		90.00		1-35		C None
			Ky. Blue Grass	F	20.00		68.50		6-35		
			Red Top	F	10.72	20.31	42.00		6-35		
			Rye Grass	F	47.08		88.50		6-35	9,225	F Buckhorn 630; common plantain 630; ox-eye daisy 315; red sorrel 450
6710	Sears, Roebuck & Co., Indianapolis[281] Super Fine Lawn Seed	Ostberg Seed Co., Chicago, Ill.	Ky. Blue Grass	C	33.80		81.00		1-35		
			Red Top	C	42.07		91.00		1-35		
			Rye Grass	C	14.85		90.00		1-35		C Buckhorn 16; curled dock 16; mustard 16; quack grass 64
			Ky. Blue Grass	F	31.76		48.50		7-35		
			Red Top	F	29.49	13.77	26.25		7-35		
			Rye Grass	F	24.29		85.00		7-35	20,475	F Buckhorn 135; common plantain 3,060; red sorrel 180
6711	Sears, Roebuck & Co., Indianapolis[282] Green Karpet Lawn Seed	Ostberg Seed Co., Chicago, Ill.	Ky. Blue Grass	C	8.35		81.00		1-35		
			Red Top	C	39.09		91.00		1-35		
			Rye Grass	C	39.08		90.00		1-35		C Buckhorn 80; curled dock 70; dodder 16; quack grass 64; red sorrel 11
			Red Top	F	23.78	26.61	32.00		7-35		
			Rye Grass	F	45.31		84.00		7-35	12,375	F Buckhorn 135; common plantain 450; ox-eye daisy 45; red sorrel 45
6712	Sears, Roebuck & Co., Indianapolis Jackson Park Lawn Seed	Ostberg Seed Co., Chicago, Ill.	Ky. Blue Grass	C	20.88		81.00		1-35		
			Red Top	C	33.20		91.00		1-35		
			Rye Grass	C	32.17		90.00		1-35		
			White Clover	C	1.98		90.00		1-35		C Buckhorn 61; corn cockle 32; dodder 16; quack grass 64; red sorrel 24
			Ky. Blue Grass	F	18.95		74.00		7-35		
			Red Top	F	27.35	19.94	70.75		7-35		
			Rye Grass	F	32.08		89.00		7-35		
			White Clover	F	1.18				7-35	14,760	F Buckhorn 225; common plantain 135; ox-eye daisy 45; red sorrel 360; yellow trefoil 45

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*Not labeled.

†Certified by Retailer.

C and F stands, respectively, for Claimed and Found.

[276] Removed from sale. Misbranded.

[277] Removed from sale. Misbranded.

[278] Removed from sale. Misbranded.

[279] Removed from sale. Misbranded. Retagged.

[280] Removed from sale. Misbranded. Retagged.

[281] Removed from sale. Misbranded. Returned to distributor.

[282] Removed from sale. Misbranded. Returned to distributor.

MIXTURES—Continued

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, per cent	Inert Matter, per cent	Germination, per cent	Hard Seeds, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds	Number per Pound of each of the Noxious Weed Seeds Specified in the Law
6713	Sears, Roebuck & Co., Indianapolis[283]	Ostberg Seed Co.,	Ky. Blue Grass C	17.40		81.00		1-35		
	Shady Spot Lawn Seed	Chicago, Ill.	Red Top C	23.37		91.00		1-35		
			Poa Trivialis C	21.25		80.00		1-35		
			Rye Grass C	28.52		90.00		1-35		C Buckhorn 32; corn cockle 16; horse nettle 16; prickly lettuce 48; quack grass 16
			Ky. Blue Grass F	15.77		67.50		7-35		
			Red Top F	22.02	12.20	50.75		7-35		
			Poa Trivialis F	10.42		63.50		7-35		
			Rye Grass F	38.30		84.00		7-35	14,715	F Buckhorn 135; common plantain 540; ox-eye daisy 45; red sorrel 495
6607	Ayres & Co., L. S., Indianapolis[284]	Scott & Sons Co., O. M.,	Ky. Blue Grass C	51.00		85.00		1-35		
	Scott's Lawn Seed, Lot Reg.	Marysville, Ohio	Rough Stalked Meadow Grass C	8.37		90.00		1-35		
			Creeping Bent C	7.35		90.00		1-35		
			White Dutch Clover C	5.00		85.00		1-35		C None
			Ky. Blue Grass F	59.35		70.00		6-35		
			Creeping Bent F	6.34	2.97	67.00		6-35		
			Red Top F	23.13		95.25		6-35	6,480	F Buckhorn 90; ox-eye daisy 45; red sorrel 45
6612	McCrory, J. G., Indianapolis[285]	Stanford Seed Co.,	Ky. Blue Grass C	8.00		70.00		1-35		
	Pure Lawn Seed	Buffalo, N. Y.	Fancy Red Top C	41.50		80.00		1-35		
			White Dutch Clover C	5.00		82.00		1-35		
			Dom. Rye Grass C	29.00		90.00		1-35		
			Timothy C	9.50		85.00		1-35		C None
			Ky. Blue Grass F	7.75		65.00		5-35		
			Fancy Red Top F	42.32	6.64	81.00		5-35		
			Dom. Rye Grass F	26.86		81.00		5-35		
			Timothy F	10.60		83.00		5-35	57,285	F Buckhorn 135; common plantain 225; ox-eye daisy 90; red sorrel 135
6349	Syler & Syler, Nappanee[286]	Syler & Syler,	C	90.00		88.00		1-35		C None
	Red Clover and Alsike Clover	Nappanee, Ind.	Red Clover F	84.74		84.00	3.00	3-35		
			Alsike Clover F	7.76	0.82	79.75	12.50	3-35	19,629	F Buckhorn 13,770; Canada thistle 108; chicory 90; common plantain 45; curled dock 2,700; red sorrel 288; wild carrot 1,080; yellow trefoil 18

6371	Syler & Syler, Plymouth Red Clover, Timothy, Alfalfa Mixture, Lot 244	Syler & Syler, Plymouth, Ind.	Medium Red Clover C	60 53		92 00		1-35		
			Timothy C	20 94		90 00		1-35		
			Alfalfa C	16 42		92.00		1-35		
			Alsike Clover C	1.23		94.00		1-35		C Curled dock 630
			Medium Red Clover F	69 44		89 00	0 50	4-35		
			Timothy F	15.12	0.49	89.50		4-35		
			Alfalfa F	13.50		71.50	6.50	4-35	1,719	F Buckhorn 144; common plantain 36; curled dock 423; red sorrel 126
6719	Syler & Syler, Plymouth Red Clover, Alsike Clover and Timothy Mixture, Lot 327	Syler & Syler, Plymouth, Ind.	Red Clover C	76 88		85 05		3-35		
			Timothy C	11.16		88 00		3-35		
			Alsike Clover C	8 92		85 05		3-35		C Buckhorn 1,440; common plantain 180; curled dock 180; red sorrel 180
			Red Clover F	71.49		89.00	7.00	6-35		
			Timothy F	12.20	1.79	75.50		6-35		
			Alsike Clover F	10 94		92 00	3 25	6-35	2,840	F Buckhorn 1,341; common plantain 270; curled dock 81; dodder 5; red sorrel 63
5930	Chance Bros., Connersville Timothy and Alsike Clover, Lot 4269	Teweles Seed Co., L., Milwaukee, Wis.	Timothy C	48.92		95 00		1-35		
			Alsike Clover C	49.12		84 00	11.00	1-35		C None
			Timothy F	45.04		83.00		3-35		
			Alsike Clover F	53.72	0.84	88.25	9.25	3-35	4,347	F Common plantain 18; red sorrel 54
6338	Martin Feed Store, Elkhart Alsike Clover and White Clover	Teweles Seed Co., L., Milwaukee, Wis.	Alsike Clover C	92 16		89 00	7 00	2-34		
			White Clover C	6.04		85 00	10 00	2-34		C Red sorrel 450; yellow trefoil 450
			Alsike Clover F	92 56		88.50	4.75	4-35		
			White Clover F	5.81	0.10	87.75	5.50	4-35	4,779	F Canada thistle 18; common plantain 18; red sorrel 198; yellow trefoil 720
6340	Martin Feed Store, Elkhart Timothy and Alsike Clover	Teweles Seed Co., L., Milwaukee, Wis.	Timothy C	48 92		94 00		2 34		
			Alsike Clover C	49 12		84 00	11 00	2-34		C None
			Timothy F	48 89		86 00		4-35		
			Alsike Clover F	49.39	0.98	86.75	7.25	4-35	7,065	F Common plantain 36; red sorrel 54
6267	Wolcottville Elevator Co., Wolcottville Timothy and Alsike Clover	Teweles Seed Co., L., Milwaukee, Wis.	Timothy C	48 92		94.00		2-34		
			Alsike Clover C	49 12		84.00	11.00	2-34		C None
			Timothy F	46.29		87 00		4-35		
			Alsike Clover F	52.33	0.79	90.50	6.00	4-35	5,715	F Curled dock 18; red sorrel 72

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*Not labeled.

†Certified by Retailer.

C and F stands, respectively, for Claimed and Found.

[283] Removed from sale. Misbranded. Returned to distributor.

[284] Removed from sale. Misbranded. All sold.

[285] Not tagged. Labels furnished.

[286] Removed from sale. Misbranded. Wholesaled.

MIXTURES—Continued

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, per cent	Inert Matter, per cent	Germination, per cent	Hard Seeds, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds	Number per Pound of each of the Noxious Weed Seeds Specified in the Law
6707	Peoples Hardware, Inc., Gary[287]	Van Camp Hardware Co.,	Ky. Blue Grass C	25.50	......	75.00	......	3-35	......	
	Shado Lawn Seed	Indianapolis, Ind.	Red Top C	27.50	......	85.00	......	3-35	......	
			Rough Stalked Meadow Grass C	8.75	......	90.00	......	3-35	......	
			New Zealand Chewing Fescue C	8.50	......	50.00	......	3-35	......	
			White Clover C	4.75	......	85.00	......	3-35	......	
			Rye Grass C	9.75	......	80.00	......	3-35	......	C None
			Ky. Blue Grass F	26.81	......	70.00	......	7-35	......	
			Red Top F	33.40	12.70	94.75	......	7-35	......	
			Rough Stalked Meadow Grass F	4.31	......	......	......	7-35	......	
			New Zealand Chewing Fescue F	3.42	......	......	......	7-35	......	
			White Clover F	3.91	......	......	......	7-35	......	
			Rye Grass F	14.45	......	87.00	......	7-35	12,645	F Buckhorn 540; ox-eye daisy 90; red sorrel 270; yellow trefoil 45
6608	†Vonnegut Hardware Co., Indianapolis[288]	Whitney-Eckstein Seed Co.,	Ky. Blue Grass C	42.36	......	92.00	......	12-34	......	
	Vonnegut's Best Lawn Seed, Lot 68038	Buffalo, N. Y.	Red Top C	28.78	......	92.00	......	12-34	......	
			Chewing Fescue C	8.45	......	86.00	......	12-34	......	
			White Clover C	5.40	......	88.00	......	12-34	......	C Red sorrel 900
			Ky. Blue Grass F	43.36	......	65.00	......	6-35	......	
			Red Top I	29.40	14.41	94.25	......	6-35	......	
			Chewing Fescue F	7.26	......	80.00	......	6-35	23,580	F Buckhorn 225; curled dock 45; ox-eye daisy 270; red sorrel 990

*Not labeled.
†Certified by Retailer.
C and F stands, respectively, for Claimed and Found.

[287] Removed from sale. Misbranded. Returned to distributor.

[288] Removed from sale. Misbranded. Retagged.

GARDEN SEED

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, per cent	Inert Matter, per cent	Germination, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds		Number per Pound of each of the Noxious Weed Seeds Specified in the Law
6643	Central Sugar Co., Decatur	Central Sugar Co.,	C	99.00		80.00	3-35		C	None
	Sugar Cane Beet	Decatur, Ind.	F	99.04	0.89	84.00	5-35	8	F	None
6644	Central Sugar Co., Decatur	Central Sugar Co.,	C	99.00		80.00	3-35		C	None
	Sugar Cane Beet	Decatur, Ind.	F	99.08	0.89	81.00	5-35	27	F	None
6652	Central Sugar Co., Decatur[289]	Central Sugar Co.,	C	99.00		80.00	3-35		C	None
	Beet Seed	Decatur, Ind.	F	94.91	4.97	78.50	5-35	63	F	None
6648	*Gast, W. K., Akron	Quirk, John B.,	C						C	
	Red Cord Chantenary Carrot	North Madison, Ohio	F	96.08	3.87	63.50	5-35	225	F	None
6646	*Gast, W. K., Akron	Banks, King L.,	C						C	
	Mountain Denvers Onion Seed	Delta, Colo.	F	99.96	0.04	93.00	5-35		F	None
6217	Campbell & Co., Kendallville	Campbell & Co.,	C	99.00		90.00	1-35		C	None
	Yellow Globe Onion	Kendallville, Ind.	F	99.84	0.16	96.50	3-35		F	None
6223	Campbell & Co., Kendallville	Campbell & Co.,	C	99.00		90.00	1-35		C	None
	White Globe Onion	Kendallville, Ind.	F	99.75	0.25	83.00	3-35		F	None
6213	*Ort & Co., Churubusco	Ferry-Morse Seed Co.,	C			90.00	12-34		C	
	Southport Yellow Globe Onion	Detroit, Mich.	F	99.97	0.03	88.50	3-35		F	None
6214	*Ort & Co., Churubusco	Ferry-Morse Seed Co.,	C			87.00	12-34		C	
	Southport Yellow Globe Onion, Brigham Strain	Detroit, Mich.	F	99.86	0.14	91.00	3-35		F	None
5761	Wedrick & Co., W. R., Silver Lake[290]	Ferry-Morse Seed Co.,	C			88.00			C	
	Southport Red Globe Onion	Detroit, Mich.	F	99.42	0.58	83.50	3-35		F	None
5762	Wedrick & Co., W. R., Silver Lake[291]	Ferry-Morse Seed Co.,	C			90.00			C	
	Southport Yellow Globe Onion, Brigham Strain	Detroit, Mich.	F	99.95	0.05	91.00	2-35		F	None
5763	Wedrick & Co., W. R., Silver Lake[292]	Ferry-Morse Seed Co.,	C			92.00			C	
	Southport White Globe Onion, Lot 6751	Detroit, Mich.	F	99.86	0.14	97.50	2-35		F	None
6647	*Gast, W. K., Akron	Herbst Bros., Inc.,	C						C	
	Sweet Spanish Valeria Onion	New York, N. Y.	F	99.46	0.54	83.50	5-35		F	None
6222	*Ort & Co., Churubusco	Klitgord, M.,	C			90.00	1-35		C	
	Southport White Globe Onion	Lima, N. Y.	F	99.98	0.02	85.00	3-35		F	None
6212	*Ruderman, Louis, La Otto	Klitgord, M.,	C			90.00	1-35		C	
	Sweet Spanish Onion	Lima, N. Y.	F	99.90	0.10	87.00	3-35		F	None
6215	*Ruderman, Louis, La Otto	Klitgord, M.,	C			90.00	1-35		C	
	Early Yellow Globe Onion	Lima, N. Y.	F	99.92	0.08	91.50	3-35		F	None
6219	*Ruderman, Louis, La Otto	Klitgord, M.,	C			88.00	1-35		C	
	Southport Red Globe Onion	Lima, N. Y.	F	99.99	0.01	86.00	3-35		F	None

*Not labeled.
†Certified by Retailer.
C and F stands, respectively, for Claimed and Found.

[289] Removed from sale. Misbranded. Retagged.

[290] Tag incomplete.

[291] Tag incomplete.

[292] Tag incomplete.

GARDEN SEED—Continued

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, per cent	Inert Matter, per cent	Germination, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds		Number per Pound of each of the Noxious Weed Seeds Specified in the Law
6221	*Ruderman, Louis, La Otto	Klitgord, M.,	C	......	......	89.00	1-35	....	C	
	Southport White Globe Onion	Lima, N. Y.	F	99.96	0.04	90.00	3-35	....	F	None
6649	Gast, W. K., Akron	Quirk, John B.,	C	99.70	....	88.00	12-34	....	C	None
	Southport Yellow Globe Onion	North Madison, Ohio	F	99.76	0.24	84.50	5-35	....	F	None
6650	Gast, W. K., Akron	Quirk, John B.,	C	99.80	......	88.00	11-34	....	C	None
	Southport White Globe Onion	North Madison, Ohio	F	99.98	0.01	92.00	5-35	45	F	None
6242	Strock, Frank, Hudson	Quirk, John B.,	C	99.80	.....	85.00	11-34	....	C	None
	Southport Yellow Globe Onion	North Madison, Ohio	F	99.92	0.08	88.50	3-35	....	F	None
6251	Strock, Frank, Hudson	Quirk, John B.,	C	99.80	.....	85.00	11-34	....	C	None
	Southport White Globe Onion	North Madison, Ohio	F	99.79	0.14	91.00	3-35	135	F	Wild carrot 45
6218	Ort & Co., Churubusco	Wedrick & Co., W. R.,	C	99.00	....	90.60	1-35	.....	C	None
	Southport Red Globe Onion, Lot 1	Silver Lake, Ind.	F	99.88	0.12	86.00	3-35	...	F	None

*Not labeled.
†Certified by Retailer.
C and F stands, respectively, for Claimed and Found.

MISCELLANEOUS

Laboratory No. S	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, per cent	Inert Matter, per cent	Germination, per cent	Hard Seeds, per cent	Date of Germination	Total Number Weed Seeds per lb. of Seeds		Number per Pound of each of the Noxious Weed Seeds Specified in the Law
5440	†Jefferson Co. Farm Bureau Co-op. Assn., Inc., Madison	Sample, John L.,	C	92.00	.....	85.00	.....	8-34	....	C	None
	Barley, Lot Gray	Madison, Ind.	F	97.09	1.27	99.50	.....	9-34	700	F	Buckhorn 4; curled dock 4
6622	Ruff Hardware, Inc., J. J., Hammond[293]	Ostberg Seed Co.,	C	99.10	.....	90.00	.....	1-35	....	C	None
	Creeping Bent Grass	Chicago, Ill.	F	98.06	1.74	95.00	.....	6-35	5,400	F	None
5677	Indiana Seed & Plant Co., Richmond	Indiana Seed Co.,	C	90.00	.....	78.00	.....	2-34	....	C	None
	Chewing Fescue, Lot 1235	Indianapolis, Ind.	F	98.56	1.04	63.50	.....	3-35	468	F	Red sorrel 18
5676	Indiana Seed & Plant Co., Richmond	Indiana Seed Co.,	C	98.20	.....	90.00	.....	1-34	....	C	Curled dock 360; red sorrel 108
	Meadow Fescue, Lot B22	Indianapolis, Ind.	F	98.52	0.85	90.50	.....	2-35	1,332	F	Curled dock 288; red sorrel 54
6592	Naber, Chas. F., Alexandria	Indiana Seed Co.,	C	95.00	.....	85.00	.....	9-34	....	C	Buckhorn 90; curled dock 360; red sorrel 900
	Meadow Fescue, Lot B36	Indianapolis, Ind.	F	95.96	1.25	97.50	.....	5-35	7,056	F	Bracted plantain 9; buckhorn 117; curled dock 153; red sorrel 657
6602	Schuh Bros. Co., Indianapolis[294]	Indiana Seed Co.,	C	92.00		85.00	.....	9-34	....	C	None
	Poa Trivialis, Lot 9A	Indianapolis, Ind.	F	91.76	0.28	70.50	.....	7-35	9,495	F	Ox-eye daisy 45
6610	†Vonnegut Hardware Co., Indianapolis[295]	Whitney-Eckstein Seed Co.,	C	96.49	.....	84.00	.....	1-35	....	C	None
	Poa Trivialis, Lot 2681	Buffalo, N. Y.	F	93.29	6.12	84.00	.....	6-35	12,150	F	None
5441	†Jefferson Co. Farm Bureau Co-op. Assn., Inc., Madison	Sample, John L.,	C	98.00	.....	90.00	.....	7-34	....	C	None
	Rye	Madison, Ind.	F	97.99	1.57	94.50		9-34	....	F	None
5439	Main Feed Store, Madison[296]	Scott Seed Co.,	C	98.00	....	90.00	..	7-34	.....	C	None
	Rosen Rye	New Albany, Ind.	F	94.18	3.80	72.00	..	9-34	120	F	Corn cockle 4; mustard 4
6312	Hartford City Milling Co., Hartford City	Allied Seed Co., Inc.,	C	99.00	.	90.00	..	1-35	....	C	None
	Rye Grass, Lot B2	Fort Wayne, Ind.	F	99.64	0.10	91.00	....	4-35	549	F	Bracted plantain 9; buckhorn 99; common plantain 9; curled dock 45; red sorrel 27
5678	Indiana Seed & Plant Co., Richmond	Indiana Seed Co.,	C	99.00	...	95.00	.	10-33	......	C	Curled dock 90; red sorrel 800
	Italian Domestic Rye Grass, Lot I1101	Indianapolis, Ind.	F	98.82	0.36	91.50	.	2-35	3,393	F	Curled dock 63; red sorrel 1,170
6623	Minas, E. C., Hammond[297]	Johnson, Inc., J. Oliver,	C	99.00	...	90.00	.	2-35	....	C	None
	American Rye Grass	Chicago, Ill.	F	99.70	0.08	73.50		5-35	396	F	Red sorrel 36
6696	Gary Seed Store, Gary	Vaughan's Seed Store,	C	97.42		79.00	....	5-34	.....	C	None
	Perennial Rye Grass, Lot 2080G	Chicago, Ill.	F	98.39	1.19	85.00	....	6-35	1,638	F	Buckhorn 9; red sorrel 9

*Not labeled.
†Certified by Retailer.
C and F stands, respectively, for Claimed and Found.

[293] Removed from sale. Misbranded. Retagged.

[294] Removed from sale. Misbranded. All sold.

[295] Removed from sale. Misbranded. Retagged.

[296] Removed from sale. Misbranded. Returned to distributor.

[297] Removed from sale. Misbranded. Returned to distributor.

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Circular No. 214 January, 1936

Purdue University
Agricultural Experiment Station
Lafayette, Indiana

UNIVERSITY

ELECTRICITY SERVES THE FARM HOUSEHOLD

Gail M. Redfield, *Department of Home Economics*
Truman E. Hienton, *Department of Agricultural Engineering*

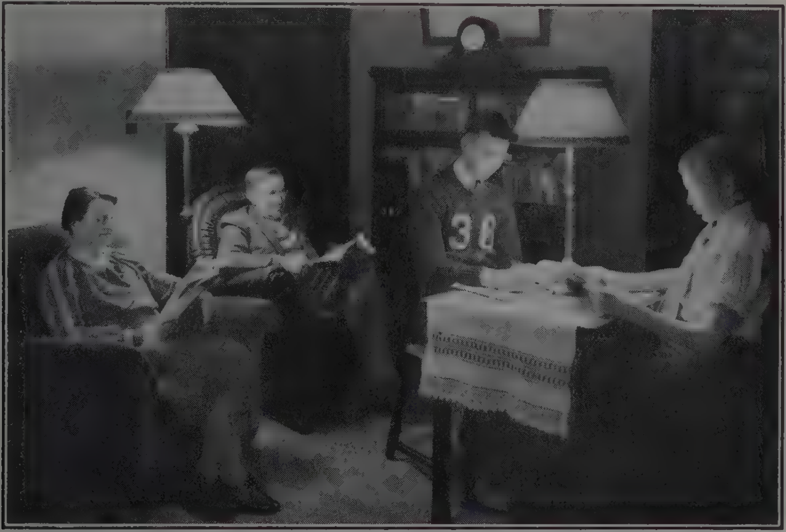

Figure 1. Lamps of proper design provide adequate light at low cost.

The two reading lamps used in this Tipton County farm home are designed to provide adequate light and eliminate glare. A lamp of this type will consume one kilowatt-hour in ten hours and will cost from one-half to three-fourths of a cent per hour for electricity.

Electricity lightens the work of the homemakers on more than 35,000 Indiana farms and, with the constantly increasing spread of rural electric lines, will do the same for many others in the future. As a source of light, heat and power, electricity has become an indispensable servant to homemakers in making their farm homes more livable and their care less laborious.

Extension of electric service and the adoption of electric equipment has taken place largely during the past decade. Results of a survey of 496 Indiana electrified farms by the Agricultural Experiment Station in 1925 revealed that electricity was employed very sparingly in the household, frequently only for lighting purposes. The situation at that time stimulated the initiation of studies on electric household equipment on Indiana farms by the Agricultural Experiment Station. Many different articles of equipment were installed under its direction in the houses of the experimental farms near Bedford and Wanatah and in those of six co-operators on the Pinney-Purdue experimental electric line in LaPorte County. Each article was individually metered and its electric consumption recorded monthly for a period of three years. Additional data were obtained for a period of one year by individual metering of equipment in 49 farm households located in the following counties: Allen, Bartholomew, Clinton, Delaware, Elkhart, Fountain, Grant, Hamilton, Howard, Marion, St. Joseph, Vanderburg, Vigo, Wabash and Wells.

Illumination of the house has been the first thought for using electricity in the past, but other applications, such as the radio and pump, are now considered just as important. Electric power for pumping water for household uses, running the refrigerator, operating the vacuum cleaner, and other small motor-driven equipment is desired by farm homemakers. Electric heat for the iron or ironer, for cooking food, heating water, and other appliances likewise is of interest to them.

Lighting

Good lighting probably contributes more than any other single item to the comfort and happiness of the farm family. It is used by every member of the family several hours every day during a large portion of the year. Records of electric consumption on 56 Indiana farms for 1934 indicate that electricity used for lighting averages from 10 to 20 kilowatt-hours per month throughout the year.

Adequate lighting equipment gives good light at all work, study and reading centers and is so shaded that there is no glare. Special, as well as general lighting, should be provided in practically all rooms. A single center fixture in the kitchen gives a general light to the rooms, but at most work centers, such as the sink or range, the homemaker's shadow frequently obscures her work. Separate fixtures should be provided to care for these work centers when necessary. Similarly, in the living room, additional light should be provided at the desk or table and near each reading center. Light at these places is usually provided by portable lamps.

Attractive lamp shades add to the decorative scheme of any room but should be selected primarily from the standpoint of efficiency. Lamps are available which are especially designed for reading such as those shown in Figure 1. These lamps are designed to give adequate and efficient light and safeguard the eyes.

Water Supply

Electric motors provide a convenient and economical source of power for pumping water. Many forms of power may be used to drive the pump but none are as easy to control automatically nor usually as economical to operate as the electric. Studies for an entire year on five Indiana farms reveal that an average of 2.1 kilowatt-hours were consumed per month by shallow-well pumps to furnish all the water used in the house including bathroom and kitchen sink. On four other farms, where two deep-well and two shallow-well pumps were installed, the energy consumption for pumping water used on the entire farm, as well as in the household, averaged 6.2 kilowatt-hours per month for the year.

Running water eliminates labor in pumping and saves many steps required in carrying water from the cistern or well to the kitchen. It also makes the use of a sink more convenient and furnishes the supply required for the installation of a bathroom. Pressure systems are often installed and operated by hand or other power. The substitution of an electric motor as the power unit is a simple matter when electric service becomes available.

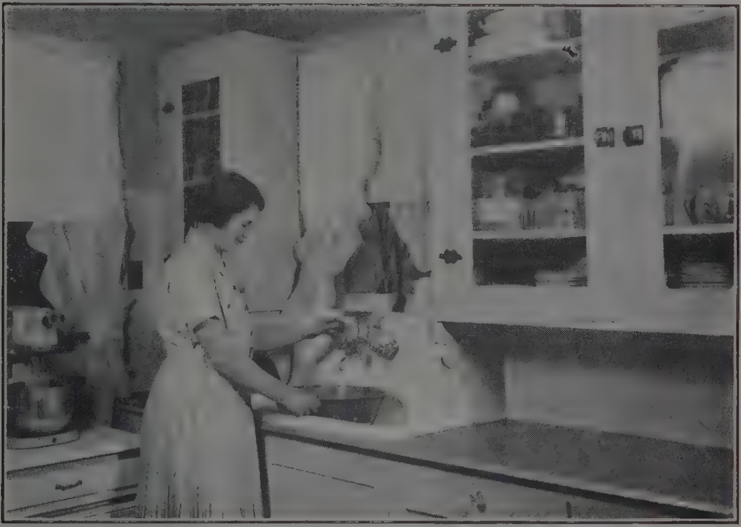

Figure 2. Running water is provided automatically by electric pumps for a few cents per month for power.

Water under pressure eliminates endless steps and labor spent in pumping and carrying it on this farm in Delaware County. On five Indiana farms, 2.1 kilowatt-hours were used per month by automatic shallow-well pumps to provide water for the household.

Laundry

Laundry work is one of the hardest jobs in the average farm home due largely to the lack of adequate equipment and facilities. The washing and ironing must be done at least once a week and it is work that needs and deserves good equipment.

The electric washer not only cuts down much of the hard labor involved in washing but also reduces the time required. Studies have shown that time consumed with an electric machine is about one-third that required with the washboard and one-half that with hand-power equipment.

An electric washer uses very little electricity. Records obtained for a year, for washing in 13 Indiana farm homes, show an average consumption of 2.32 kilowatt-hours per month. The amount used varied from 0.5 kilowatt-hour in a family of two to 4.0 kilowatt-hours in two larger families. A portable or small stationary motor may be attached to a hand-power washer to convert it into an electrically driven machine.

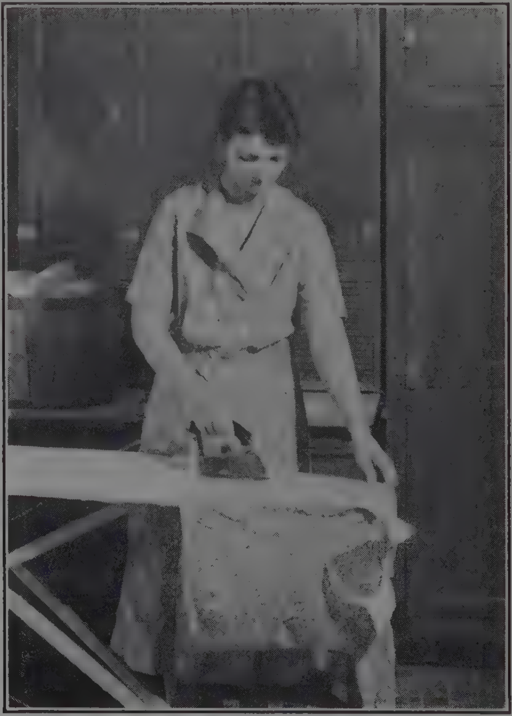

Figure 3. The electric iron is one of the first electrical appliances purchased after electric service is obtained.

The ironing can be done with an electric iron in two-thirds the time required with the use of sadirons. According to records obtained in Indiana farm homes, irons consume an average of 4.6 kilowatt-hours per month. The large sole plate of this new light-weight, high-wattage iron aids this Delaware County farm housewife in reducing the time and energy expended in ironing.

The electric iron is often the first single piece of equipment secured for use in homes after electricity has been obtained. It saves time and energy, is convenient, and has both low initial and operating costs. Records kept for the Agricultural Experiment Station show that the electric hand iron uses an average of 4.6 kilowatt-hours per month with a range in consumption from 1.7 to 6.3 kilowatt-hours. Many irons, now being manufactured, are light in weight, have large sole plates and automatic temperature controls. These features reduce the time and energy required for ironing. Studies have shown that the ironing can be done in about one-third less time with an electric iron than with sadirons.

An ironer is useful where there are large amounts of ironing to be done and can be used for practically the whole ironing at a saving of at least half the time required with the electric hand iron. It will use an average of 14.0 kilowatt-hours per month according to records obtained in five Indiana farm homes. There are two general types of ironers, the rotary type and the press type, both of which have been found satisfactory. The temperature of the shoe is automatically controlled on many ironers, usually by a separate control for each end. On some models, the temperature must be controlled by the operator.

Water Heating

Heating an adequate supply of water for household use is an important problem on the farm. The modern electric water heater is attractive in appearance and may be placed in any convenient location. It is entirely indepen-

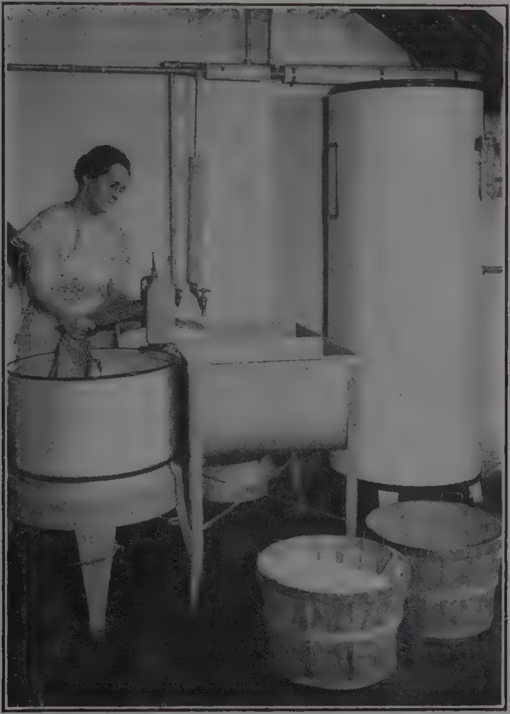

Figure 4. Full-automatic electric water heaters furnish a constant supply of hot water for the laundry, kitchen and bathroom.

On this farm near Selma, the electric washing machine, running water and automatic electric water heater minimize washday labors. Special water heater rates make the cost for hot water approximately ten cents a day. Washing machines use one-half kilowatt-hour per week.

dent of any fire, does not require a chimney, and demands practically no attention. The proper connection to an electric outlet and the ordinary piping connections for both hot and cold water are all that are necessary for its installation. A special circuit is required for a water heater but, if 110-220 volt service is available in the house, the necessary wiring for the water heater can be installed at very little cost.

Water heating rates are available from 1.0 to 1.3 cents per kilowatt-hour for 24-hour operation in practically all sections of Indiana. Special off-peak water heating rates are available in some sections of the state and, in this class of service, water is heated only during certain specified hours, usually during the night. Five household water heater installations of the full-automatic type used an average of 254.3 kilowatt-hours per month on Indiana farms. Good insulation of the water-storage tank is essential to efficient operation.

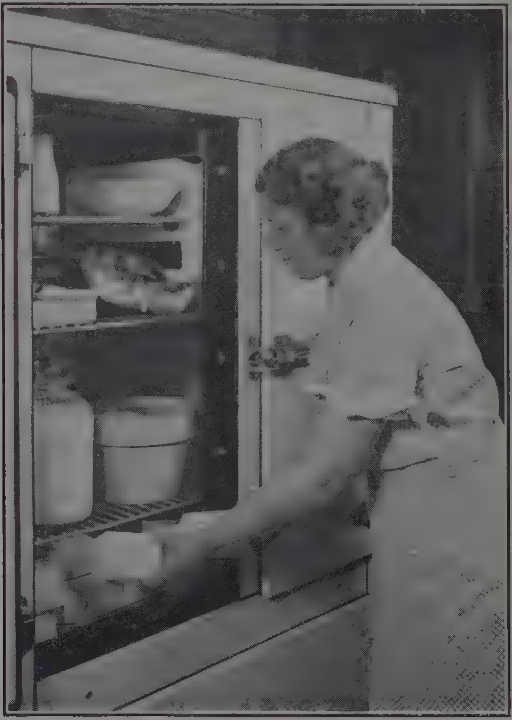

Figure 5. Electric refrigerators preserve farm produce in good condition for table use or sale.

This large electric refrigerator in a Delaware County home, like many others in the state, is used for the storage of both household foods and marketable produce. Household refrigerators on Indiana farms use an average of 48.0 kilowatt-hours per month when operated the entire year.

Refrigeration

The procurement of adequate refrigeration, which is necessary for the proper storage of foods, is one of the biggest problems in the average farm home. This is seldom possible without some type of mechanical refrigeration due to difficulty in obtaining satisfactory ice service. Thirteen electric refrigerators in farm households used an average of 48.0 kilowatt-hours a month, when operated throughout the year, according to records kept for a year on Indiana farms. The average consumption per month varied from 33.9 to 63.3 kilowatt-hours. Four others, used by small families, were operated only during the summer months and averaged 45.1 kilowatt-hours. The capacities of the refrigerator cabinets included were four of 5 cubic feet, three each of 4, 6 and 7 cubic feet, and one each of 5½, 9, 11 and 12 cubic feet.

A recent survey of 144 mechanical refrigerators, in use on Indiana farms, disclosed the fact that 36 or 25 per cent were used partially for the storage of marketable produce. An example of this use of a refrigerator on a Delaware County farm is shown in Figure 5. Marketable produce, such as butter, eggs, cream, poultry, fresh fruits and vegetables, is stored as well as freshly butchered meats which are held in the refrigerator until used.

This survey also showed that the average capacity of refrigerators, in which marketable produce is stored, is 6.86 cubic feet and 6.29 cubic feet for refrigerators used only for storing household foods. Of the refrigerators in which marketable produce is stored, 84.8 per cent are operated the entire year while only 60.4 per cent of the others are operated for the same time.

The degree of satisfaction, which any user will get from her refrigerator, will depend on how it is used. Proper operation, which insures the best results, includes a study of the best placing of foods in the refrigerator. Liquids and moist foods should always be covered, and all foods should be cooled to room temperature before they are put into the refrigerator for the greatest economy in operation.

Cooking

Electric energy for cooking is safe, clean and efficient and is becoming more popular in rural Indiana homes with the decrease in electric rates and recent improvements in electric ranges. Cooking rates are available at 2½ to 3 cents per kilowatt-hour in most localities in the state. These rates make electricity compare very favorably in cost with fuels in common use. Records kept for a year on the energy consumption for cooking in 20 Indiana farm homes showed an average of 116.6 kilowatt-hours per month, varying from 53.0 in a family of two to 318.5 in a family of eleven.

Energy is consumed by an electric range only while cooking is actually in progress and is conserved by the thermostatic control when the oven is used. The insulation in the oven of an electric range reduces the heat lost, thus making the kitchen more comfortable during the summer months. Combination coal or wood and electric ranges are often used where there is no heat other than that supplied by the range to provide the necessary heat for the kitchen during cold weather. Records show that when electricity is used for cooking the time required in the care and cleaning of the range is only 26 minutes a week. An average of three hours and two minutes a

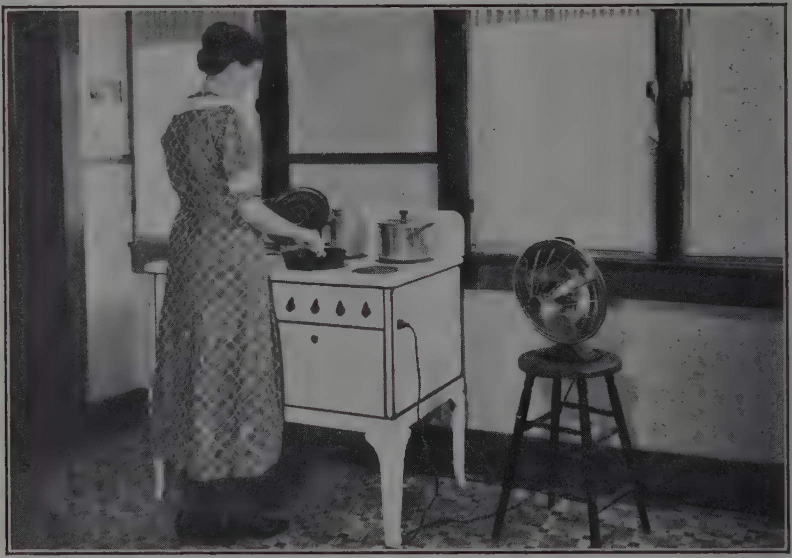

Figure 6. Electricity for cooking is appreciated in the farm home for its safety, convenience and time saving.

Records obtained in Indiana farm homes show that electricity used for cooking averages four kilowatt-hours per day. An electric heater furnishes auxiliary heat, when it is needed, to maintain a comfortable temperature in a kitchen like this one in Howard County which has no furnace outlet.

week was spent by the homemaker in kindling fires, carrying fuel, removing ashes, and cleaning stoves with wood and coal ranges.*

The homemaker largely controls the amount of electric energy used for cooking by her care in handling the equipment. Two identical ranges, on which records were obtained in one locality in Indiana, were operated by women cooking for the same size families. One woman used an average of 58.1 kilowatt-hours per month while the other used 97.3 kilowatt-hours.

Radio

The radio has probably done more to eliminate the isolation of the farm home than any other single article and is considered by many farm people as a necessity. Recent figures show that 32 per cent of Indiana farms are equipped with radios. There is no other agency which provides in one instrument the same variety of information and entertainment as does the radio. It furnishes the latest news, programs of interest to the homemaker and facts to assist the farmer in planning his field work, and market reports to help in disposing of farm produce.

Radios operated directly from electric outlets use from 50 to 100 watts, or one kilowatt-hour in 10 to 20 hours. They are available for either 110- or 32-volt circuits. The operation from a lighting circuit eliminates the necessity for keeping a storage battery charged and the purchase of dry cells.

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*Bul. No. 339 Fuels Used for Cooking Purposes in Indiana Rural Homes.

Cleaning

Cleaner rooms result from the use of a vacuum cleaner and the labor and time involved in cleaning a house are considerably less than with a broom. Special attachments are available for a cleaner, operated by the same motor, for cleaning upholstered furniture, draperies, mattresses, pillows and the interior of automobiles. Small hand machines are also available for this type of cleaning. A vacuum cleaner has a small motor and operates at a very low cost. Records in three Indiana farm homes for a year show an average use of 1.8 kilowatt-hour per year, with a variation from 1.5 to 2.1.

Small Heating Appliances

The electric toaster is used in farm homes because of its low first cost and practically daily demands. A more desirable product can be obtained using a toaster at the table than when using any one of the old types on the range. A regular toaster is less expensive to operate than either a surface unit toaster or the oven of an electric range. Many toasters are automatic, so bread toasted the exact amount desired by each member of the family is obtained at the table with little attention on the part of the homemaker. In the average family, a toaster uses about four kilowatt-hours per month.

Waffle irons offer many variations to the menu for, in addition to plain waffles, ginger bread, cakes and fritters can be baked on them. The waffle iron can be used at the table to prepare the main part of any meal, the

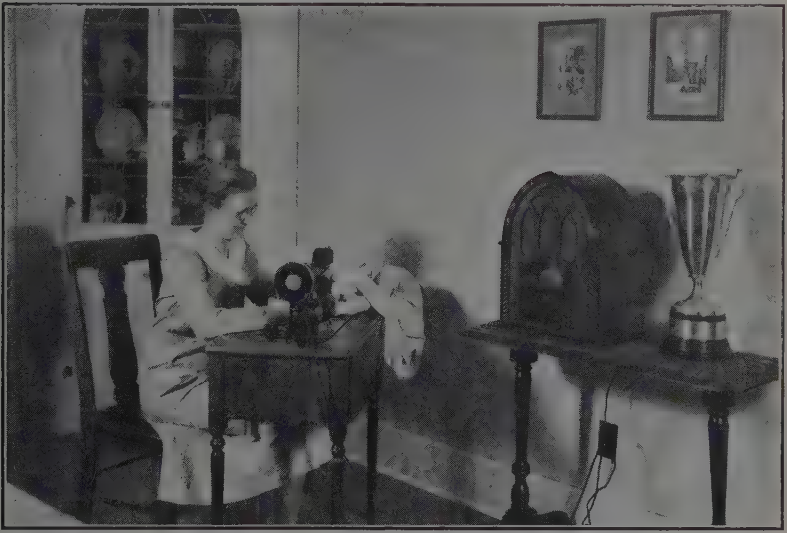

Figure 7. Radios lessen the isolation of the farm family for less than half a cent an hour spent for electricity.

Varied entertainment and educational programs are available at any hour. This Delaware County homemaker enjoys these while she sews for her family. The sewing machine uses less than one kilowatt-hour a month for its operation.

dessert, or the Sunday night supper. Uniform products result from the use of the automatic type waffle iron. Approximately 0.1 kilowatt-hour per person is consumed by the waffle iron each time it is used.

Consumption of electric energy by coffee makers and percolators varies with the wattage of the heating element and the amount of use of the equipment. The most common types will operate one and one-half hours on one kilowatt-hour. Other small electrically heated appliances in use in farm homes include the hot plate or table stove, room heater, egg cooker, well-type cooker, portable electric oven, tea kettle and small immersion type water heater. These last mentioned electric cooking devices are used very frequently as auxiliary appliances in homes that do not have an electric range.

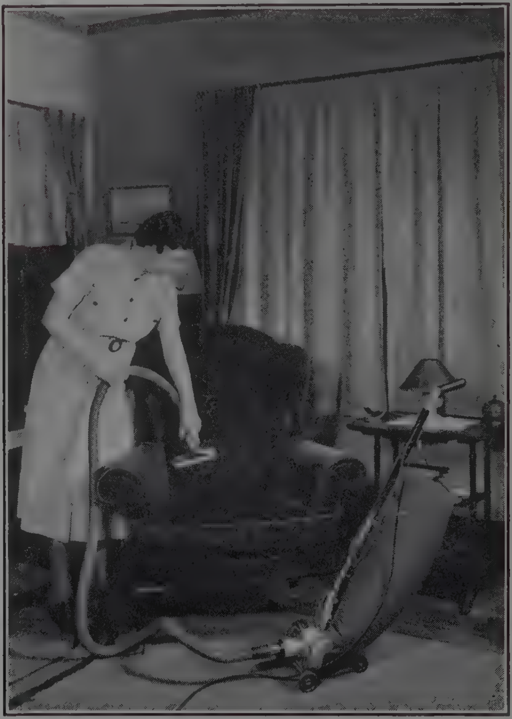

Figure 8. Household cleaning problems are simplified by the use of a vacuum cleaner at a power cost of one cent a month.

The vacuum cleaner is a real help to this farm homemaker, who resides near Muncie, in cleaning rugs. Attachments are used to clean the floors, walls, draperies, upholstered furniture and to spray paint.

Small Motor-Driven Appliances

The electric mixer is increasing in popularity in rural homes because of its variety of uses. It is used not only for mixing, beating and whipping, but may also be equipped with a variety of attachments for grinding, grating and slicing. Some farm homemakers use their mixers regularly for churn-

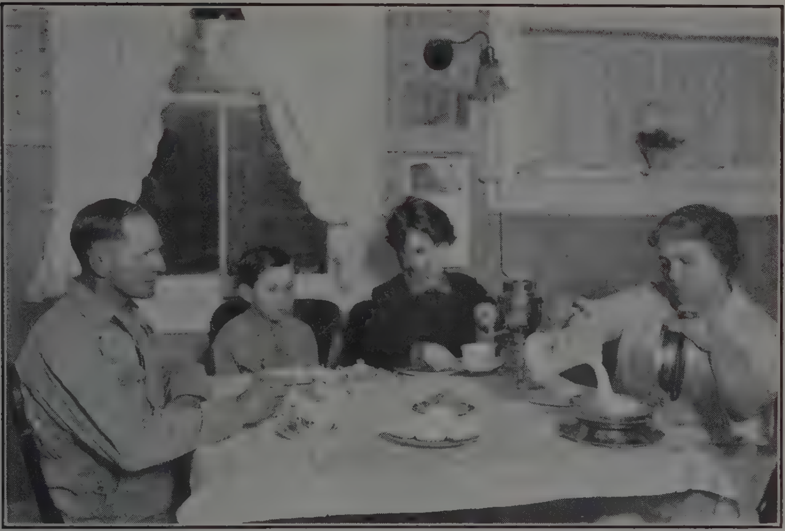

Figure 9. Electric cooking appliances make possible the preparation and serving of hot foods at the table as wanted.

The waffle iron and percolator in this Elkhart County farm home are used to prepare a favorite breakfast at a cost of less than five cents a meal spent for electricity.

ing, as seen in Figure 10. Mixers consume a very small amount of electric energy and will usually operate about ten hours on one kilowatt-hour.

Many women do a large part of the family sewing and find that an electrically driven sewing machine lightens the burden materially. A foot-power machine is tiresome to operate and reduces the amount of sewing which can be done in a given length of time when the operator provides the power. The majority of sewing machines may be purchased with motor drive but farm women have found the addition of a small motor to their foot-power machines entirely satisfactory. The sewing machine motor is so small its energy consumption will rarely exceed one kilowatt-hour of electricity per month even when a great deal of sewing is done.

The electric fan adds much to the comfort of the home on a hot day. It may be used in the kitchen while work is in progress there and is easily moved to other rooms when the kitchen tasks are finished. Household electric fans, as well as ventilating fans, can be used to force odors out of the kitchen and bring in fresh air. The electric energy used by a fan will depend upon its size but the common 8-inch fan is operated for 25 hours by one kilowatt-hour of electricity.

The electric clock, which requires no winding, oiling or regulating, is used in many homes and renders a valuable service as an accurate time keeper. The motor in the clock is so small that it uses only two to four watts and consumes from one to three kilowatt-hours per month. Some clocks are entirely automatic, that is, will continue operation despite a current interruption. A second type will start again as soon as the current is available but must be reset. A third type must be started and set by hand after any current interruption.

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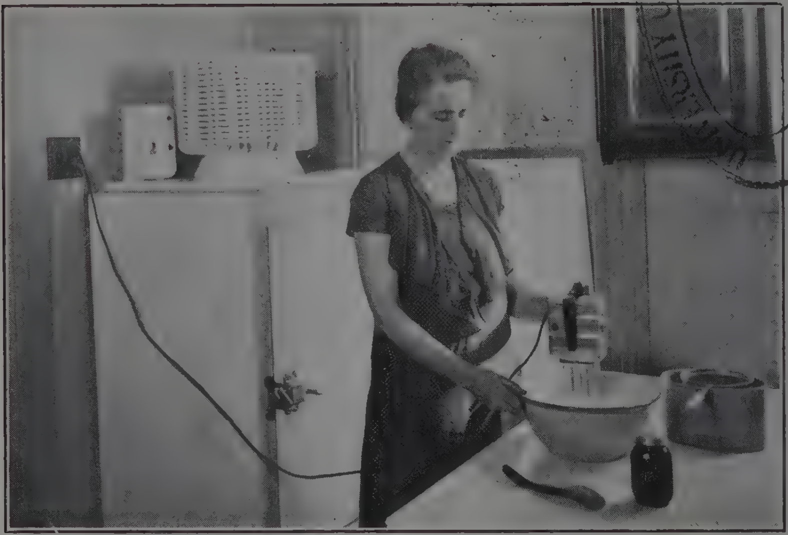

Figure 10. The electric mixer, with its attachments, performs many household tasks for less than one cent per hour power cost.

In addition to mixing, beating and whipping, the mixer on this farm near Matthews is used regularly for churning. Available attachments for some mixers include such equipment as fruit juice extractor, knife sharpener, food chopper and grater.

Table 1. Current Consumption of Household Equipment on Indiana Farms

Article	Consumption	Average
House lighting	10 - 20 kw.-hr. per month	
Water supply	2.1 kw.-hr. per month (house only)	
	6.2 kw. hr. per month (house and farm)	
Washing machine	0.5 - 4.0 kw.-hr. per month	2.3
Iron	1.7 - 6.3 kw.-hr. per month	4.6
Ironer	14.0 kw.-hr. per month	
Water heater	254.3 kw.-hr. per month	
Refrigerator	33.9 - 63.3 kw.-hr. per month	48.0
Range	53.0 -318.5 kw.-hr. per month	116.6
Sewing machine	less than 1.0 kw.-hr. per month	
Toaster	4 kw.-hr. per month	
Clock	1 - 3 kw.-hr. per month	
Vacuum cleaner	1.5 - 2.1 kw.-hr. per year	1.8 per year
Radio	1 kw.-hr. for 10-20 hours operation	
Waffle iron	0.1 kw.-hr. per person per meal	
Coffee maker	0.16 kw.-hr. per meal	
Mixer	1 kw.-hr. for 10 hours operation	
Fan, 8-inch	1 kw.-hr. for 25 hours operation	

Circular No. 215 January, 1936

TWENTY-FIRST ANNUAL REPORT

of the

CREAMERY LICENSE DIVISION

For the Year Ending March 31, 1935

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MILK HANDLED BY LICENSED PLANTS, 1920-1934

YEAR	Number of Licensed Plants	Pounds of Milk or Its Equivalent Handled by Licensed Plants	*Number of Milk Cows
1920	183	1,227,971,123	659,000
1921	198	1,350,320,469	653,000
1922	234	1,471,978,897	659,000
1923	220	1,439,266,503	652,000
1924	234	1,698,110,981	659,000
1925	243	1,758,946,467	679,000
1926	272	1,830,970,397	678,000
1927	307	2,132,280,140	680,000
1928	334	2,444,867,845	686,000
1929	344	2,434,039,990	693,000
1930	369	2,552,288,533	702,000
1931	372	2,912,519,251	722,000
1932	389	2,639,138,629	751,000
1933	401	2,598,374,017	774,000
1934	418	2,718,411,140	814,000
1935	....	....	795,000

*Indiana Crops and Livestock, 1935. Department of Agricultural Statistics.

TWENTY-FIRST ANNUAL REPORT OF THE CREAMERY LICENSE DIVISION

T. H. BINNEY

Indiana Dairy Statistics

At the time of applying for the renewal of creamery licenses, all creameries, milk plants, cheese factories, condenseries, etc., report the amount of butter, milk, cheese, or other dairy products made or sold during the year. With this information, together with figures supplied through a co-operative agreement with the United States Department of Agriculture, Bureau of Agricultural Economics, it is possible to compile reliable statistics concerning the total production of licensed dairy manufacturing plants.

The following table is a summary of the reports received from licensed plants for the years indicated:

OUTPUT OF LICENSED PLANTS IN INDIANA FOR 1914, 1923, 1933 AND 1934

	1914	1923	1933	1934
Pounds of Butter	26,636,520	51,662,093	76,508,061	77,061,858
Pounds of Milk	51,067,066	213,578,850	463,359,717	486,921,912
Pounds of Cream	5,421,838	14,501,004	24,930,340	27,640,066
Gallons of Ice Cream	2,035,874	4,447,157	3,077,146	3,346,232
Pounds of Cheese	211,922	373,943	17,616,875	23,362,975
Pounds of Sweetened Condensed Milk	1,019,400	7,127,541	3,217,549	2,733,998
Pounds of Evaporated Milk	10,106,800	16,098,231	38,153,894	41,175,957
Pounds of Bulk Evaporated Milk	2,450,988	10,130,565	21,041,576	22,095,158

By comparing the figures for 1934 with those for 1933 in the above table, it will be noted that with the exception of sweetened condensed milk all products show an increase. The increase in the amount of butter made is 553,797 pounds, or 0.7 per cent. A total of 486,921,912 pounds of milk and 27,640,066 pounds of sweet cream were sold in licensed plants during the past year. This represents an increase of 5.0 per cent of milk and 10.8 per cent of cream in 1934 as compared with 1933. The amount of ice cream manufactured during the past year shows an increase of 269,086 gallons, or 8.7 per cent. Cheese production increased 5,746,100 pounds, or 32.6 per cent. Sweetened condensed milk decreased 483,551 pounds, or 17.6 per cent; evaporated milk (case goods) increased 3,022,063 pounds, or 7.9 per cent, and bulk evaporated milk increased 1,053,582 pounds, or 5.0 per cent.

In addition to the above products, dairy plants of the state manufactured 14,724,932 pounds of condensed skim milk; 778,157 pounds of evaporated skim milk; 151,372 pounds of concentrated skim milk (for animal feed); 6,484,139 pounds of condensed or evaporated buttermilk; 4,553,144 pounds of dried or powdered skim milk, and 1,633,831 pounds of dried or powdered buttermilk.

The following tables give the amount of milk which goes into the various dairy products handled in licensed plants and the distribution of milk in the state.

DISTRIBUTION OF MILK IN LICENSED PLANTS

Creamery Butter Used	1,618,299,018 pounds or	59.5%
Cheese Used	233,629,750 pounds or	8.6%
Ice Cream Used	46,010,690 pounds or	1.7%
Condensed and Evaporated Used	165,012,782 pounds or	6.1%
Cream Used	168,536,988 pounds or	6.2%
Milk Used	486,921,912 pounds or	17.9%
Total	2,718,411,140 pounds or	100.0%

Partial Distribution of Milk in Indiana

Handled in Licensed Plants	2,718,411,140 pounds
Shipped into State	189,886,824 pounds
Shipped out of State	258,412,696 pounds
Fed to Calves*	71,000,000 pounds
Retailed by Producers*	213,000,000 pounds
Used as Whole Milk on Farms*	411,000,000 pounds
Making Farm Butter*	158,000,000 pounds

*Milk Production Trends United States Department of Agriculture, June 10, 1935.

Station Operation and Equipment

In order to answer a number of questions which are frequently asked regarding cream stations in Indiana, a study of the operation and equipment of stations was made during the past year. The state was divided into nine sections as shown on the map on page 5. The data secured in the study is recorded in the following table. Of the 1,323 stations studied, 1,192 were company-owned stations and 131 were operated independently.

	Sec. 1	Sec. 2	Sec. 3	Sec. 4	Sec. 5	Sec. 6	Sec. 7	Sec. 8	Sec. 9	Total
Number of Cream Stations	111	129	115	102	144	160	240	145	177	1,323
Company owned stations:										
Indiana Creameries	90	115	91	73	112	91	207	50	54	883
Out of State Creameries	7	0	8	23	21	41	16	83	110	309
Independent Stations:										
Selling in Indiana	12	14	12	6	11	25	16	7	10	113
Selling out of State	2	0	4	0	0	3	1	5	3	18
	%	%	%	%	%	%	%	%	%	%
Stations operated alone	18.4	13.4	21.5	21.9	37.2	24.2	11.8	17.9	37.4	22.5
Stations operated with another business	81.6	86.6	78.5	78.1	62.8	75.8	88.2	82 1	62.6	77.5
Days Operating:										
Daily	88.8	81.9	86.9	77.2	79.8	89.3	58.2	69.1	56.3	74.3
One day per week	1.6	3.9	1.9	10.4	5.5	4.0	12.7	17.1	19.0	9.1
Two days per week	6.4	11.8	5.6	7.3	11.6	4.7	26.4	11.4	20.7	13.3
Three days per week	3.2	1.6	2.8	3.1	2.3	2.0	2.3	.8	2.9	2.3
Four days per week	......	......	2.8	1.0	......	......	......	.8	......	.4
Five days per week	......	.8	......	1.0	.8	......	.4	.8	1.1	.6
Centrifuges:										
Electric	93.6	88.2	95.3	83.3	92.2	92.6	70.0	64.2	69.5	81.4
Steam	2.4	5.5	1.9	6.3	1.6	2.0	2.7	3.3	1.7	2.9
Hand	4.0	6.3	2.8	10.4	6.2	5.4	27.3	32.5	28.8	15.7
Hot Water Facilities:										
Oil stove	74.4	61.4	69.2	70.8	55.8	64.4	85.0	77.2	85.1	72.9
Gas	4.0	9.4	15.8	8.3	23.3	16.1	5.5	5.7	5.2	9.9
Steam	5.6	16.5	10.3	12.5	13.9	12.1	5.5	10.6	4.6	9.6
Hot Water System	5.6	7.2	1.9	1.0	......	.7	1.8	......	1.1	2.1
Coal Stove	10.4	5.5	2.8	7.4	7.0	6.7	2.2	6.5	4.0	5.5
Cream Balances:										
One bottle Torsion	60.8	55.9	39.3	62.5	59.7	53.7	71.0*	67.4†	40.8	57.3
Two bottle Torsion	27.2	31.5	25.2	29.2	24.0	12.8	19.5	26.8	35.7‡	25.4
Four Bottle Torsion	12.0	11.0	32.7	8.3	15.5	33.5	9.5	5.8	22.4	16.7
Twelve bottle Torsion	......	1.6	2.8	......	.8	......	......	......	1.1	.6

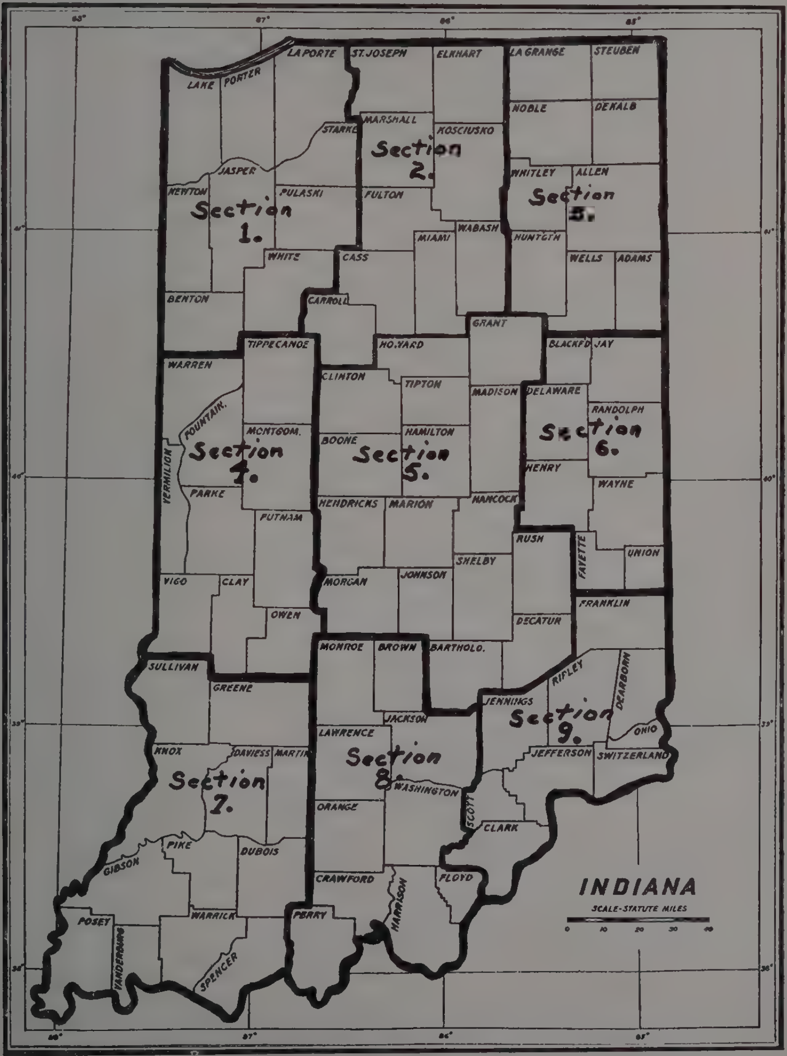
*Includes 4 Troemner Balances.
†Includes 3 Troemner Balances.
‡Includes 1 Troemner Balance.

Creamery Licenses

Every creamery, shipping station, milk factory, cheese factory, or person, agent, firm, company, association or corporation, receiving, buying and paying, for milk or cream on the basis of the amount of butterfat contained therein, shall be required to hold a creamery license. (Section 6, Chapter 340, Acts of 1913, Indiana.) The license is issued by the Purdue University Agricultural Experiment Station upon complying with the provisions of the Indiana Creamery and Testers' License Law. Such license is valid for a term of one year unless revoked by the Purdue University Agricultural Experiment Station.

During the past year 1,789 creamery licenses were issued. This is an increase of 33 over the previous year's total of 1,756. Plant licenses show a gain of 17 in number, while the number of station licenses show an increase of 16.

The following table is a summary of the kind of plants issued creamery licenses during the year ending March 31, 1935, and for previous years, as indicated.


88°
87°
86°
85°
LAKE
PORTER
LAPORTE
ST. JOSEPH
ELKHART
LA GRANGE
STEUBEN
NOBLE
DEKALB
STARKE
MARSHALL
KOSCIUSKO
Section 2.
JASPER
WHITLEY
ALLEN
Section
NEWTON
PULASKI
FULTON
Section 1.
WABASH
MIAMI
HUNTGTN
41°
WHITE
CASS
WELLS
ADAMS
BENTON
CARROLL
GRANT
TIPPECANOE
HOWARD
BLACKFD
JAY
WARREN
CLINTON
TIPTON
MADISON
DELAWARE
RANDOLPH
FOUNTAIN
MONTGOM.
BOONE
HAMILTON
Section 6.
Section 4.
Section 5.
VERMILION
HENRY
40°
PARKE
HENDRICKS
MARION
HANCOCK
WAYNE
PUTNAM
RUSH
FAYETTE
UNION
SHELBY
VIGO
CLAY
MORGAN
JOHNSON
OWEN
FRANKLIN
DECATUR
MONROE
BROWN
BARTHOLO.
SULLIVAN
GREENE
RIPLEY
DEARBORN
JENNINGS
Section 9.
JACKSON
39°
LAWRENCE
OHIO
KNOX
DAVIESS
MARTIN
Section 8.
JEFFERSON
SWITZERLAND
Section 7.
WASHINGTON
ORANGE
SCOTT
CLARK
PIKE
DUBOIS
GIBSON
CRAWFORD
HARRISON
FLOYD
INDIANA
SCALE-STATUTE MILES
0
10
20
30
40
POSEY
WARRICK
PERRY
VANDERBURG
SPENCER
38°

CREAMERY LICENSES ISSUED FROM 1929-1934, INCLUSIVE

PLANTS AND STATIONS	NUMBER AND YEAR					
	1929	1930	1931	1932	1933	1934
Butter	58	56	58	57	56	56
Milk	141	162	147	162	175	172
Ice Cream	16	18	16	12	14	14
Cheese	17	18	19	18	22	26
Condensed Milk	9	8	10	10	11	13
Butter and Milk	33	36	46	54	51	61
Butter and Ice Cream	13	10	13	9	11	5
Butter and Cheese	2	1	2	3	2	5
Butter, Milk, and Ice Cream	15	20	17	23	26	25
Butter, Milk and Condensed Milk	5	7	6	2	4	2
Butter, Milk, Cheese	0	0	0	0	0	2
Butter, Milk, Ice Cream and Condensed Milk	7	6	6	7	5	5
Butter, Milk, Ice Cream, Condensed Milk and Cheese	0	0	0	0	0	1
Butter, Ice Cream, Cheese	0	0	1	1	1	3
Butter, Milk, Cheese and Condensed Milk	1	0	0	1	1	1
Milk and Ice Cream	18	19	26	25	19	26
Milk and Condensed Milk	5	4	5	4	3	1
Total Number of Plants	344	369	372	389	401	418
Stations	1,588	1,524	1,457	1,363	1,355	1,371
Total Licenses Issued	1,932	1,893	1,829	1,752	1,756	1,789

The following table shows the number of plants which reported each of the five major products handled in licensed plants for the years indicated:

PRODUCT	NUMBER OF PLANTS REPORTING					
	1929	1930	1931	1932	1933	1934
Butter	134	136	149	158	157	166
Milk	229	257	254	279	281	296
Ice Cream	73	76	79	77	76	79
Cheese	21	20	22	22	26	38
Condensed Milk	30	28	31	25	24	23

Testers' Licenses and Examinations

To insure accurate tests to the producer and manufacturer, licensed testers are employed by all plants and stations where milk and cream are bought on a butterfat basis.

Before securing a license an operator must pass an examination which consists of both laboratory and written work. The laboratory work consists of testing samples of milk and cream in duplicate; the written work consists of answering twenty questions which pertain to the testing of milk and cream.

Five hundred and twelve candidates appeared for the testers' examination during the past year. This is an increase of ninety-one candidates over the previous year. Out of this number fifty-three failed to receive a passing grade; thirty of the failures were due to unsatisfactory written work, six were due to laboratory work and seventeen were due to both written and laboratory work.

Twenty hundred and seventy-five testers' licenses were issued during the past year, an increase of thirty-five over the previous year's total of twenty hundred and forty.

The following table shows the number of candidates examined and testers' licenses issued for the year indicated:

NUMBER OF CANDIDATES EXAMINED AND TESTERS' LICENSES ISSUED FOR THE YEARS ENDING MARCH 31, 1920, 1924, 1928, 1934 AND 1935.

	1920	1924	1928	1934	1935
Number of Individual Examinations	1,339	850	904	421	512
Number of Failures	226	125	290	24	53
Number of Persons Passing Examination	1,113	725	614	397	459
Number of Testers' Licenses Issued	2,371	2,518	2,661	2,040	2,075

The results of the forty-three examinations which were held at the seven examination points in the state are given in the following table:

RESULTS OF TESTERS' EXAMINATIONS 1934-1935

PLACE OF EXAMINATION	Number of Examinations	Number of Candidates	AVERAGE GRADES (PER CENT)		
			All Candidates	Candidates Passed	Candidates Failed
Lafayette	7	148	82.3	84.1	56.1
Muncie	6	75	81.1	83.4	62.5
Fort Wayne	6	69	83.7	85.1	62.2
Evansville	6	55	77.6	80.9	67.1
Terre Haute	6	38	80.9	83.5	59.2
Indianapolis	6	43	84.2	84.9	69.5
Seymour	6	84	79.9	83.0	61.0
Totals	43	512	81.4	83.6	62.5

Glassware Inspection

The Indiana Creamery and Testers' License Law requires that all milk and cream test bottles, milk pipettes, and nine-gram weights be examined for accuracy by the Purdue University Agricultural Experiment Station before being used in Indiana cream stations and dairy plants. All glassware conforming to the specifications given in Section 13 of the Law (Acts of 1913, Chapter 340) and found to be within the allowable tolerance are stamped with the letters "S. G. P." meaning "Standard Glassware, Purdue." The use of standard inspected glassware eliminates the possibility of incorrect tests from this source.

During the past fiscal year 45,380 pieces of Babcock testing glassware were examined by the Glassware Inspector of the Agricultural Experiment Station. In addition, 175 nine-gram weights were inspected and all found to be correct. This is 2,374 more pieces of glassware and 96 less nine-gram weights than were inspected last year.

The following table gives the amount of each kind of glassware inspected, and the number of pieces found to be incorrect:

KINDS OF GLASSWARE	Total Number of Pieces	Number Incorrect	Per Cent Incorrect
Cream Test Bottles	32,784	100	.305
Milk Test Bottles	9,888	5	.050
Milk Pipettes	2,708	0	.000
Summary	45,380	105	.231

Licenses Revoked

Inspectors of the Creamery License Division check the weights and tests made by operators of the Babcock test to determine their accuracy. If an operator is found to be testing incorrectly the inspector cautions him to be more careful in the sampling, weighing, and testing of milk and cream. Should later inspections show that incorrect testing is being done, whether intentionally or unintentionally, evidence is secured and presented to the State Creamery Examining Board at one of their regular meetings. At this meeting the operator is given an opportunity to explain the cause for differences between his tests and the tests made by the inspector. After careful consideration of the facts presented, the Board recommends to the Purdue University Agricultural Experiment Station the action to be taken.

During the past year the following testers were requested to appear before the Examining Board and, after considering the evidence, the Board recommended that their testers' licenses be revoked:

Miss Cordia King, Tell City, Perry County, Indiana, tester for Pure Cream Products Company, Tell City, Indiana.

Miss Edith Bender, Evansville, Vanderburg County, Indiana, tester for Sugar Creek Creamery Company, Evansville, Indiana.

Mrs. Flora Spence, Ridgeville, Randolph County, Indiana, tester for Sherman White & Company, Fort Wayne, Indiana.

Mr. Lawrence Abbott, Chrisney, Spencer County, Indiana, an independent buyer.

Mrs. Bess Meienberg, Brookville, Franklin County, Indiana, tester for Red 73 Creamery Company, Union City, Indiana.

Mrs. Velma Cavitt, Zanesville, Wells County, Indiana, tester for Zanesville Creamery Company, Zanesville, Indiana.

Mrs. Estella Dick, Alexandria, Madison County, Indiana, tester for Schlosser Bros. Creamery, Fort Wayne, Indiana.

Mr. William Griffin, Bloomington, Monroe County, Indiana, tester for Johnson Creamery Company, Bloomington, Indiana.

Mr. William Brougher, Grammer, Bartholomew County, Indiana, tester for Merchants Creamery Company, Cincinnati, Ohio.

Licensed Manufacturing Plants in Indiana
October 1, 1935

Abrassart Ice Cream Co.	Vincennes	Milk, Ice Cream
Adams Products, Inc.	Fairmount	Butter, Milk, Ice Cream
Oscar Adler Dairy	Fort Wayne	Milk, Butter
Adler Milk Company	Fort Wayne	Milk
Albin Dairy	Greencastle	Milk
Alexandria Pure Milk Co.	Alexandria	Milk
American Dairy Company	Elkhart	Milk
American Dairy Company	Evansville	Butter, Milk
Armour Creameries	Rochester	Butter, Cheese
Associated Dairies Co.	Fort Wayne	Milk
Auburn Dairy	Auburn	Milk
Babybrand Dairy Co.	Fort Wayne	Milk
Baker's Dairy	Fremont	Ice Cream
Ballard Ice Cream Co.	Indianapolis	Milk, Ice Cream

Banner Farms Dairy	Indianapolis	Milk
Banquet Ice Cream & Milk Co.	Indianapolis	Milk, Ice Cream
Barnett Bros. Sunlight Creamery	Logansport	Butter, Milk
Beatrice Creamery Co.	Muncie	Butter, Ice Cream
Bedford Dairy Co.	Bedford	Milk, Ice Cream
John E. Belcher Dairy	Bloomington	Milk
Berkes Dairy Co.	Auburn	Milk
Bettenbrock Dairy	Terre Haute	Milk, Butter
Betty Lou Farms	Kokomo	Milk
Blue Creek Dairy	Bluffton	Milk
Blue Ribbon Dairy, Inc.	Evansville	Milk
Blue Ribbon Dairy	Gary	Milk
Blue Valley Creamery Co.	Indianapolis	Butter
Borden-Wieland, Inc.	Akron	Milk
Borden-Wieland, Inc.	Hammond	Milk
Borden, Wieland, Inc.	Lowell	Milk
Mitchell Bosma	Beech Grove	Milk, Butter
Bosstick Pure Milk & Ice Cream	Sullivan	Ice Cream
Bowman Dairy Company	Francesville	Milk
Bowman Dairy Company	Kouts	Milk
O. A. Bowne Dairy	Terre Haute	Milk, Butter
Brandywine Creamery	Fountaintown	Milk, Butter
Breezy Heights Dairy	Evansville	Milk
Chris Bullerman & Sons	Fort Wayne	Milk
Bunker Hill Creamery	Bunker Hill	Butter
Calvert's Dairy	Edinburg	Milk
Capitol Dairies, Inc.	Indianapolis	Milk
Carey & Sons	Indianapolis	Milk
Carringer Dairy	LaPorte	Milk
Central Dairy	Ossian	Milk
Chapman Dairy	Frankfort	Milk
Cicero Butter Co.	Cicero	Butter, Milk
City Dairy Co.	Connersville	Milk
City Dairy	Kendallville	Milk
City Dairy Co.	South Bend	Milk, Butter
C. C. Clark & Son	Muncie	Butter, Ice Cream
Cloverleaf Creameries, Inc.	Decatur	Butter, Cheese
Cloverleaf Creameries, Inc.	Huntington	Butter, Ice Cream, Cheese
Cloverleaf Dairy	Culver	Milk, Butter
Cloverleaf Dairy	Gary	Milk, Butter
Collier Brothers Creamery	Martinsville	Butter, Milk, Ice Cream
Collier Brothers Creamery	Spencer	Milk
Columbia Dairy	Columbia City	Butter, Ice Cream, Milk
Compton Dairy	Edinburg	Milk
Cook Bros. Dairy	Elkhart	Milk
County Line Cheese Factory	Auburn	Cheese
Covalt Dairy Company	Muncie	Milk, Butter
Cowin Brothers Dairy	Monticello	Butter, Milk
Cream Top Milk Co.	Kokomo	Butter, Milk, Ice Cream

Crescent Creamery	Fort Wayne	Milk
Crescent Dairy Co., Inc.	Kokomo	Milk, Butter
Crystal Dairy	Warsaw	Milk
Dale Creamery Ass'n	Dale	Butter
Daum Dairies	Connersville	Milk, Ice Cream
Davis Dairy Farm	Anderson	Milk
Dearmin & Company	Odon	Butter
DeBeck's Sanitary Dairy	Mishawaka	Butter, Milk
Delaware County Creamery	Muncie	Butter, Cheese
Walter M. Denehie	Terre Haute	Milk
Dimitt Dairy	West Middleton	Milk
Dixie Dairy Company	Gary	Milk
Douglass-Skidmore Dairy, Inc.	Frankfort	Milk
Dyer Creamery	Dyer	Butter
East Central Coop. Company	Rushville	Butter
East End Dairies, Inc.	Indianapolis	Milk
East Side Jersey Dairy Co.	Anderson	Milk, Butter
Eby's Guernsey Dairy	Elkhart	Milk
Economy Creamery	Economy	Butter
Edgewood Dairy	Evansville	Milk
Edwards Milk Company	Crawfordsville	Milk
Eel River Creamery Co.	North Manchester	Butter
Elkhart Dairy	Elkhart	Milk
Ellsworth Ice Cream Co., Inc.	Huntingburg	Milk, Butter, Ice Cream
Elmore's Creamery	Elwood	Milk
Elwood Creamery Co.	Elwood	Ice Cream
English Lake Creamery	English Lake	Butter
Eskay Dairy Company	Fort Wayne	Milk, Butter
Evans Milling Company	Indianapolis	Malted Milk
Ewing-Von Allmen Dairy Co.	Madison	Milk
Fairview Sanitary Dairy Co.	Anderson	Milk
Farm Bureau Creamery	Portland	Butter
Farmers Dairy Company	Carlos City	Butter
Farmer's Marketing Ass'n	Columbus	Butter
Farmer's Produce Ass'n	Crawfordsville	Butter
Fertig Dairy Company	Franklin	Ice Cream
Fertig Ice Cream Company	Indianapolis	Ice Cream
Fertile Acres Dairy	Lakeville	Milk
Forest Dairy	Fort Wayne	Milk
Forgey Dairy	Logansport	Milk, Butter
Fort Wayne Pure Milk, Inc.	Fort Wayne	Milk
Fort Wayne Pure Milk Prod.	Fort Wayne	Milk
Frazier's Dairy	Frankfort	Milk
Franklin Pure Milk Company	Franklin	Milk, Butter, Ice Cream
George Freese's Sons	Nappanee	Butter, Ice Cream, Cheese
Furnas Ice Cream Company	Fort Wayne	Ice Cream
Furnas Ice Cream Company	Indianapolis	Milk, Ice Cream
Furnas Ice Cream Company	Morristown	Condensed
Furnas Ice Cream Company	South Bend	Ice Cream
O. J. Garringer	Winchester	Milk

F. H. George & Company	Fort Wayne	Butter
Roscoe Geyer	Wakarusa	Milk
Gingrich Dairy	Lafayette	Milk, Butter, Cheese
Glass Dairy Co.	Madison	Milk, Ice Cream
Glen Park Dairy Company	Gary	Milk, Butter
Glenwood Dairy	Inglefield	Milk
Gnau Bros. Dairy	Tell City	Milk
Golden Guernsey Dairy, Inc.	Frankfort	Milk
Gold Medal Dairy Company	Evansville	Milk, Ice Cream
Gordon Baking Company	Lagrange	Condensed
Goshen Milk Condensing Co.	Goshen	Milk. Condensed
Grady's Milk Company	Elkhart	Milk
Graham Farms	Elnora	Cheese
Graham Farms	Washington	Cheese, Butter
Grandview Dairy	Lafayette	Milk
Greendale Ice Cream Co.	Lawrenceburg	Ice Cream
Greenfield Ice Cream Co.	Greenfield	Milk
Greenwood Dairy Farms	Greenwood	Milk
Guernsey Milk & Ice Cream Co.	Lebanon	Milk, Ice Cream
Hagerstown Dairy	Hagerstown	Milk
Hall Dairy	Bloomington	Milk
Hamilton Dairy	Terre Haute	Milk
Handy's Sanitary Dairy	Greencastle	Milk, Butter
Hartford City Dairy	Hartford City	Milk
Hartley's Dairy	Portland	Milk, Butter, Ice Cream
Haxson Dairy Co., Inc.	Gary	Milk
Haynes Dairy	Garrett	Milk
Heckaman Dairy	Nappanee	Milk, Ice Cream
Hedges Dairy Products, Inc.	Terre Haute	Milk, Butter
Hewins Dairy	Boonville	Milk, Butter
Highland Creamery Co.	Terre Haute	Butter
L. F. Hill & Son	Winchester	Milk
Hillside Cheese Co.	Decatur	Cheese
Hoffmeister Cheese Co.	Seymour	Cheese
Holland Creamery Ass'n	Holland	Butter
Holland Custard & Ice Cream	Holland	Ice Cream, Milk
Fred Holle & Sons Dairy	Fort Wayne	Milk
Home Creamery Co.	Morocco	Butter
Hoosier Condensed Milk Co.	Bluffton	Condensed
Hoosier Dairy Products Co.	Noblesville	Ice Cream, Milk
Hoosier Dairy Products Co.	Rushville	Milk, Ice Cream
Hoosier Milk Company	Indianapolis	Milk, Ice Cream
Hoosier State Creamery	Rensselaer	Butter
Hoovens Dairy	Goshen	Milk
Hornaday Milk Company	Indianapolis	Milk, Butter
R. B. Hough Dairy	Richmond	Milk
Huff's Creamery	Bremen	Butter
Hunding Dairy Company	Wellsboro	Milk
Hy-Grade Dairy Products, Inc.	Crawfordsville	Milk, Butter, Ice Cream
Ideal Pure Milk Company	Evansville	Milk, Butter, Ice Cream, Condensed

Indiana Condensed Milk Co.	Lebanon	Condensed
Indiana Condensed Milk Co.	Sheridan	Condensed
Indiana Condensed Milk Co.	Veedersburg	Butter
Indiana Dairy Company	South Bend	Milk
Indiana Dairy Marketing Ass'n	Muncie	Milk, Butter, Cheese
Indiana Ice & Dairy Co.	Anderson	Milk, Butter, Condensed
Indiana Milk Transportation	Dyer	Milk
Indiana Produce Company	Huntingburg	Butter
International Dairy Co.	Deep River	Milk
Iselman's Dairy	LaPorte	Milk, Ice Cream
Jacobi Dairy	Greenville	Milk
Jersey Creamery Co.	Newcastle	Milk, Butter, Ice Cream
Jersey-Maid Dairy Co.	Hammond	Milk, Butter
Jessup Milk Company	Plainfield	Milk
Johnson Butter Company	Terre Haute	Butter, Milk, Ice Cream
Johnson Creamery Company	Bedford	Milk
Johnson Creamery Company	Bloomington	Milk, Butter, Ice Cream
Johnson Creamery Company	Linton	Milk
W. A. Jones & Sons Dairy	Syracuse	Milk, Butter
Keener Township Dairy Co.	DeMotte	Cheese
Kentland Dairy Products Co.	Kentland	Cheese, Butter
Kentland Dairy Products Co.	Mulberry	Cheese
Kewanna Cooperative Creamery	Kewanna	Butter
Kimmel Farms, Inc.	Kendallville	Milk, Butter
A. W. King's Dairy	Richmond	Milk
Kline's Dairy	Logansport	Milk, Butter
Knispel Dairy	Fort Wayne	Milk
Koch Dairy Co.	Evansville	Milk, Butter, Ice Cream
Kosanke Bros.	Argos	Butter
Kraft-Phenix Cheese Corp.	Bloomfield	Cheese
Kraft-Phenix Cheese Corp.	Dale	Cheese
Kraft-Phenix Cheese Corp.	Kendallville	Cheese
Kraft-Phenix Cheese Corp.	Marshall	Cheese
Kraft-Phenix Cheese Corp.	Paoli	Cheese
Kraft-Phenix Cheese Corp.	Salem	Cheese
Kraft-Phenix Cheese Corp.	Sharpsville	Cheese
Kraft-Phenix Cheese Corp.	Shirley	Cheese
Kraft-Phenix Cheese Corp.	Sullivan	Cheese
Kraft-Phenix Cheese Corp.	Summitville	Cheese
Kraft-Phenix Cheese Corp.	Sweetsers	Cheese
Kroger Grocery & Baking Co.	Indianapolis	Milk, Condensed
Krueger Dairy Products Co.	Monon	Butter
Kyle Creamery Ass'n	Aurora	Butter
Lafayette Ice Cream Co.	Lafayette	Milk, Ice Cream
Lakeside Dairy Co.	Osceola	Milk
Lake View Dairy	Gary	Milk, Butter
Lanesville Creamery Co.	Lanesville	Butter
Lemont Dairy	Brook	Milk

Lenick's Dairy	LaPorte	Milk, Ice Cream, Butter
Leonard Creamery Co.	Paoli	Ice Cream
Liberty Creamery Co.	Liberty	Milk, Butter
Ligonier Dairy Products, Inc.	Ligonier	Milk
Lincoln Ave. Dairy	Evansville	Milk
Will Linsmith Milk Co.	Columbus	Milk
Linton Ice & Cold Storage Co.	Linton	Ice Cream, Milk, Butter
Longfield Creamery	Wakarusa	Butter, Ice Cream
W. H. Lowe Creamery	Versailles	Butter
Mack & Company	Monon	Ice Cream
Madison Creamery Company	Madison	Butter
Maplehurst Farms	Indianapolis	Milk, Butter
Marion Pure Milk	Marion	Milk
Marten's Dairy	Fort Wayne	Milk
Matthews Dairy	South Bend	Milk
Maywood Milk Company	Maywood	Milk
McKinstray Bros.	Indianapolis	Milk
Medaryville Cheese Factory	Medaryville	Cheese
Med-O-Bloom Dairy	Kokomo	Milk
Meadowbrook Farm	Hicksville, O.	Butter
Middlebury Coop. Creamery Co.	Middlebury	Butter
Milford Dairy	Milford	Milk, Butter
Milk Producers Corporation	Garrett	Condensed
J. M. Miller Dairy	Culver	Milk, Butter
Miller Ice & Dairy Co.	Cambridge City	Milk, Butter
Oscar Miller Dairy	Goshen	Milk
Miller Yarling Dairy	Shelbyville	Milk, Ice Cream
Mishawaka Farmers Dairy Co.	Mishawaka	Milk, Butter
Model Creamery	Indianapolis	Milk, Ice Cream
Model Milk & Ice Cream Co.	Terre Haute	Butter, Milk, Ice Cream, Condensed
Modern Dairy	Hobart	Milk, Butter
Modern Dairy	Mexico	Milk, Butter
Mt. Vernon Cheese Factory	Mt. Vernon	Cheese
Mt. Vernon Creamery Company	Mt. Vernon	Butter, Milk, Ice Cream
Muncie Pure Milk Co.	Muncie	Milk, Butter
Murfield Creamery	Mishawaka	Butter
Murphy Dairy	Scottsburg	Milk, Butter
Mutual Milk Company	Indianapolis	Milk
Nances Creamery	Brazil	Butter, Milk, Ice Cream
Napoleon Creamery	Napoleon	Butter
Nappanee Dairy	Nappanee	Milk
National Dairy Co.	Whiting	Milk, Butter
National Milk Co., Inc.	South Bend	Milk
New Paris Creamery	New Paris	Butter, Milk
Nieter Dairy, Inc.	Fort Wayne	Milk
Northwestern Milk Company	Indianapolis	Milk
Oakland City Cheese Factory	Oakland City	Cheese
Oak-Ridge Blue Bell Creamery	Mishawaka	Milk, Butter

Olympia Dairy	Columbus	Milk
Orchard Hill Creamery	Mitchell	Milk
Orchard Knoll Farm Creamery	Moores Hill	Butter
Orrco Farms Dairy	Liberty	Milk
Osterhaus Dairy	Fort Wayne	Milk
Page Milk Company	Greensburg	Milk
Page Milk Company	Shelbyville	Butter, Powdered Milk
Pango Milk Chocolate Company	Warsaw	Condensed
Parlor City Creamery	Bluffton	Butter
Peters Dairy	Michigan City	Milk
Phend Dairy Company	Goshen	Milk
Pinckley's Dairy	Sellersburg	Milk
Pleasant Hill Dairy	Fort Wayne	Milk
Pleasant View Dairy	Highland	Milk, Butter
Plymouth Dairy	Plymouth	Milk
Polk Sanitary Milk Company	Indianapolis	Milk, Butter
Prairie View Dairy Company	E. Chicago	Milk
Prange-Flaugh Dairy	Fort Wayne	Milk
Producers Cooperative Dairy, Inc.	Evansville	Milk, Butter
Producers Creamery	Hartford City	Cheese
Producers Creamery	Kewanna	Butter
Producers Creamery	Marion	Butter, Milk, Condensed, Ice Cream
Producers Dairy Marketing Ass'n	Orleans	Butter, Ice Cream
Producers Dairy Products Company	Crawfordsville	Milk, Ice Cream
Purdue University Creamery	West Lafayette	Milk, Butter, Ice Cream
Pure Cream Products Company	Tell City	Butter, Ice Cream, Milk
Purity Dairy Company	Evansville	Milk, Ice Cream
Purity Dairy Company	Huntington	Milk
Purity Maid Products Company	New Albany	Butter, Milk, Ice Cream
Purity Milk Company	East Columbus	Milk
Quality Dairy Company	Boonville	Milk, Butter, Ice Cream
Ray and Arnold Creamery	Logansport	Butter, Milk
Reid's Creamery	Vincennes	Milk
Reliable Dairy Company	South Bend	Milk, Butter
Rensselaer Creamery & Prod. Co.	Rensselaer	Butter
Richmilk Dairy	Fort Wayne	Milk
Rife's Dairy	Warsaw	Milk
Rea Riggin & Sons	Muncie, R. R.	Milk, Butter
Rising Sun Creamery	Rising Sun	Butter
W. F. Ritzmann	Lawrenceburg	Butter
Riverside Dairy	Columbia City	Milk, Butter
Riverside Dairy	Mishawaka	Milk
Roanoke Creamery Company	Roanoke	Butter
Wm. H. Roberts & Sons	Indianapolis	Milk
Rock Bottom Dairy Farm	Flat Rock	Butter
Rowe Dairy Company	Fort Wayne	Milk
Russell's Dairy	Hartford City	Milk, Butter

Salem Creamery	Salem	Milk, Butter
Sample's Dairy	Connersville	Milk
Sanitary Dairy	Crown Point	Milk
Sanitary Dairy	Logansport	Milk
Sanitary Dairy	Michigan City	Milk
Sanitary Milk & Ice Cream	Peru	Milk, Butter, Ice Cream, Condensed, Cheese
Schaefer Dairy Co., Inc.	Indianapolis	Milk
Schaper's Dairy	Fort Wayne	Milk
Schlosser Bros.	Bremen	Cheese
Schlosser Bros.	Fort Wayne	Butter, Ice Cream, Cheese
Schlosser Bros.	Frankfort	Butter
Schlosser Bros.	Indianapolis	Butter
Schlosser Bros.	Plymouth	Butter, Ice Cream
Schlosser Bros.	South Bend	Milk
Theodore Schmitz Milk Plant	Palmer	Milk
Schanitter Confectionery	Madison	Ice Cream
Schoen Dairy	South Bend	Milk
Scholl Dairy Company	Michigan City	Milk, Ice Cream, Butter
Shannon's Dairy	Jeffersonville	Milk, Butter
Sherman White & Company	Fort Wayne	Butter
Sherman White & Company	Goodland	Butter
Shively's Dairy	Greenfield	Milk
Shively's Dairy	N. Manchester	Milk
Snyder Dairy	Seymour	Milk
Shortle Dairy Farm	Kokomo	Milk
South Bend Pure Milk Co.	South Bend	Milk, Butter
South Side Dairy	Mishawaka	Milk
Spring Brook Dairy	Bremen	Milk
Staley Dairy Products Co.	Decatur	Butter, Ice Cream
Standard Dairy	Evansville	Milk
State Creamery	Fort Wayne	Milk, Butter
State Street Creamery	Huntington	Butter
Suabedissen-Wittner Dairy	South Bend	Milk
Sugar Creek Creamery Co.	Evansville	Butter
Sugar Creek Creamery Co.	Indianapolis	Butter
Summers & Son	Elwood	Milk
Sunderman Dairy	Crown Point	Milk
Sunnydale Dairy	Union City	Milk
Sunrise Dairy	Angola	Milk
Sunrise Dairies	Laketon	Butter
Sunshine Dairy	Fort Wayne	Milk
Sunshine Farms, Inc.	Lafayette	Milk, Butter, Condensed
Superior Dairy	Garrett	Milk, Ice Cream
Superior Ice Cream Co.	Lafayette	Milk, Ice Cream
Swift & Company	Alexandria	Cheese
Swift & Company	Evansville	Butter
Swift & Company	Logansport	Butter
Swift & Company	Marion	Butter

Swift & Company	Wabash	Cheese
Tansy Milk Company	Beech Grove	Milk
Teegarden Dairy Corp.	Teegarden	Milk
Terre Haute Milk & Ice Cream	Terre Haute	Milk, Ice Cream, Butter, Condensed
Thayers Dairy	Delphi	Milk
Thomas Dairy	Elkhart	Milk
Thompson Dairy Co.	North Vernon	Milk
Thompson Dairy Co.	Seymour	Milk, Ice Cream
Tipton Ice Cream Company	Tipton	Ice Cream, Milk
Tip Top Creamery Company	Princeton	Milk
Tip Top Creamery Company	Vincennes	Butter, Milk, Ice Cream, Condensed
Tip Top Creamery Company	Washington	Milk
Tolleston Dairy, Inc.	Gary	Milk, Butter, Ice Cream
Tonne Dairy	Fort Wayne	Milk
Turner Creamery Company	Paoli	Milk, Butter
United Dairy Company	Indiana Harbor	Milk, Butter
United Milk Products Co.	Berne	Condensed
United Milk Products Co.	Butler	Condensed
United Milk Products Co.	Wolcottville	Condensed
United Milk Products Co.	Yorktown	Condensed
Valparaiso Home Ice Company	Valparaiso	Milk, Ice Cream, Butter
Van Camp Milk Co., Inc.	Angola	Condensed
Wabash Valley Creamery Co.	Vincennes	Ice Cream
Wabash Valley Dairy Products Co.	Vincennes	Cheese, Butter, Milk
Wadley Company	Indianapolis	Butter
Wagner & Sons	Logansport	Milk, Butter
Wakarusa Cooperative Creamery	Wakarusa	Butter, Milk
Wambaughs Sanitary Milk Co.	Elkhart	Milk
Sidney Wanzer & Sons, Inc.	Monterey	Milk
Sidney Wanzer & Sons, Inc.	Servia	Milk
Warsaw Milk Company	Warasw	Milk
Waterloo Dairy	Waterloo	Milk, Butter
Wayne Dairy Products Co.	Richmond	Butter, Milk
L. H. Weaver	Indianapolis	Milk, Butter
Weber Milk Co.	Indianapolis	Milk, Butter
C. M. Wert & Son	Wabash	Milk
West End Milk Co.	Newcastle	Milk
Western Indiana Dairy Ass'n	New Richmond	Cheese
Western Reserve Creamery	Kokomo	Butter
White Lily Milk & Ice Cream Co.	Evansville	Milk, Butter, Ice Cream
Wiggam Milk Company	Indianapolis	Milk
Williams Dairy	North Liberty	Milk
Williams Dairy	Richmond	Milk
Winona Dairy	Winona Lake	Milk
O. J. Wittner Dairy	South Bend	Milk
Zanesville Creamery	Zanesville	Butter
Zapp's Dairy & Creamery	New Albany	Milk, Butter

Circular No. 216 May, 1936.

Purdue University
Agricultural Experiment Station
Lafayette, Indiana

LIBRARY

ROSES

E. R. Honeywell,
Department of Horticulture

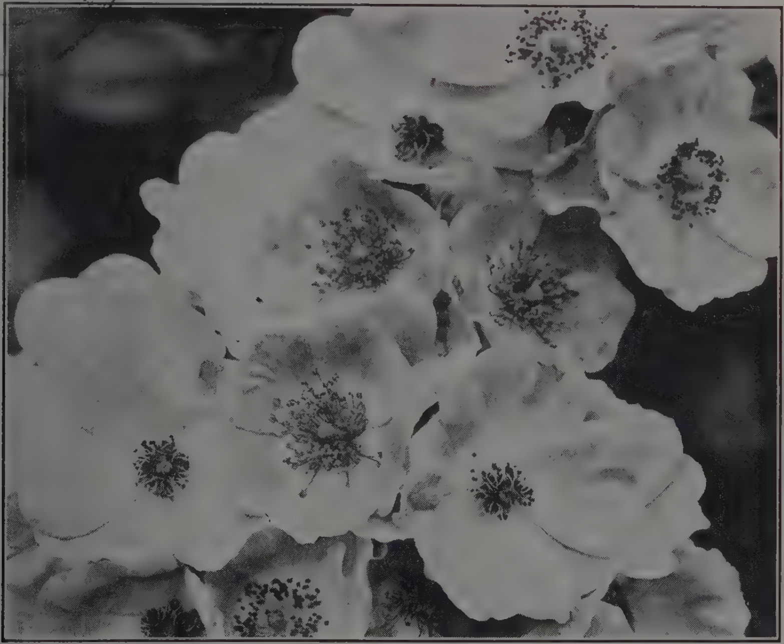


Figure 1. The Hugonis Rose (*Rosa hugonis*) is one of the best of all shrub roses.

The rose is considered the oldest of all cultivated flowers. Although very little is known of its origin, it is commonly referred to in the Bible, in Greek mythology, and in the writings of the ancient Roman philosophers and poets. It has played a definite part in wars and religious ceremonies, and has survived through the world's history. Today, more than ever before, the rose in its native and hybrid forms appeals more strongly for the part it has played.

This is evident by the fact that 11.21 per cent of all nursery sales, including both ornamentals and fruits, is for roses.* It is therefore easy to assume that the prestige of the rose is the same as it was nearly 2,600 years ago when Sappho proclaimed it the "Queen of Flowers" in the following words:

"Would Jove appoint some flower to reign
In matchless beauty on the plain,
The Rose (mankind will all agree),
The Rose, the Queen of Flowers should be.
The pride of plants, the grace of bowers;
The blush of meads, the eyes of flowers;
Its beauties charm the gods above;
Its fragrance is the breath of love;
Its foliage wantons in the air,
Luxuriant, like the flowing hair;
It shines in blooming splendor gay,
While zephyrs on its bosom play."

The purpose of this circular is to give a brief discussion of the essentials of rose culture, so that the rose may be more successfully grown.

CLASSIFICATION, USE, AND SUGGESTED VARIETIES

Roses vary greatly in plant habit, flowering characteristics, and use. For this reason, plants of similar characteristics are grouped into horticultural classes in order that one may have a better understanding of cultural principles.

The number of rose varieties available constitutes several thousand. An average of about 150 new varieties is described each year. Only a few of the best, well-known varieties representing each horticultural class are listed here.

Bush Roses for Landscape Effect

Indiana has long been known for its wild roses, which are commonly seen growing uncultivated along the roadside, on steep banks and fences, and in prairies and swampy areas. They often appear voluntarily where few other plants will thrive. Their ability to grow under so many different situations, their remarkable variation in height, and habit of growth, and their natural appearance make them ideal for naturalistic plantings, especially in parks and roadside plantings. The roses here suggested are of both native and foreign origin, including many hybrids which have proved satisfactory. Greater interest should be stimulated in the culture and use of such roses.

The Meadow Rose *(Rosa blanda)* is native to Indiana. The flowers are usually large, bright pink, and borne solitary, in pairs, or in clusters of three to five. Height 2-4 feet. Bloom in June.

The Bristly Rose *(Rosa nitida)* has been reported growing wild in Indiana. A very dwarf rose (1-2 feet) which is very useful in covering steep banks, or as a foundation planting for other roses. The flowers are usually solitary and bloom in June and July.

The Swamp Rose *(Rosa palustris)* is common throughout Indiana, growing in swampy areas. It is an upright shrub, often attaining 8 feet in height. The flowers are pink, about 2 inches across and bloom in June. A beautiful shrub when planted along the waterside. The bright colored hips (fruits) are attractive throughout the winter.

The Pasture Rose *(Rosa humilis)* is a very widely distributed rose generally attaining a height of 3-4 feet. The flowers are of medium size, usually solitary and bloom from June to August. It is useful for roadside planting.

The Austrian Brier Rose *(Rosa foetida)* is a large shrub, often 8 feet high. The flowers are bright yellow, 2-2½ inches across. There are several good hybrids. Two of the most common are: Austrian Copper and Persian Yellow.

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*Data taken from "A survey of the Nursery Industry" by the American Association of Nurserymen.

The Sweetbrier Rose *(Rosa rubiginosa)* is a dense shrub which usually attains a height of 6 feet. The flowers are bright pink, about 1½-2 inches across. There are several good hybrids. Some of the best are: Jeannie Deans, Lady Pensance, and Rose Bradwardine.

The Scotch Rose *(Rosa spinosissima)* is a low growing shrub 3-4 feet with spreading branches. Flowers usually solitary and white.

The Rugosa Rose *(Rosa rugosa)* is one of the most popular of all shrubby roses, and is especially famous in winter for its attractive fruit. It is an upright shrub which attains a height of about 6 feet and is very hardy. Flowers red. Some of the best hybrids are: Alice Aldrick, Arnold, Agnes Emily Carman, Agnes, Belle Poitevine, Mme. George Bruant, Mrs. Anthony Waterer, and New Century.

The Hugonis Rose *(Rosa hugonis)* is one of the very best of all shrub roses. The foliage is refined, Acacia-like, and remains beautiful throughout the summer. The flowers are medium size and bright yellow. Height about 6 feet.

The Damash Rose *(Rosa damascena)* is a very hardy and robust grower about 5 feet in height. The flowers are generally borne in trusses of three or more, and are rather large, double, and fragrant. York and Lancaster is one of the best known hybrids.

The Cabbage or Provence Rose *(Rosa centifolia)* is upright in habit and attains a height of about 4 feet. It is one of the most fragrant of all roses. The flowers are pink and medium double. From this species a class of roses designated as *Moss Roses* has originated. They resemble the original rose in all characteristics, including fragrance, but in addition they have a mossy envelop which adorns the calyx. The flowers are very beautiful especially when in bud. Some of the best hybrids are: Anni Welter, Baron de Wassenaer, Celina, Comtesse de Murianais, and Venue.

The Wichurian Rose *(Rosa wichuraiana)* is commonly known as the Memorial Rose. It is a half-evergreen shrub with prostrate and creeping branches which make it the outstanding rose for covering steep banks, fences, and rockeries. The flowers are large and white. It is from this species that many of the best climbing roses have been developed.

The Prairie Rose *(Rosa setigera)* is a climbing native rose of Indiana which attains a height of 6 to 12 feet. The flowers are large, single, and deep rose-pink. It is a very hardy rose and should be used more freely for covering banks along roadsides and in general landscape plantings. (See back cover page.)

Bedding and Cutflower Roses

Roses of this group are grown primarily for their showy flowers of excellent size, fragrance, color, and quality. This is especially true of Teas, Hybrid Teas, and Hybrid Perpetuals. The flowers of the dwarf Polyanthas are borne in large clusters, are generally small, and have little fragrance.

Cold bleak winds of winter and dry hot winds of summer are the worst enemies of these roses. For this reason they should be grown in beds by themselves where they can be given adquate protection, free circulation of air, and the best growing conditions.

Teas.—These are generally supposed to be the progeny of the tea-scented rose *(Rosa odorata)* crossed with *(Rosa chinensis)*. They are characterized by their tea-like fragrance, their everblooming habit, long deep flowers, and their wide range of color. They are not considered frost hardy in Indiana unless given sufficient protection and the most of care. Suggested varieties are:

Alexander Hill Gray: pale lemon yellow and very double.
Bon Silene: soft rosy red shaded yellow, and semi-double.
Lady Hillington: deep saffron-yellow, slender pointed buds.
Marie Van Houtte: lemon-yellow, medium large and very double.
Mme. Antoine Mari: flesh-colored shading to lilac rose.
Mrs. Herbert Stevens: white, tinted pale lemon at center.

Hybrid Teas.—These are roses which have been mainly obtained by crossing varieties of Tea roses and Hybrid Perpetuals. They are noted for their fragrance, variety of color, size and character of bud, continuous flowering habit, and their ability to withstand garden conditions with moderate protection. They are well suited for bedding. Suggested varieties are:

Briarcliff: brilliant rose-pink, large pointed buds.
E. G. Hill: brilliant red, shading to darker crimson; very double.
Joanna Hill: creamy yellow, buds large and long.
Mme. Butterfly: light pink, tinted with gold.
Mrs. Aaron Ward: Golden buff, very attractive.
Premier Supreme: dark pink, very pleasing.
Red Radiance: deep rose-red, freely produced.
Souv. de Claudius Pernet: light-yellow, and very large.
Sunburst: yellow, strongly suffused with orange.
Talisman: scarlet-orange and rich yellow.

Hybrid Perpetuals. Roses of this class are often called Remontant. They are the result of many crosses between *(Rosa chinensis)*, *(Rosa centifolia)*, *(Rosa gallica)*, and *(Rosa damascena)*. They are characterized by their stiff, upright growth, wrinkled, dull green foliage, and large flowers which are inclined to be somewhat flat, and their hardiness. They flower in great profusion in June and early July, and if judiciously pruned back after flowering some additional flowers may be expected in mid-autumn. Suggested varieties are:

Anna de Diesbach: clear, rosy carmine, very large.
Frau Karl Druschki: snow-white flowers of beautiful shape.
General Jacqueminot: scarlet-crimson of moderate size.
George Arends: soft pink in various shades.
Mrs. John Laing: clear pink, very large, and smooth.
Paul Neyron: dark lilac-rose of immense size.
Ulrich Brunner: bright carmine-red.

Dwarf Polyantha or Baby Ramblers: Polyantha roses are hybrids of *(Rosa chinensis)*, *(Rosa multiflora)*, and various horticultural varieties. They form a class of everblooming roses with flowers produced in large clusters. They are small bushes seldom attaining more than 2 feet in height and are very hardy. Roses of this class are very well suited to Indiana conditions and should be grown more freely. Suggested varieties are:

Aennchen Muller: shining, bright pink.
Cecile Brunner: light pink with yellow base.
Eblouissant: glowing, dark red.
Golden Salmon Superior: bright, scarlet salmon.
Lafayette: bright red flowers in large clusters.
Miss Edith Cavell: brilliant scarlet-red.
Sparkler: brilliant red.
Triomphe Orleanais: bright cherry-red.

Climbers

Climbing roses are very effective when grown on arbors, pergolas, pillars, trellises, and for covering steep banks and fences. When in bloom they are very beautiful trained on porches, but when so used they should be given adequate supports and planted in such a manner that they will be exposed to full sunlight and a free circulation of air.

There are many classes of climbing roses, including climbing forms of Teas, Hybrid Teas, Hybrid Perpetuals, and others. As a group, the most satisfactory Climbing roses for Indiana are hybrids of *(Rosa multiflora)*, a vigorous climbing rose that produces many small flowers in large clusters and *(Rosa wichuraiana)*, a half-evergreen shrub with prostrate and creeping branches. Suggested climbers are:

(A)—Hybrids of *(Rosa multiflora)*
    Crimson Rambler: large clusters of crimson flowers.
    Dawson: small, double flowers of rose-pink.
    Goldfinch: large, creamy flowers with bright yellow centers.
    Ida Klemm: snowy white, borne profusely.
    Tausendschon: large flowers of many shades of yellow, creamy white, and bright rose.

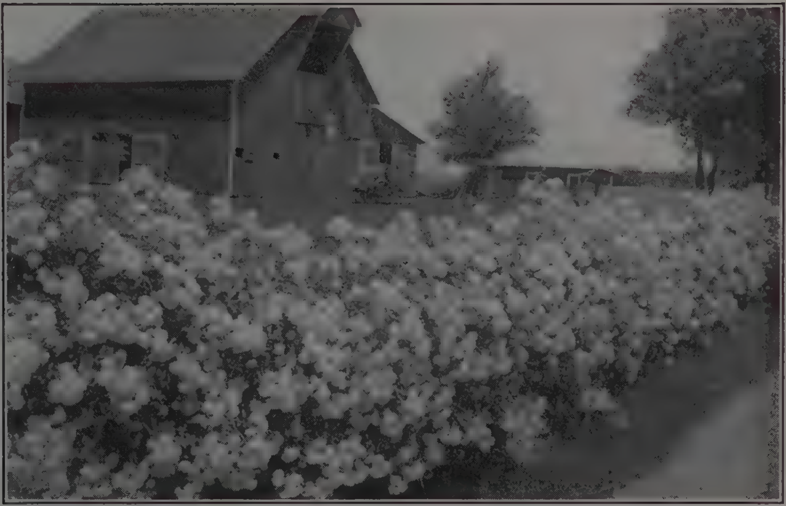

Figure 2. Climbing roses are desirable for screen plantings. Such a planting aids in concealing the barnyard and helps to break the wall surface of adjacent buildings. Roses prefer full sun exposure and a free circulation of air.

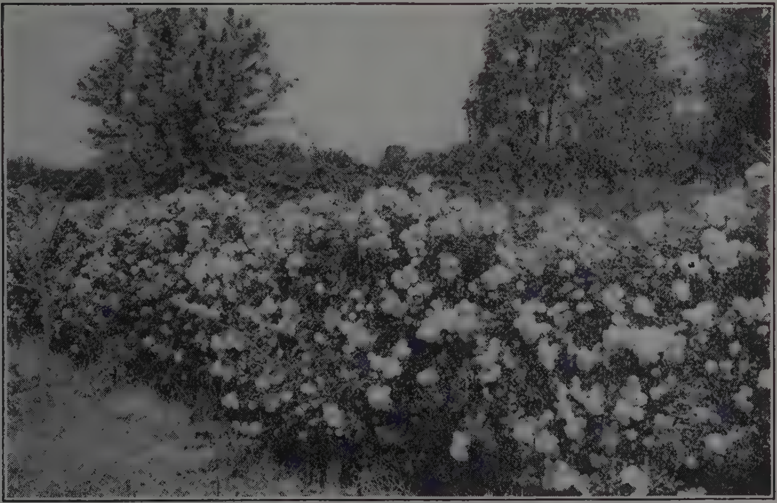

Figure 3. Highways can be made more attractive through proper selection, planting and care of climbing roses.

(B)—Hybrids of *(Rosa wichurainana)*

American Pillar: large, single flowers of crimson-pink.
Dorothy Perkins: miniature flowers of shell-pink.
Dr. Huey: large flowers of crimson-maroon.
Dr. W. Van Fleet: large pale pink flowers borne on long stems.
Excelsa: scarlet-crimson blooms with light streaks and shades.
Gardenia: yellow buds and ivory-white flowers somewhat deeper yellow in center.
Hiawatha: single flowers of brilliant carmine.
Mary Wallace: large flowers of bright pink.
Silver Moon: long, creamy white flowers with showy golden anthers.

PROPAGATION

It is obvious that the most economical way to replace or increase a selection of roses for the home garden is to purchase them directly from a local nurseryman. Nevertheless, there are occasions when in order to preserve certain memories, involving the rose, the growing of plants from successful propagation may be, and often is, the most fascinating activity in rose culture. Although plants may be propagated by several methods, those which may be employed most successfully are softwood cuttings, hardwood cuttings, division, and layering.

Softwood Cuttings.—Cuttings are sometimes referred to as "slips." Material used for propagation should be selected from vigorous, healthy plants. Flowering wood of the current year's growth is best suited. The cuttings should be removed from the parent plant with a sharp knife and should be at least three nodes (joints) long. The cut at the base of the cutting should be as straight across as possible, and just below a node. The leaves at the two lower nodes should be removed in order to prevent excessive loss of moisture from the cutting.

As soon as the cuttings are made thev should be placed in some convenient container, such as a flower pot or plant box, or placed in a cold frame or in

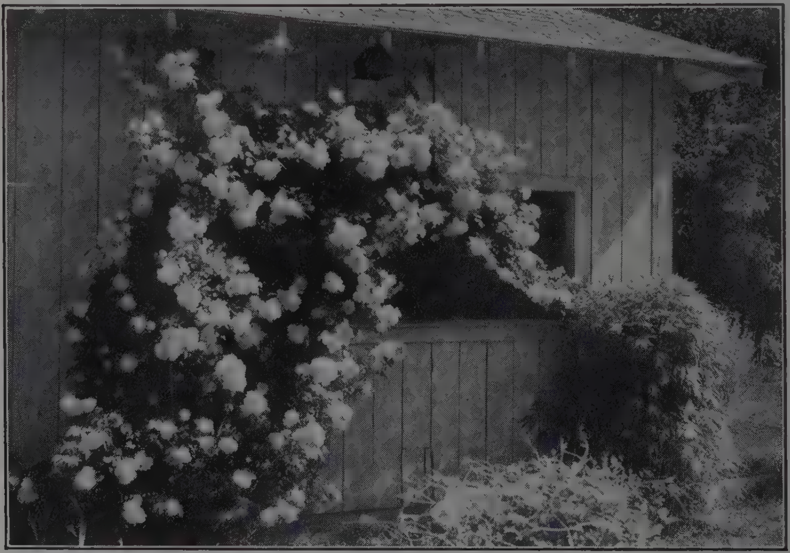

Figure 4. Climbing roses may make an uninteresting wall an attractive part of a garden enclosure.

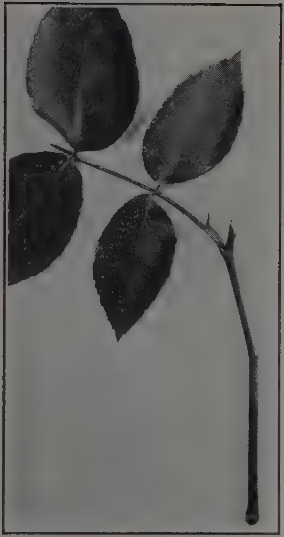

Figure 5. Softwood cutting.

some well protected place in the garden. They should then be thoroughly watered and shaded to prevent wilting. Sand or sand with the addition of leaf mold is the best soil media. The practice of placing inverted Mason jars over newly made cuttings to retain moisture and heat gives good results. As soon as the cuttings are well rooted the protection should be removed gradually in order that the plants may become accustomed to more adverse conditions.

Hardwood Cuttings.—Many kinds of roses can be successfully propagated by hardwood cuttings. This is especially true of large bush roses, Hybrid Perpetuals, and Climbers. The best time for making such cuttings is in autumn or early winter, preferably as soon as possible after the leaves have dropped. Only firm wood of the last season's growth should be used. The cutting should be made approximately six inches in length. The cut at the base of each cutting should be just below a node.

As soon as the cuttings are made they should be tied in bunches, keeping all the base ends on the same plane. Each variety should be properly labeled. The cuttings should then be placed in a box of moist sand, leaf mold, or sawdust and stored in a cool, damp cellar or basement. By early spring the cuttings should be well rooted, or at least well calloused, and should be planted out. They should be planted to a depth so that only the uppermost (terminal) bud is above the soil surface.

Division.—Many species of roses, such as those listed as being useful for landscape effect, may be successfully propagated from root shoots or suckers which are often freely produced. The best time of year for propagating roses in this manner is in early spring or fall.

Layering.—The propagation of roses by layering is a natural method by which many Climbers, Creepers, and Bush roses naturally increase. Branches which come in contact with moist soil develop roots, at the point of contact, and in time become individual plants.

Man can aid nature in this method by slightly notching the stems on the under side (preferably at a node) and bending them over to the ground and covering the injured portion with soil. This is best done in late spring and summer. By the same fall or following spring (all conditions being favorable) the buried portion will have developed roots and may be severed from the parent plant and be transplanted to another location.

Grafting.—Opinion differs so greatly as to the advantages of own roots versus grafted plants for ordinary garden conditions that it is very difficult to make a definite statement regarding their merits. As with all debatable questions, there is substantiated evidence for each. As observed by the writer, both own root and grafted roses (other conditions being satisfactory) will give good results under Indiana conditions. Certain varieties do seem to show greater vigor when grafted. Inasmuch as grafting involves tedious, long-time methods, it is obvious that such a method should not be attempted by the amateur. If grafted roses are desired, they are best obtained from those trained in the art.

WHERE AND HOW TO ORDER ROSES

Before placing an order for roses, it is well to study your needs and to know what varieties and types are best suited for your conditions. The best time to make a selection is when the plants are in bloom. Where possible, buy from your local nurseryman or from a nurseryman of long-established reputation. Try a few new varieties each year.

Generally speaking, field-grown plants are best for they are accustomed to outdoor conditions. Seldom do greenhouse-forced plants give satisfaction.

Place your order early for such orders can be given more individual attention. It is also important to state definitely when you wish your order filled and how it should be delivered.

The importance of securing good plants, properly labeled, packed, and delivered can not be over-emphasized. The small saving made by investment in cheap or inferior plants is usually lost many times over in lessened interest and pleasure in rose growing.

SOIL PREPARATION

Roses, as a group, vary considerably regarding soil preference. This is especially evident with wild roses. For example the Swamp Rose *(Rosa palustris)* is generally found growing in wet places, while the Pasture Rose *(Rosa humilis)* and the Meadow Rose *(Rosa blanda)* are generally found in dry sandy soils in prairie regions.

In general, however, it may be said that roses as a group respond best in soils which have been richly prepared and well drained. This is especially true of such roses as Teas, Hybrid Teas, and Hybrid Perpetuals. To prepare suitable conditions the soil should be well spaded to a depth of ten to twelve inches. If the soil seems heavy and poorly drained a three- or four-inch tile should be laid to provide sufficient drainage. A layer of gravel, cinders, or stones placed to a depth of ten or twelve inches may be used, but seldom gives as good results as tile.

Well-rotted manure, freely used and well incorporated into the soil is very beneficial. If manure is not available, well decayed, organic materials, such as leaves, lawn clippings, peat, or leaf mold may be used.

Commercial fertilizers may be safely used in soil preparation. Bone meal, or acid phosphate, applied at the rate of 10 pounds per 100 square feet of soil area is recommended. If such fertilizers are not on hand, a 2-12-4, 4-12-6, or one of similar analysis, applied at the rate of 4 pounds per 100 square feet of bed area is advised.

Lime is not a fertilizer and should seldom, if ever, be applied to garden roses, for most roses prefer soils which are slightly acid in reaction.

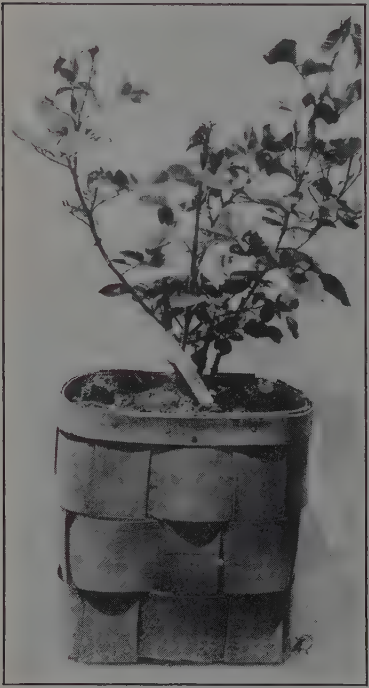

Figure 6. A field-grown plant which was dug while dormant in early spring and transferred to a plant basket for early sale. Plants so handled are planted with container intact and seldom show any ill effect of transplanting.

PLANTING

Time of year.—The proper time to plant roses is a very debatable question, for many factors must be considered. Climatic conditions, soil types, and kind of roses are important factors. As a general rule fall planting (October to November) is most favorable in Indiana. This is especially true with all roses except, perhaps, Teas and Hybrid Teas. Arguments in favor of fall planting are:

1. A more complete stock is available for selection.
2. More time and attention can be given to individual orders.
3. Plants are freshly dug; therefore, there is less damage due to storing and handling.
4. Weather conditions are usually more favorable.
5. More time for soil preparation.
6. Plants which become well established in the fall bloom more freely the first year.

If spring planting is practiced, it is important that the plants are set out as soon as the soil becomes workable. All dormant roses should be planted on or before April 15.

Care of plants on arrival.—As soon as the plants arrive they should be unpacked, inspected, and, if weather conditions are favorable, planted at once. If weather conditions are not favorable, the plants should be placed where they will neither freeze nor dry out. In case the roots have become very dry in transit, it is desirable to soak them in water a few hours previous to planting. If it is necessary that planting be delayed for several days, it is advisable to heel the plants in moist soil until time of planting.

Distance to plant.—Most roses are planted so closely together that adequate care can not be given. The following distances are suggested:

Large bush roses	4-6 feet
Teas and Hybrid Teas	1½ feet
Hybrid Perpetuals	2½ feet
Dwarf Polyanthas	2-2½ feet
Climbing roses	6-10 feet

Setting plants.—Planting consists of more than merely digging a hole, dropping a plant into it, covering its roots, and expecting it to grow. Each plant should be considered as an individual and so treated. The hole should be dug sufficiently deep and large enough that the plant may be placed and its roots spread out in a natural manner. Moist, mellow soil should then be worked in about the roots and well firmed to within about three inches of the soil level. The plant should then be well watered, which aids in firming the soil and driving out the air. As soon as all the water has settled, additional soil should be filled in about the plant. Each plant should be set at the same depth or perhaps one inch deeper than it originally grew in the nursery.

Pruning newly set plants.—All newly set plants should be pruned back in proportion to the reduced root system. This aids in stimulating stronger shoots and better quality flowers.

Pruning should consist first of cutting out all bruised and weak growth, and then cutting back the stronger canes. Most roses should be cut back so that only about one third of the original growth remains.

Protection.—All newly set plants, whether planted in spring or fall, should be provided with a mulch of well-rotted manure, straw, or peat, in order to preserve moisture and to prevent alternate freezing and thawing which results in soil heaving. See winter protection (page 11).

CULTIVATION AND FERTILIZATION

Roses require frequent, careful cultivation to keep weeds in check and the soil in the best physical condition. Deep cultivation is unnecessary and should be avoided as there is danger of disturbing the feeding roots.

A mulch of well-rotted manure or peat applied in early spring aids greatly in improving the physical condition, fertility, and waterholding capacity of the soil, and aids in modifying soil temperature to some extent.

The time to apply fertilizers to established roses is during early spring and through their flowering period. This enables the plants to make vigorous growth and flowers of good size and quality. Roses which are heavily fed in late summer and fall do not harden off properly and are subject to winter injury.

Chemical fertilizers are becoming more popular each year and should be used more freely by gardeners. A complete fertilizer, such as a 2-12-4, 4-12-6, or one of similar analysis, is recommended. Such a fertilizer, if used for roses, may be applied at the rate of two or three pounds per 100 square feet of bed area. Three applications should suffice: the first just as the plants are leafing out; the second just previous to flowering; and the third immediately after flowering. For large individual bushes or climbing roses, one-half cupful of a 2-12-4 or 4-12-6 fertilizer for each application should be adequate. Small plants should be given less in proportion to their size. Where possible, applications of fertilizers should be well incorporated into the surface soil previous to a rain. If this is not possible, it should be well watered in. Fertilizers should not be applied during hot dry weather.

WATERING

Roses require considerable water; this is especially true just previous to and during their flowering season. When the plants show need of water, water thoroughly. Frequent light waterings should be avoided for such a practice causes shallow root formation and makes conditions more favorable for diseases, such as black spot and mildew. Under ordinary conditions, evening or night waterings promote the best growth. Under no conditions is it advisable to wet the foliage and flowers during the heat of the day in full sunlight. Watering under such conditions results in scalding and promotes a weak, soft growth and flowers of inferior substance and quality.

WINTER INJURY

Winter injury to roses is a common cause of much discouragement in rose culture, much of which can be avoided if proper cultural conditions are practiced. There are two types of injury: (1) loss of moisture from the canes and roots by evaporation and (2) the actual freezing of the canes and roots.

Plants, although dormant, require moisture for evaporation continues throughout the plant at all times. In order that the twigs may continue to give off moisture the roots must remain active. Frequently high winds accompany low temperatures, and if the soil is not well protected it will dry out so rapidly that the roots will become severely injured. This in turn will cause the twigs and buds to dry out, shrivel and die for lack of moisture.

The actual freezing of plants is the result of ice crystals being formed within the plant tissue from water that has been withdrawn from the cells. Twigs which have been so affected present a brown, water-soaked appearance shortly after they thaw and are permanently injured.

In order to reduce winter injury to the minimum, early maturity is the most important single factor. While seasons vary greatly from year to year, certain cultural practices should be followed in bringing about as great a degree of maturity as possible. The following suggestions are offered:

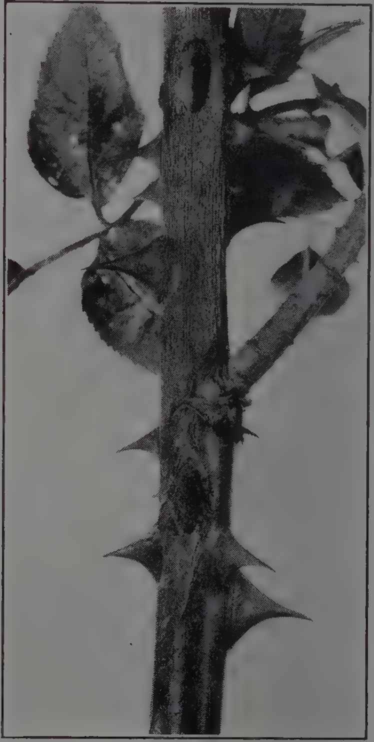

Figure 7. Winter injury. Early maturity of plants through cultural practices is the most important means of control. Winter protection is also beneficial.

1. Select those varieties that are known to be relatively hardy for your locality.
2. Roses which have become heavily defoliated during their growing season due to insect injury, diseases, or for any other reason, are more susceptible to winter injury.
3. Soils that are heavy and inclined to be wet delay maturity. Roses require adequate drainage.
4. Winter winds of high velocity may cause heavy injury. This is particularly true of roses which are grown in the protection of deciduous trees during the summer. Such trees afford but little protection during winter.
5. Cultivation and applications of nitrogenous fertilizers should be discontinued after August 1 in order that the new growth may have adequate time to mature before freezing weather.
6. Late summer pruning should be avoided, as it often stimulates new growth, which will not become sufficiently mature before winter.

WINTER PROTECTION

It is generally assumed that protection is applied to keep plants warm. This conception is not true. The real purpose is to keep the soil and plant temperatures as uniform as possible when the ground is once frozen, thus preventing alternate freezing and thawing which accompany the weather changes. No protection should be applied until the plants have become defoliated and the soil is frozen or about to become frozen.

Inasmuch as roses vary greatly in hardiness the requirements of the various groups will be considered individually.

Bush Roses.—Such roses are very hardy and seldom if ever need protection after once established. Mounding soil up about the plants in late fall for the first two years is suggested.

Teas.—Roses of this group are not hardy in Indiana, but, if grown, may be treated as annuals and replaced each year. Some growers treat them similarly to cannas, digging them each fall and storing them in cellars or basements and covering them with moist soil, then planting the following spring.

Hybrid Teas.—Hybrid Teas may be successfully carried over winter if adequate protection is given. The most common practice is to hill soil up about the plants to a height of about ten inches, and over the soil place a mulch of coarse straw or well-rotted strawy manure.

The placing of inverted fruit hampers or wooden boxes over the plants and hilling soil about them has given good results, but is rather unsightly.

Hybrid Perpetuals and Dwarf Polyanthas.—Roses of these two groups are comparatively hardy, but respond very favorably to protection. This is best provided by banking soil up about the plants to a height of eight to ten inches. Straw, leaves, or well-rotted strawy manure may then be applied as a mulch with good results.

Climbers.—Under ordinary conditions the Climbing roses mentioned (page 4) are comparatively hardy, although some winter injury is common each year. There are several methods of protecting such plants. Some of the most common are: (1) bringing all the canes together and wrapping with straw. Although this method is very effective, it is somewhat unsightly; (2) removing the plant from the trellis or support and laying it down and then covering it with soil. After the soil is well frozen add a layer of leaves or straw; (3) covering the entire plant with burlap while still intact to its support.

PRUNING ESTABLISHED PLANTS

Pruning is probably the least understood and the most neglected phase of rose culture. It may be considered an annual chore which, if properly done, will show definite response and pay adequate reward.

The purpose of pruning is to remove all dead and diseased wood, weak growth and interfering canes, to encourage new growth, increase size and quality of flowers, and to make the plants more shapely. The method and time of year to prune roses should depend on their flowering habit, the purpose for which they are grown, and, to some degree, upon varieties. Each plant must be considered as an individual and so treated if best results are to be secured. A good pair of pruning shears should be used. A knife is seldom satisfactory. The following suggestions are offered:

Bush Roses.—Roses of this group require only such pruning as the removal of weakened, dead, and interfering canes. Occasionally a few of the larger canes should be removed or shortened to prevent crowding. It is best done in early spring.

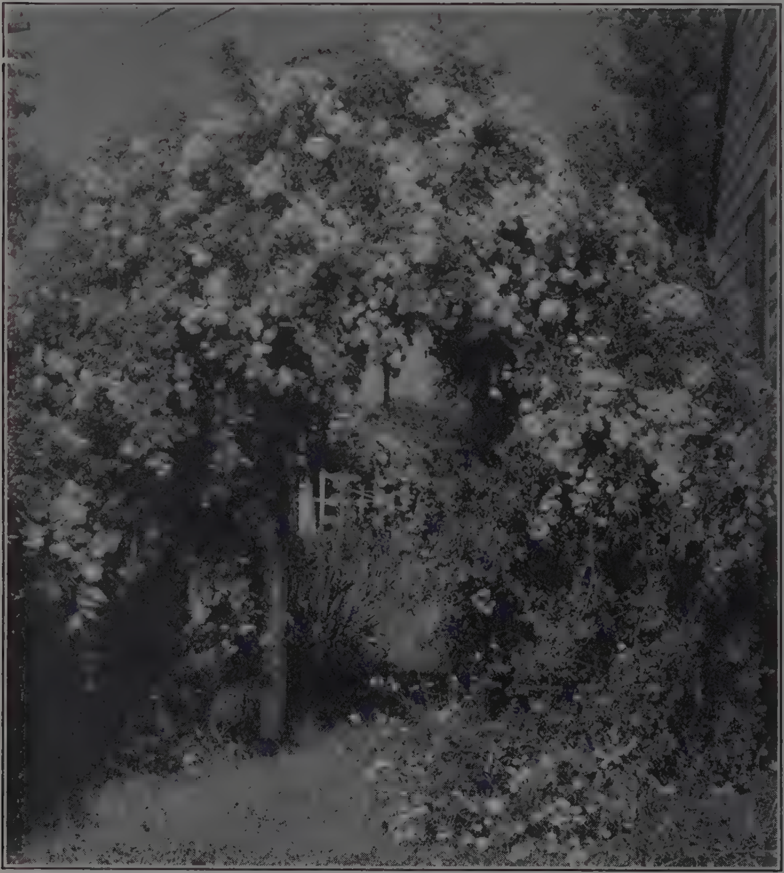

Figure 8. Neglected pruning. Climbing roses should be pruned annually as soon as possible after their flowering season. Most of the canes of the previous season's growth should be removed.

Tea Roses.—Tea Roses generally winter-kill severely each winter. All dead wood should be removed in early spring.

Hybrid Teas.—Roses of this group should be pruned severely, shortening each cane to about six inches in early spring. Heavy pruning stimulates heavier and stronger canes resulting in flowers of larger size and better quality.

Hybrid Perpetuals.—This group of roses should be less severely pruned than the Hybrid Teas for they produce their flowers upon the last season's growth. If judiciously pruned after flowering (July 1) they will often bloom again in mid-autumn.

Dwarf Polyanthas.—These roses generally flower throughout the summer. All old canes should be removed and canes of the last season's growth cut back about one-third in early spring. They flower on the current season's wood.

Climbers.—Roses of this group, including such varieties as Crimson Rambler, Tausendschon and Dorothy Perkins, should be pruned just after their flowering season. This is because they differ in their flowering habit from most other roses in that the next year's blooms are formed on the canes which were produced the previous year. Most of the old wood (one year or older) should be removed and the new (current year's) wood permitted to mature for next year's flowering. Such varieties as Dr. W. Van Fleet, Mary Wallace, Silver Moon, and Paul's Scarlet Climber should not be so severely pruned.

INSECTS AND ALLIED PETSTS*

Rose slugs.—Slugs are perhaps the commonest of outdoor rose pests and their injury is conspicuous because they skeletonize the foliage, causing the leaves to turn brown and drop or they may eat the entire leaf, depending on the species. Although there are three kinds of rose slugs, by far the most abundant is the one which feeds on the upper surface of the foliage and skeletonizes the leaves, leaving only a network of veins.

Control is easily obtained by spraying with lead arsenate, nine level teaspoonfuls to a gallon of water, or dusting with this poison or with calcium arsenate which has been diluted with four or five parts hydrated lime. Nicotine sulphate, diluted as for plant lice will also give good control if thoroughly applied.

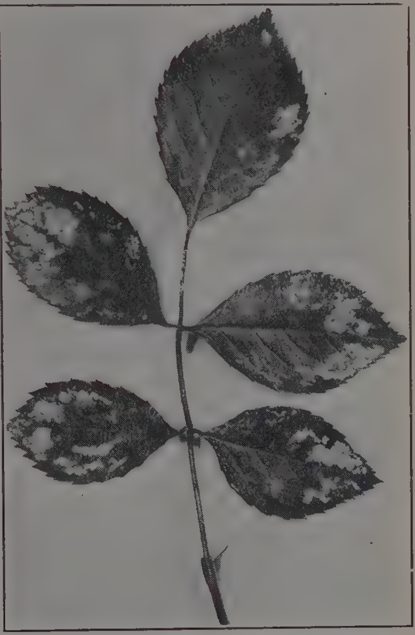

Figure 9. Rose slug injury. Leaves are skeletonized, turn brown, and fall prematurely.

Grasshoppers.—These insects are occasionally common and destructive to the foliage and flowers. If the plants are sprayed or dusted as for the slugs, this is usually ample protection. In severe cases poison bran bait may be used. This is prepared by mixing one teaspoonful of Paris Green with two quarts of bran. In another container dilute one-half teacupful of a strong grade of molasses with three teacupfuls of water. Then mix the diluted molasses with the poisoned bran and sprinkle the bait wherever the grasshoppers occur.

Rose chafer or beetle.—The rose chafer is a small robust, long-legged, clay-colored bettle which is especially fond of the buds and flowers of roses. They usually occur only in areas of sandy soil. Although they have chewing mouth parts. the usual stomach poisons are of little value. Perhaps best control can be obtained by dusting when the plants are dry with barium fluosilicate diluted with equal parts of flour.

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*Prepared in co-operation with the Department of Entomology.

Leaf-cutter bees.—One frequently finds neatly cut circular areas cut out of the rose leaves, with no evidence of the culprit. These bees do not eat the foliage but cut the circular pieces to use in lining their nest, usually in pithy stems of plants. They do very little actual damage and no control is known.

Aphids or plant lice.—Aphids are the commonest of the several sucking insects attacking rose. The common species is about the size of a pin head, leaf-green in color, and they are usually found clustered on the developing buds or tender terminal shoots. These insects reproduce very rapidly and it is, therefore, highly important that control be attempted when the first individuals appear.

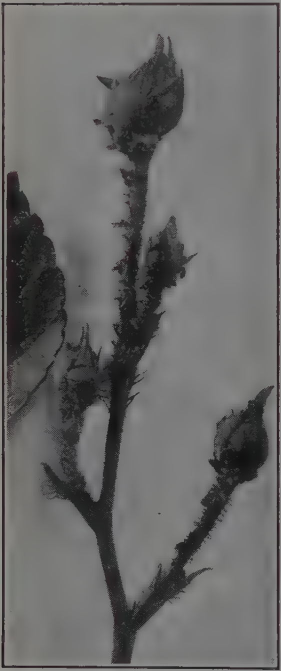

Figure 10. Aphids or plant lice on rose buds. These are sucking insects which generally feed on the terminal shoots causing a stunting growth and inferior flowers.

The material most commonly used to destroy aphids is 40 per cent nicotine sulphate, which is diluted at the rate of one and a fourth teaspoonfuls to a gallon of water in which a cubic inch of soap has been dissolved. Any of the other plant alkaloid materials, such as pyrethrum, derris, and rotenone, which are now commonly on the market, are effective. They should be used according to directions on the container. Whatever contact insecticide is used, it is important that it be applied as a fine, forceful spray and hit the insects to be destroyed.

Leafhoppers.—These are small green active insects which infest the under surfaces of the leaves. The immature individuals run quickly to the shaded side of the foliage when the leaf is turned over, while the adults fly when disturbed. Both immature and adult forms suck the juices of the plant. causing a whitening of the foliage, which results in premature dropping of foliage.

Any one of the contact sprays recommended for aphids is effective against the immature forms, but since the individual insects are quite active it is necessary to make a very thorough application. Excellent results will be obtained by dusting with equal parts pyrethrum powder and dusting sulphur and this combination will also check mildew as well as aphids, leafhoppers, and slugs.

Red spiders.—Tiny, speck-like mites usually infest the under surfaces of the leaves. These are known as red spiders and have sucking mouth parts and affect the foliage much as do leafhoppers. Dry conditions are favorable to red spiders and it is often possible to keep them under control by forceful syringing with water.

Sulphur is the specific remedy for these animals. Dry lime-sulphur, available at most dealers in insecticides, is used at the rate of one to two ounces per gallon of water, depending on the tenderness of the plants. Wettable, colloidal and liquid lime-sulphur is used as recommended on the container for plants in foliage. Dusting with a dusting grade of sulphur is also effective, but usually two or three applications are necessary.

Scale insects.—The San Jose and rose scales are the two most commonly attacking rose. They give the shoots a scurfy appearance. Heavily infested canes should be cut out and burned and the plants sprayed during the dormant season when the temperature is above 40 degrees Fahrenheit, using dormant strength lime-sulphur or spray oil, the latter being most efficient.

Rose stem girdler.—This pest is a native of Europe and has been reported from a number of regions in Indiana the past two years. It seems to attack by preference the rugosa types. This borer makes spiral burrows beneath the bark, causing a noticeable enlargement of the stem. The shoot eventually dies. Cutting out and burning infested shoots as they are observed is the only remedy.

DISEASES*

Black spot.—This is one of the most destructive diseases of garden roses. Practically all varieties are affected although some are fairly resistant, while others are extremely susceptible. The disease is characterized by large black circular spots on the upper surface of the leaf and surrounded by a yellow area. Under favorable conditions several spots may appear on a single leaflet involving most of the leaf's surface. The areas between the spots become yellow and the leaf falls prematurely. Under severe conditions plants may become completely defoliated.

One important step in the control of black spot is to destroy all infested leaves by burning. This is especially important in the fall because the fungus lives over winter on infected leaves. Dust the plants with dusting sulphur once a week during the growing season. Keep the plants growing vigorously by watering and fertilizing. Do not wet the foliage.

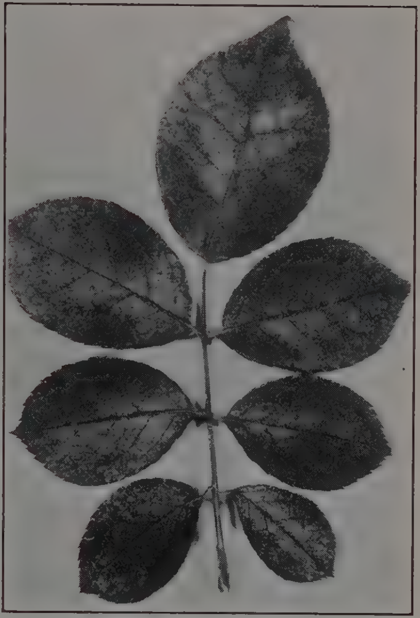

Figure 11. Red spider injury. These mites have sucking mouth parts and usually feed on the under surface of the leaves. The leaves become yellow and fall prematurely.

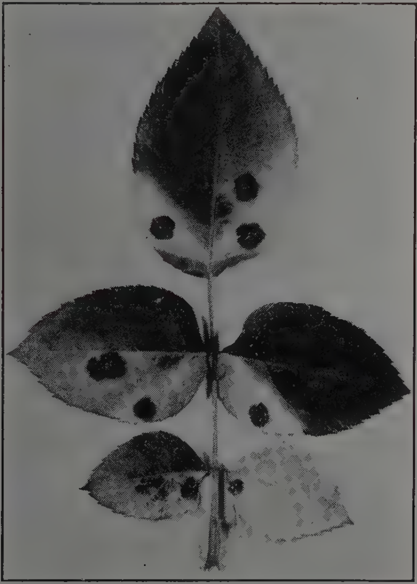

Figure 12. Black spot of roses.

Mildew.—This is an exceedingly troublesome disease which affects most garden roses, especially Climbers of the Crimson Rambler type. The first noticeable symptom is the formation of a white powdery growth on young leaves and buds. The mildew grows rapidly and may soon cover all buds, young leaves, and stems. In severe cases the leaves become dwarfed and distorted. The flowers open abnormally and wilt prematurely. Often plants are so badly infected that they become completely defoliated. The disease is most severe during damp cloudy weather but may be serious throughout the growing season.

This disease can best be controlled by dusting the plants at regular weekly intervals with dusting sulphur. The first application should be made as soon as the plants are well leafed out or as soon as the disease appears. Roses that are properly pruned and are exposed to free circulation of air and sunlight are less susceptible.

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*Prepared in co-operation with the Department of Botany.

The Prairie Rose (*Rosa setigera*), a native of Indiana.

THE WAYSIDE ROSE

Out on the old highway it grows,
The wayside rose,
Rooted deep in the hard dry ground,
Swathed in the weeds that crowd it round,
Tended by naught but the rain and sun,
Its loveliness hidden, praised by none,
Contented, it blooms for the One who knows
Why it is there,—
This wayside rose.

Beaten by every wind that blows,
This wayside rose,
Asking not for a better place,
Where to unfold with ease and grace,
Wasting no time with excuses vain,
It brightens the weed-filled dusty lane,
An exquisite flower that blooms and grows
Perfect for Him,—
This wayside rose.

—*Sarah Wilson Middleton.*

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THE PURDUE PLOW TRASH SHIELD

R. H. Wileman
Department of Agricultural Engineering

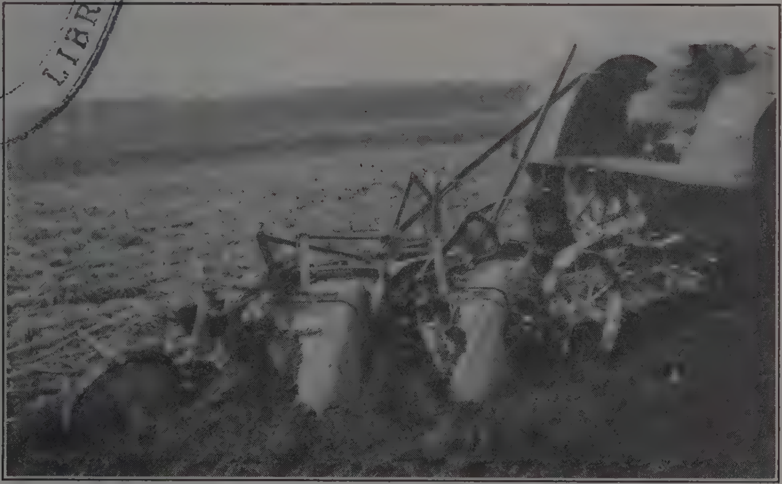

Figure 1. A 2-14 inch bottom plow equipped with Purdue Trash Shields turning under a heavy growth of corn stalks.

The need for some device or attachment for plows which would enable farmers to completely plow under corn stalks and other crop residues has long been recognized. The Purdue Plow Trash Shield is a result of European Corn Borer Control research conducted by the Department of Agricultural Engineering, Purdue University Agricultural Experiment Station. This shield makes possible clean plowing which is recognized as an effective method of controlling the corn borer. It eliminates the necessity for any treatment of corn stalks previous to plowing and the need for hand picking of trash after plowing to meet corn borer control requirements. The shield has also proven to be very effective for turning under sweet clover, soybeans, large weeds and similar materials. Clean plowing is generally recognized as a good farm practice and its value cannot be over emphasized. It materially aids in controlling weeds and eliminates much difficulty from trash clogging tillage implements and helps to control other insect pests as well as the European Corn Borer.

The Purdue Trash Shields can be adapted to and used on any wheeled plow. Their use is recommended on plows which are equipped with a good set of rolling coulters and jointers and have 14 inch or wider bottoms. They are not recommended unless good rolling coulters and jointers are used with them. Rolling coulters which are not less than 15 inches in diameter should be used. Coulters 18 inches in diameter are recommended. The large coulters mount trash much better, wear longer and give better satisfaction in every way.

These trash shields are constructed of sheet metal shaped to form a hood over the top side of the furrow slice as it is turned over. The rear edge of the shield is bent down so that it is perpendicular to the ground surface. This edge is irregular in shape and conforms to the contour of the turning furrow slice. The amount of contact between the shield and the soil is not sufficient to cause wear on the shield or add extra draft to the plow. The shield is hinged at the lower front corners and is free to rise and allow any obstruction to pass under it. This point of hinging is important as it allows the rear of the shield to rise without throwing the front portion out of its desired position. The shield is set so that its top is as near parallel to the turning furrow slice as possible and yet give a maximum amount of clearance for trash. This position of the shield with respect to the furrow slice prevents bunching of trash and bobbing of the shield.

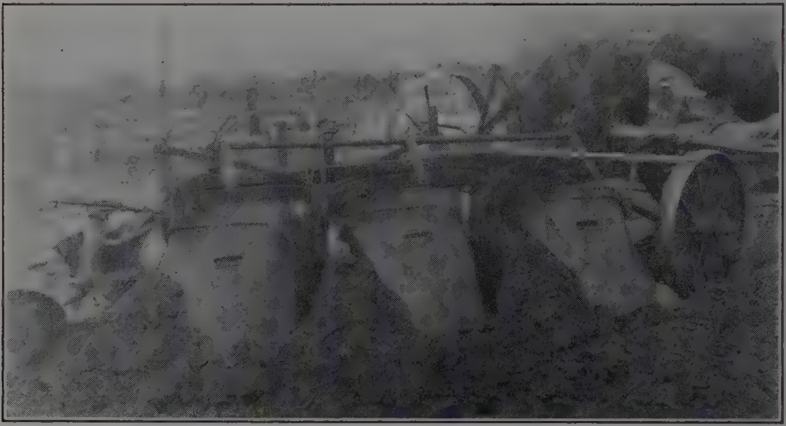

Figure 2. Close-up of trash shields in action.

The relation of the trash shields to the turning furrow slice, how they hood the trash and feed it into the bottom of the open furrow is shown in the above picture. Your attention is called to the sheet metal shield placed on the inside of the front furrow wheel. This shield prevents stalks and trash from catching in the spokes of the wheel and wrapping around the axle or being thrown onto the plowed ground.

The lower end of the shield extends over the open furrow and just clears the edge of the previously turned furrow slice. This edge of the shield is from four to four and one-half inches above the bottom of the open furrow. The portion of the furrow slice on which the stalks and trash are located is completely hooded. The trash to be buried is fed into the bottom of the open furrow immediately in front of the turning furrow slice. (See figure 2). The material being plowed under is buried deep enough so that little or no trouble is experienced from dragging it to the surface during subsequent tillage. When the plow is set to cut seven inches deep, numerous tests show that very little trash is found above four and one-half to five inches. Trash buried to this depth will not interfere with tillage operations. The trash is placed in the bottom of the furrow in the form of a roll which covers from one-third to one-half the width of the furrow. This leaves at least one-half the width of the furrow practically free of trash so that capillary action of soil water is not materially effected.

Good Rolling Coulters and Jointers Are Essential.—It is essential that the plow be equipped with a good set of rolling coulters and jointers to secure satisfactory results from these trash shields. The rolling coulter must cut through the trash and the jointer clean the edge of the furrow slice which when turned over lies against the previously turned furrow. The jointer throws this trash under the shield which feeds it into the bottom of the furrow where it is buried by the turning furrow slice.

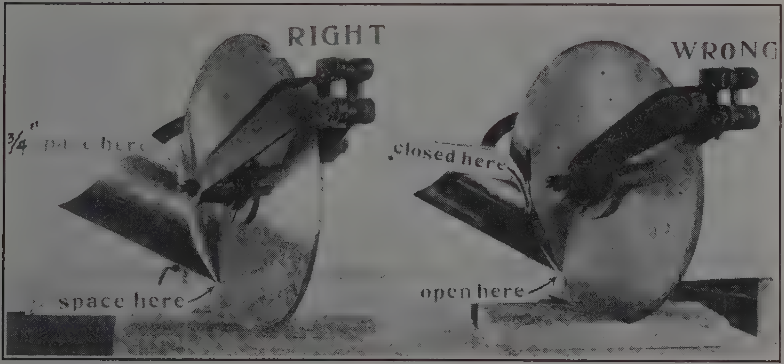

Figure 3. The right and wrong way to adjust a combination rolling coulter and jointer.

Proper Adjustment Prevents Clogging of Combination Rolling Coulters and Jointers.—This difficulty can be overcome in the following manner. The jointer should be adjusted with respect to the coulter so that the point sets from three-sixteenths to one-fourth inch away from the coulter when it is out of the ground. This clearance allows for the spring of the jointer arm caused by the pressure of the soil against the jointer when in operation and prevents the jointer from rubbing the coulter. The space between the jointer and coulter should gradually increase from the point upward as shown in figure 3. The distance between the top of the jointer and the coulter should be at least three-fourths of an inch. In order to obtain this adjustment it may be necessary to remove the bolts which hold the jointer point to the supporting arm and slot these holes slightly with a round file. This will allow more adjustment of the jointer point and make possible the setting described above. In some cases it may be necessary to straighten the edge of the jointer next to the coulter by grinding on an emery wheel.

When a plow equipped with trash shields is used to turn under corn stalks, large weeds, sweet clover and similar material, it is recommended that no treatment of the trash be made previous to plowing. However, when plowing with horses in heavy corn stalks, some previous treatment may be desirable to prevent the horses from dodging stalk rows and getting out of their proper position. In cases of this kind the following procedure is recommended. Cultipack or roll the stalks in lands the same as the field will be plowed. This should be done when the stalks are damp and tough so that they will not be broken loose from the ground or broken up more than necessary. A stalk which is fast to the ground is much easier to control than a loose one.

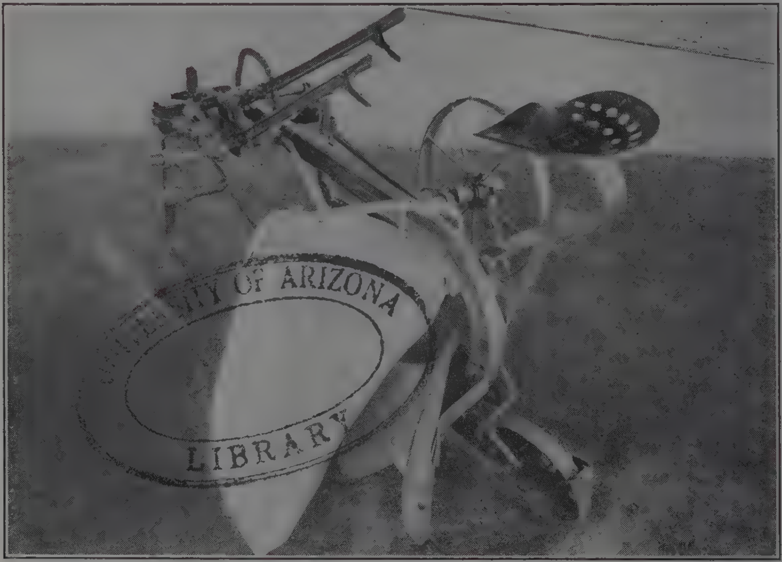

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Figure 4. A low lift horse sulky equipped with a Purdue Trash Shield.

Due to the variations in the construction of different plows, it is necessary to fit these shields to each make and type of plow. This is being done and at the present time blue prints have been prepared giving details for constructing these shields to fit 25 of the plows in most common use in Indiana. Others will be added as fast as time permits. These plans are available to anyone desiring them. There are several manufacturing concerns and blacksmiths in different sections of the state who have secured the blue prints and are in position to furnish these shields ready for installation on the plow. This enables anyone who is not equipped or does not care to make the shields himself to secure them already made. The cost has ranged from six to eight dollars a shield.

Anyone desiring trash shield blue prints or a list of concerns who can supply these shields ready to install on the plow can secure them from Purdue University Agricultural Experiment Station, Department of Agricultural Engineering, Lafayette, Indiana. A small charge is made for the blue prints to cover the cost of printing and mailing. When ordering trash shield blue prints be sure to give the following information. 1. Make of plow. 2. Number of the plow. 3. Size and number of bottoms.

Circular No. 218 April, 1936

The Wheat Meal Fermentation Time Test for Measuring Quality in Wheat

Fig. 1.—The cake maker and the bread maker require different kinds of flour and that means different kinds of wheat. The "fermentation time test" helps to classify wheats with respect to the kind of flour they will make.

Purdue University
Agricultural Experiment Station
Lafayette, Indiana

The Wheat Meal Fermentation Test provides a rapid method of measuring the "quality" of wheat for different purposes. A given amount of whole wheat meal is mixed with a given amount of yeast suspension and made into a doughball. The doughball is then put into a beaker containing distilled water which is placed in an oven in which the temperature is favorable for yeast fermentation, gas evolution and disintegration of the dough mass. The length of time or "fermentation-time" required to start the breaking apart or disintegration process of the doughball is used as an index or measure of "quality" or gluten strength of flour which may be derived from a given sample of wheat. The result, or "fermentation-time", is recorded in minutes and is, therefore, the number of minutes that elapse between the time the doughball is placed in the distilled water and the time at which dough disintegration commences.

The method is simple and easily operated, though its very simplicity may easily become a pitfall to the operator who regards it as foolproof. Despite its simplicity of operation the wheat meal fermentation time test should be carried out with the same meticulous care as is accorded in making the protein test, the baking test, the viscosity test, or any other important laboratory test.

THE WHEAT MEAL FERMENTATION TIME TEST FOR MEASURING QUALITY IN WHEAT

By

G. H. CUTLER and W. W. WORZELLA

A suitable test for evaluating quality in small plant breeding samples has long been desired by breeders interested in developing new varieties of wheat of improved quality. The need for such a test has been rather keenly felt in recent years by breeders faced with the problem of combining suitable baking quality with other major characters, such as yield, cold resistance, disease resistance, etc. This undertaking has been somewhat complicated by the fact that it was necessary to go outside of our common wheats to species of wheats that are low and distinctly inferior in baking quality, in order to secure the desired disease resistance and winter-hardiness. Furthermore, in a breeding program large numbers of selections and recombinations become available and should be tested for quality especially during the early segregating generations when only a few grams of wheat are available. It was this type of problem that confronted the authors in carrying out a soft winter wheat breeding program in which an attempt was made to recombine in a wheat such characters as cold resistance, disease resistance, yield, and other essential economic characteristics in a wheat that would yield a flour suitable for pastry purposes. Careful consideration was given, therefore, to a test suitable for appraising the quality of small samples. The authors appreciate that the term "quality" though relative includes many factors. Of these probably the most important is gluten strength or baking strength as it is often referred to. It is in this sense only that the term "quality" is used in this paper.

In studying all phases of this question it was decided that a suitable test for evaluating quality must combine at least six major features, as follows: (1) the results obtained from such a test should be in agreement with the known baking quality and correlate with other important indices for quality, (2) it must be dependable and highly accurate, (3) it must be capable of testing as little as 2 to 5 grams of wheat (seed of an individual plant), (4) it must be quickly operated in order that all samples may be tested between harvest and seeding time, (5) it must be applicable, if possible, to wheat meal, rather than flour, since the latter requires too much wheat and, (6) its operation should be as simple as possible, consistent with a high degree of accuracy.

When gauged by one or more of the above requirements, it was surprising to find that all, or nearly all methods available were unsuitable. The one which seemed to possess the greatest promise was the little known and little used Saunder's Test. This method was investigated by the writers and it was found that wheat meal could be satisfactorily substituted for flour. Each step in the procedure was then studied and standardized. The method has been designated "The Wheat Meal Fermentation Time Test". It has been employed by the authors for some six years during which time more than 22,000 tests, mostly with soft and semi-hard winter wheats grown in Indiana, have been made with satisfactory results. Likewise, favorable results have been reported by some twenty Experiment Station workers throughout United States, Germany, Australia, Russia and Argentina, as well as by many millers. These investigators show that the results obtained with the Wheat Meal Fermentation Time Test, correlate with other indices of quality and are consistent and in agreement with the known quality of wheats as determined by the trade.

Standardizing the Procedure: Since the Saunder's Test was developed for the use of flour, it was necessary to check each step in the procedure in adapting it for the use of meal. Accordingly, the following were carefully investigated: (1) age of wheat, (2) preparation of the wheat sample, (3) moisture content of the wheat, (4) soundness, (5) plumpness or leanness of the wheat, (6) disinfectants, (7) meal fineness, (8) suitable grinder for reducing the wheat, (9) meal sampling, (10) size of sample and doughball, (11) size of beaker, (12) length of time required for kneading the doughball, (13) temperature of distilled water in beaker, (14) strength of yeast suspension, (15) consistency of doughball, (16) suitable oven for fermentation, (17) oven temperature, and finally, (18) the end-point of disintegration of the doughball for different types and classes of wheat. When each step was fully investigated and the resulting data carefully analyzed a method of procedure was formulated. Later, following further experimental testing, the method was standardized and designated The Wheat Meal Fermentation Time Test. It is outlined in full in this publication and is referred to both by its full name, and by the fermentation time test. It may not suit all classes and conditions of wheat, though it has not been found necessary to modify it even after six years use on soft and semi-hard winter wheats in which more than 22,000 samples have been tested.

The Method

Preparing the Wheat Samples:—Dry, sound, clean, normal wheat representative of the bulk of the sample from which it is taken is used. Scabby, dirty, weevilly, shrunken wheat or seed treated with disinfectants should not be tested as they do not respond satisfactorily. Wheat should not contain over 13 to 13.5 per cent of moisture; less than this amount gives better end results since it permits of more normal doughball formation and disintegration.

Age of Wheat When Tested:—Inasmuch as wheat continues to undergo changes in "quality" and condition for some time after harvesting, the authors follow the practice of testing for "quality" any time after six weeks following wheat harvest. Furthermore, samples whose "quality" is to be directly compared are tested within a relatively short period of time. It has been found too that the "quality" of ground wheat changed more rapidly than unground wheat and it varies to some extent with the variety of wheat. Grinding, therefore, is done the same day that the fermentation tests are carried out.

"Raw" Wheat is Ground into a Meal:—Wheat meal, not flour, is used when measuring gluten quality by the wheat meal fermentation time test. The wheat is ground to a proper fineness by means of the Labconco Mill (Fig. 2). This mill grinds rapidly, is easy to operate, cleans itself quickly and thoroughly and is readily adjusted so as to secure the desired fineness of meal. The adjustment is made at the rear end of the motor. This, when set at "F", gives meal of satisfactory fineness. Usually the practice is followed of turning the adjustment clockwise as far as it will go, then in the opposite direction until the pointer is opposite "F".

No doubt other suitable grinders may be found on the market. Grinding of the meal, however, is so vital to correct results that proper grinding cannot be overstressed.

Sampling the Meal:—The meal should be tested within a day after it is ground since meal allowed to stand will undergo changes that will modify its quality and also the "fermentation time." When ready to sample, carefully mix the wheat meal to insure an even distribution of the finer and coarser particles (Fig. 3), (Fig. 4).

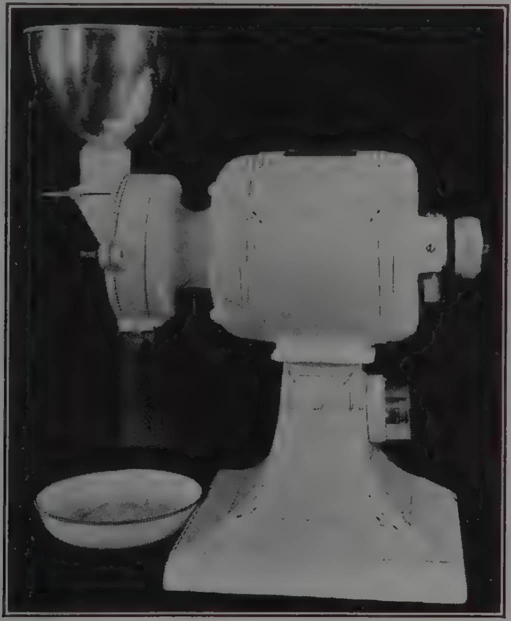

Fig. 2. The Labconco Mill

Making the Yeast Suspension:—Prepare a yeast suspension by dissolving 10 grams of Fleischmann's compressed yeast in 100 c.c. of distilled water. A new solution should be made up each day from fresh yeast, or from yeast kept in a refrigerator or ice box.

Making the Doughball:—Weigh out in triplicate 10-gram samples of meal and place into 150 c.c. beakers (as little as 3.5 grams of meal have been used with satisfaction by proportionately reducing the size of the beaker, the amount of yeast suspension and the amount of distilled water in the bath), and by means of a pipette add 5.5 c.c. of the yeast suspension (stir suspension for each doughball to insure uniform mixture) which is maintained at 80 degrees Fahrenheit (Fig. 5), and with a glass stirring rod mix into a coherent mass (Fig. 6). The mass is then transferred to the palm of the left hand, and with the thumb of the right hand is kneaded (for about a minute), until it becomes a doughball of *medium stiff consistency* (Fig. 7). Since the moisture absorption varies with different wheat varieties and strains, some doughballs may require additional water; hence moisture (do not add more of the yeast solution) is added when needed, followed by further kneading until the right consistency is obtained. Finally the ball is rolled in the hands into a small sphere, free from folds and crevices.

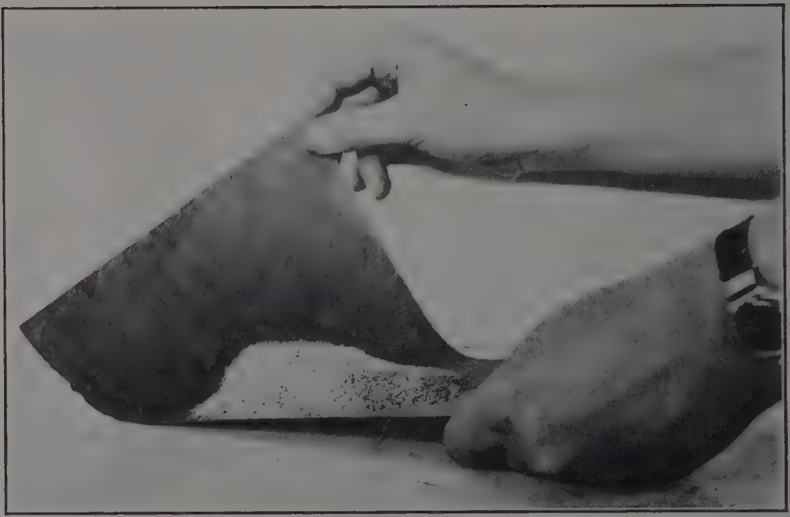

Fig. 3. Mixing the Meal

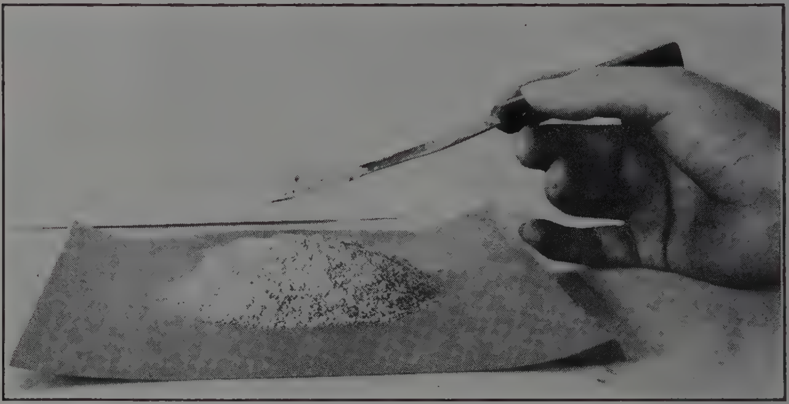

Fig. 4. Sampling the Meal

The Fermentation Test:—In making the fermentation tests, it is recommended that a standard wheat of known "time" be tested each day, or, better still, with each series of tests to serve as a check or control. Such a practice will be found helpful, especially in comparing results obtained on different days. Each 10-gram doughball is placed in a 150 c.c. low form beaker containing 80 c.c. of distilled water kept at 80 degrees Fahrenheit. The ball falls immediately to the bottom of the beaker. *The time of immersion of the doughball is at once recorded.* Place the beakers containing the doughballs in a fermentation cabinet equipped with transparent sides where a uniform temperature of 80 degrees Fahrenheit is maintained (Fig. 8). Regular observations are made on the behavior of each doughball.

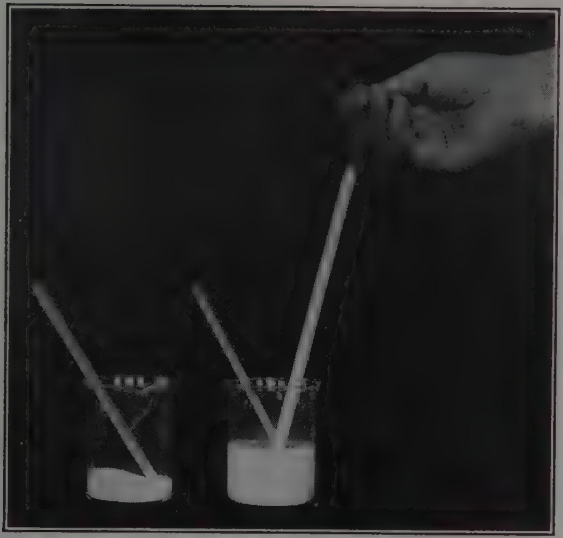

Fig. 5. Sampling the yeast suspension

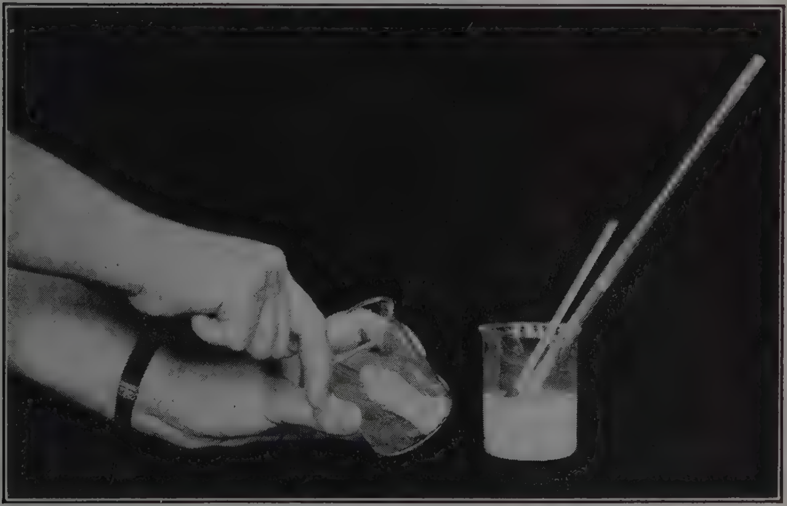

Fig. 6. Mixing yeast and meal into a coherent mass

As soon as fermentation gets under way, the ball becomes buoyant, rolls about and rises to the surface of the water. Soon it begins to swell and assumes a larger volume; in soft wheats this form may be more or less spherical (Fig. 9), while in the harder wheats it becomes flat and tends to cover the entire surface of the water (Fig. 10). The size and volume of the doughball gradually increases, and sooner or later, depending upon the gluten strength of the wheat being tested, gives evidence of breaking apart. *When the dough thus begins to detach itself and falls to the bottom of the beaker the time is again recorded.*

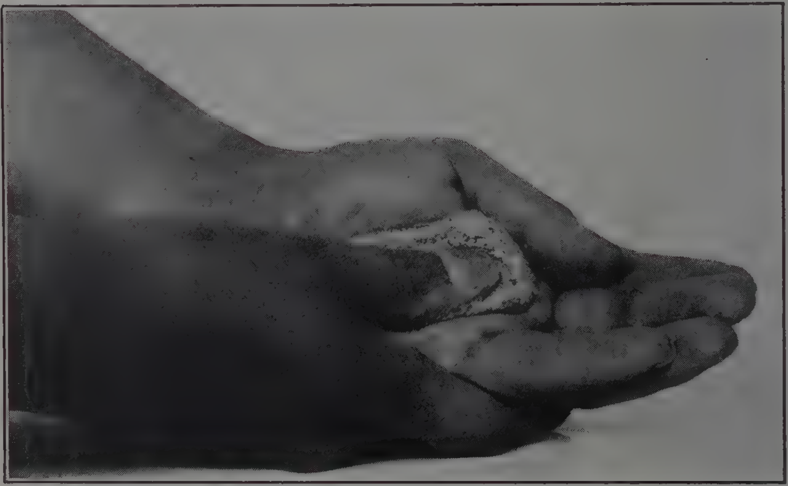

Fig. 7. Kneading into a doughball

Determining the End-point of Doughball Disintegration:—The end-point in doughball disintegration, or point at which the time is recorded, is a feature of this test which may prove a source of some difficulty, especially to operators who are unaccustomed to it. Here is certainly a place where experience will prove a good teacher because of the inevitable variation in the behavior of doughballs in the beaker. In the stronger gluten wheats the doughball tends to cover the surface of the water in a flat, fleecy-appearing mass—while the weaker gluten, soft wheats assume a spherical form and rarely fill up the beaker. Furthermore, the harder wheats with the tougher glutens require a distinctly longer interval of time before disintegration commences. Usually they start to tassel off on the under side of the ball, but sometimes a part of the side or edge of the doughball may break off and fall to the bottom, or the edges may curve under and the whole mass sink. At this point the time is recorded.

The soft wheat doughballs as a rule assume a more spherical outline. Those with medium strong glutens (40 to 125 min. wheats) disintegrate by pieces of different sizes breaking away; or the bottom part of the ball may all fall away. In others, the doughball becomes "water-logged" and sinks in a mass. On the other hand some doughballs from the weaker gluten wheats (the 15-30 min. white soft wheats) present quite a different type of disintegration. In these, minute dough particles begin to fall off in one or more places and this proceeds until in 1 to 3 minutes the particles become so numerous as to give the appearance of a "shower". Thus does the end-point or beginning of doughball disintegration manifest itself in different ways, in different wheats. In our experience, however, in the Department of Agronomy, where different operators are using the fermentation time test on wheats showing wide differences in doughball behavior, little or no difficulty is encountered in determining the end-point. With experience the operator of the fermentation time test soon gets to "know" his doughballs.

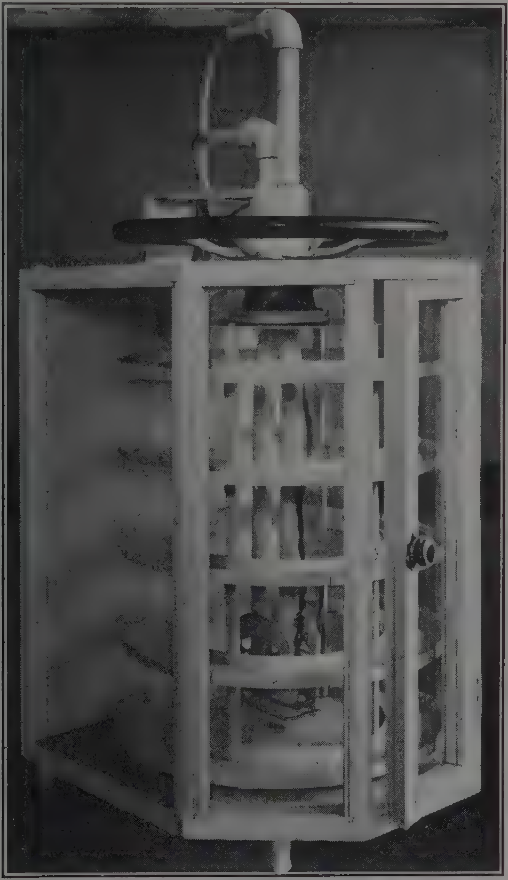

Fig. 8. Fermentation Cabinet suitable for testing "quality" of wheat by the wheatmeal fermentation time test. (Designed by the authors in 1932).

Measure of Gluten Quality:—The "time" or fermentation-time, as it is termed, for each sample is thus obtained. It is recorded in minutes, and is therefore the *number of minutes that elapse between the original immersion of the doughball and the beginning of disintegration of the doughball.* Hence the "fermentation-time" recorded in minutes becomes the index or measure of "quality". The longer the time the stronger the gluten quality; this may vary from as low as 15 minutes, in some of the soft wheats, to 400 or more in the best hard varieties. The wheats preferred for bread flours require a long "fermentation-time", while the ones preferred for pastry flours have a short "fermentation-time".

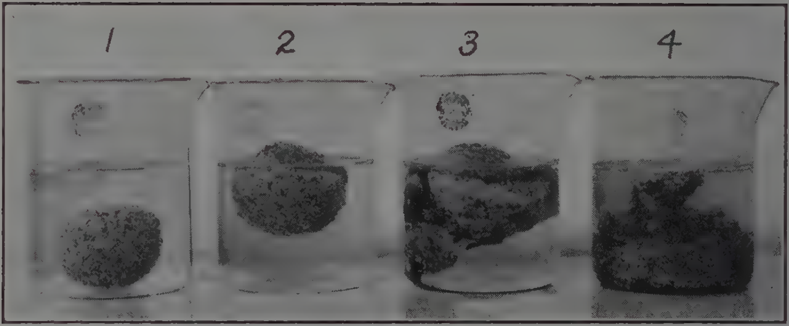

Fig. 9. Behavior of a doughball from a soft wheat. 1, doughball just immersed when time is first recorded. 2, doughball 20 to 30 minutes later. 3, the first piece of dough has just split off. At this stage the time is again recorded. 4, doughball 10 to 15 minutes later when it has disintegrated and completely fallen apart.

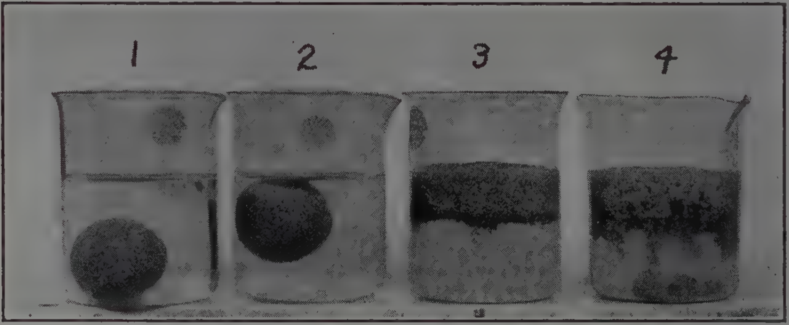

Fig. 10. Behavior of a doughball from hard spring wheat. 1, doughball just immersed when time is first recorded. 2, doughball 20-30 minutes later. 3, the first piece of dough has just detached itself and is still hanging like a small tassel to the under surface. At this stage the time is again recorded. 4, doughball three or four hours later in slow process of disintegration.

Variation in Fermentation-Time:—A 10 per cent variability rule has been adopted as a basis of agreement among triplicate doughball tests from the same lot of meal. When satisfactory agreement is not obtained, the entire test is repeated. No difficulty has been experienced in applying this rule to tests made on typical soft, semi-hard and hard varieties, when grown under their accustomed range of adaptability for quality, for their respective classes. It should be said that in our entire experience with the wheat meal fermentation time test it has seldom been found necessary to repeat a test.

Testing Millers' Samples:—In order to know the "quality" of wheat desired by the miller, one of the first steps in the soft winter wheat breeding program in the Agronomy Department at Purdue University Agricultural Experiment Station, was to obtain a large number of samples of wheat direct from the Indiana *millers*, just as they use it from day to day. These have been obtained more or less continuously over a period of years, and tested by the wheat meal fermentation time test, and the results thus secured are used as a guide in developing wheats suitable to meet miller and baker requirements.

Milling and Baking Tests Still Essential

As already emphasized a quick, dependable test for gluten quality will not only reduce time and expense in a wheat breeding program to a minimum, but, of utmost importance, new wheats of the desired "quality" can be readily developed to meet every commercial need. Of significance, too, is the fact that the miller's interests can be safeguarded since all plant selections can be tested during the early segregating generations when they may be rejected at little or no loss to the breeder should they fail to give promise of producing strains that will measure up to the specific requirements of miller and baker.

The Wheat Meal Fermentation Time Test measures a very important component of quality in wheat, namely, gluten strength. However, there are other components of quality, such as color, flour yield, fineness of flour, etc., which are not measured, and these must be determined by the milling and baking and other tests. When promising strains become fixed and a sufficient quantity of uniform grain is available, and certainly before a new variety is distributed to farmers for commercial production, milling and baking tests should be undertaken to obtain complete data on quality.

The Wheat Meal Fermentation Time Test and the Millers:—While the fermentation time test has been developed primarily for the use of wheat breeders and geneticists who have only small quantities of seed available, especially in the early segregating generations, and are therefore unable to use the baking test, it seems to offer much promise also as an aid to the miller and elevator operator. Perhaps even the cereal chemist may find use for such technic. Inasmuch as this test requires a minimum of time and seed, is simple and inexpensive to operate, it seems to lend itself peculiarly to the needs of the miller.

In discussing the fermentation time test recently before a group of millers, one of them remarked, "If this test evaluates 'quality' for the wheat breeder as accurately as experimental data would seem to indicate, will it not serve equally as well for those interested in the merchandising and processing of wheat?" In other words, why cannot the miller and others interested utilize such a simple test to advantage to himself and the milling industry? In response to such an inquiry, it may be stated that already there are numerous millers in Indiana, Ohio, and Michigan who are using this test with satisfaction.

There seems to be much promise that the fermentation time test will render an important service to the milling industry. Several hundred cooperative tests made for different Indiana millers during the past five years amply bear out this statement. Furthermore, because of the small amount of seed required, ease, simplicity and quickness in making the test, large numbers of small samples of wheat can be tested in a short time to determine their fitness for specific purposes, at low cost. Accordingly, small farm-samples representing different varieties or classes of wheat, grown in different seasons, and on different soils both high and low in fertility, in different sections of the country, can be tested quickly as to their suitability for a given purpose. Furthermore, market samples can be forwarded long distances if necessary by mail in small quantities and tested in the same way.

Some millers are now using the fermentation time test as an aid in buying and binning wheat for their regular milling operations. They find it capable of furnishing valuable information especially when used in conjunction with the protein content, viscometer data, etc.

A Classification of Wheats Based on Utility and "Quality" is Suggested:— Studies of "quality" with the aid of the fermentation time test on a wide range of wheats including classes, varieties, strains, and commercial samples, have served to emphasize the possibility of classfying wheats on a utility basis when fermentation time is made the measure of "quality". Accordingly, two general groups of wheat might be set up, viz: Soft or pastry wheats and hard or bread wheats, respectively (the durum wheats are not considered in this classification). These, in turn, can each be further subdivided into four or more classes or fermentation-time groups in keeping with gluten strength and uses or purposes to which such wheats are put, as follows:

I. Soft or Pastry Wheats

Classes	*Fermentation-Time Groups*
Very weak	Less than 30 minutes
Weak	30- 50 minutes
Medium strong	50-100 minutes
Strong	100-175 minutes

II. Hard or Bread Wheats

Weak	150-225 minutes
Medium strong	225-300 minutes
Strong	300-400 minutes
Very strong	400 and over

The authors fully appreciate the difficulties involved in a proposal to set up ironclad groups by which wheats may be classified on the basis of utility and "quality". Obviously, there must of necessity be flexibility to such a classification in order to allow for variations in the behavior of wheats due to soil and climate influences, not to mention the requirements and methods of the miller. The fact too that there is an overlapping between the soft and hard wheats, where the strong of the soft and the weak of the hard are similar in milling and baking qualities and may not infrequently be used for the same purpose, seems to add to the difficulties. Notwithstanding all of these variations, with utility and "quality" as the basis, it seems to matter little how the "quality" varies so long as the different manifestations can be correlated with utility. The value of such a scheme of classification lies in the fact that the users of wheat, whether interested in the manufacture of flour for cakes and bread of the different types, for biscuits, pastry, crackers, or flour for family uses, are enabled to find common ground on which to stand with the wheat breeder and producer. The authors offer such a classification for purposes of inviting discussion rather than as a perfected working model.

Blending Wheats:—The fermentation test offers much promise as a tool in the blending of wheats. Experimental data based on large numbers of blends and shown graphically in Fig. 11, suggest that the miller may also expect some valuable assistance in this respect from this test.

The results (Fig. 11) show quite conclusively that, as the amount of meal of the higher or long time high protein wheat is reduced in the blend the time or "quality" of the mixture is correspondingly reduced, or vice versa. Further studies are essential before this principle can be definitely established; however, in view of the fact that the data presented measured well up to mathematical expectations, the miller seems warranted in at least giving the time test a thorough trial as a basis for blending.

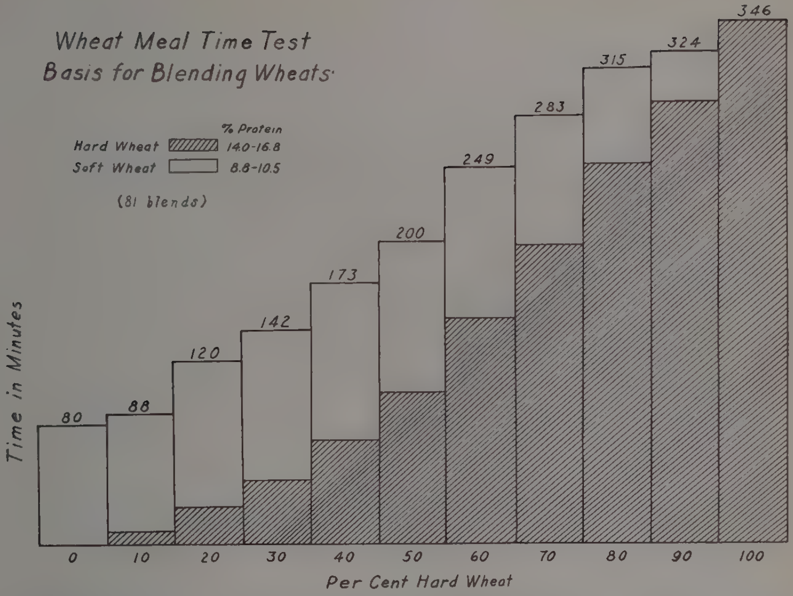

Fig. 11. Blending tests. The bars on the extreme left and right represent the quality "fermentation time" of soft and hard wheats respectively; those in between show the quality "fermentation time" of these wheats when blended in different proportions by weight.

Equipment, Supplies and Cost of Operating the Fermentation Time Test:— The equipment necessary for the Fermentation Time Test is as follows:

1. Labconco grinder
2. Fermentation cabinet
3. Beakers (150 c.c. low form)
4. Fahrenheit thermometer
5. Scales or balance
6. Pipette
7. Glass stirring rod
8. Distilled water
9. Spatula
10. Fleishmann's compressed yeast
11. Graduated cylinder (100 c.c.)

The cost of making the doughballs depends upon the number of tests carried out per day. In the Agronomy Department, the cost has been as low as four cents per doughball, when 150 to 200 doughballs were made within a day. This cost does not include overhead on equipment or distilled water.

Limitations and Interpretations

Some limitations in the application of the Fermentation Time Test in measuring "quality" in wheat have already been given. The following points, however, deserve special emphasis:

1. The Wheat Meal Fermentation Time Test measures only the gluten strength of wheat, and gives no information regarding components of quality such as color, fineness or granularity of flour, flour yield, etc. Other specific tests must be used to determine these components of quality.

2. Being an empirical method, the Fermentation Time Test must be followed exactly as given in this circular if comparable results are to be expected.

3. The method is simple, and easily operated, though its very simplicity may easily become a pitfall to the operator who regards it as foolproof. Despite its apparent simplicity, the Fermentation Time Test should be operated with the same meticulous care as the protein test, the baking test, or any other important laboratory test.

4. The Fermentation Time Test can be satisfactorily used in conjunction with the protein test, the viscosity test, the milling and baking, and other tests in obtaining a more complete knowledge of the essential components of quality. It seems quite possible that no single test will measure all of the components of quality, nor will it give all the information that is desired concerning any wheat.

5. The cost of equipment for the Fermentation Time Test is about $250.00. When large numbers of tests are made within the same day, the cost of making an individual doughball is about five cents.

6. A rule of 10 per cent variability from the average is used as a basis of agreement among triplicate doughball tests. Therefore, the fermentation-time of the individual doughballs of a sample of wheat having an average fermentation-time of 30 minutes may vary between 27 and 33 minutes, while another sample with an average fermentation-time of 300 minutes may vary between 270 to 330 minutes. Thus in a weak gluten 30-minute wheat, the individual triplicate doughballs must agree within six minutes, while in the stronger gluten wheats of 300 minutes, the agreement is within 60 minutes.

7. Since wheat continues to improve in quality for some time after harvesting, the writers follow the practice of testing for quality any time after six weeks following wheat harvest.

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Circular No. 219 June, 1936

REPORT OF
MOSES FELL ANNEX FARM
BEDFORD, INDIANA

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JUNE, 1936

The new pavilion provides a comfortable place for agricultural meetings.

Purdue University
Agricultural Experiment Station
Lafayette, Indiana

Hon. Moses F. Dunn

The Moses Fell Annex Farm consisting of 479 acres was received from the Honorable Moses F. Dunn and Antoinette Fell in 1914, and is used by the Purdue University Agricultural Experiment Station for the purpose of making a thorough study of the agricultural problems of southern Indiana. Mr. Dunn not only gave the farm but generously provided for its development so that it might be operated without cost to the taxpayers of the State.

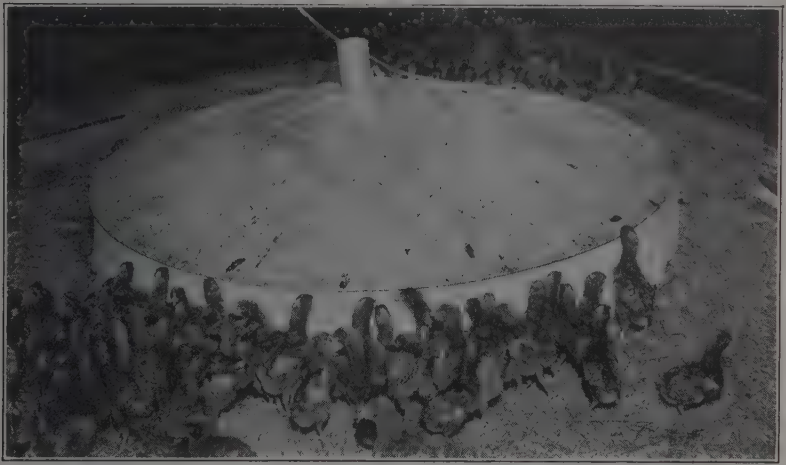
The farm is being operated for the benefit of the farmers of this section. The soil type represents a very large section in the southern part of the state and the results of the experimental work may be applied throughout that section.

Purdue University wishes to acknowledge the helpful cooperation of the various Farm Bureaus, the County Agricultural Agents, the banks, the Home Economics Clubs, Kiwanis Clubs, Rotary Clubs, and other organizations and individuals of Lawrence and neighboring counties. This cooperation extends the value and usefulness of the farm.

REPORT OF MOSES FELL ANNEX FARM

H. J. REED, Farm Director	H. G. HALL, Local Superintendent

During the past year the new pavilion was completed to provide a satisfactory place for agricultural meetings held on the Moses Fell Annex farm. This construction was undertaken in an effort to cooperate with the local authorities to make worthwhile improvements through the provisions of the C.W.A. and the Works Progress Administration. The success of several meetings in the past has been handicapped by inclement weather and those attending the meetings have been somewhat inconvenienced. With this new structure, the usefulness of the farm has been enhanced.



One of the electric brooders used in test on the Moses Fell Annex farm. Five different kinds were used this spring and the results have been quite satisfactory.

Another improvement worthy of note was the 30-foot addition to the cattle barn to provide better facilities for the live stock on the farm. This addition is equipped with modern tie stalls for the cows and will be of interest to farmers handling milk cows.

Several roads on the farm have been improved by a layer of crushed stone to eliminate the muddy conditions that have prevailed in the past.

In cooperation with Professor DenUyl of the Department of Forestry, the woods on the farm have been improved. Many worthless trees have been cut out to give the better kinds a chance to develop. In addition to this, several thousand young trees have been planted to improve the stand and value of the woods in the future.

Ten excellent ewes have been added to the flock of purebred Shropshire sheep through the cooperation and assistance of Professor Claude Harper of the Department of Animal Husbandry. This flock is being developed as a cooperative project on sheep improvement with the Bureau of Animal Industry of the United States Department of Agriculture and it is hoped that this flock may become one of the outstanding flocks of Shropshire sheep in the state.

A purebred Shorthorn bull—Bradford Goldmine No. 83121—was recently purchased for the herd of dual-purpose cattle from one of the old established herds in Pennsylvania. All of his heifers have made the register of merit and have shown good, deep-fleshing qualities. It will be some time before his value can be determined in connection with this project, but if his past performance can be duplicated in this herd we should make marked progress in the improvement of these cattle.

Through the cooperation of the State Department of Conservation, a small flock of pheasants has been established on the farm. The protection and production of wild life in southern Indiana is assuming an important place in an enlarged program of conservation and deserves the interest and cooperation of all citizens.

The Agronomy Department has included a small plot of winter oats in the variety test block for several years. The interest in this crop prompted a larger test of this cereal and last year the four-acre plot produced an average of 52 bushels per acre. A test of three varieties was started this last fall, but the severe winter killed out this larger test. This may be partly due to the fact that the crop was not planted until about the middle of October.

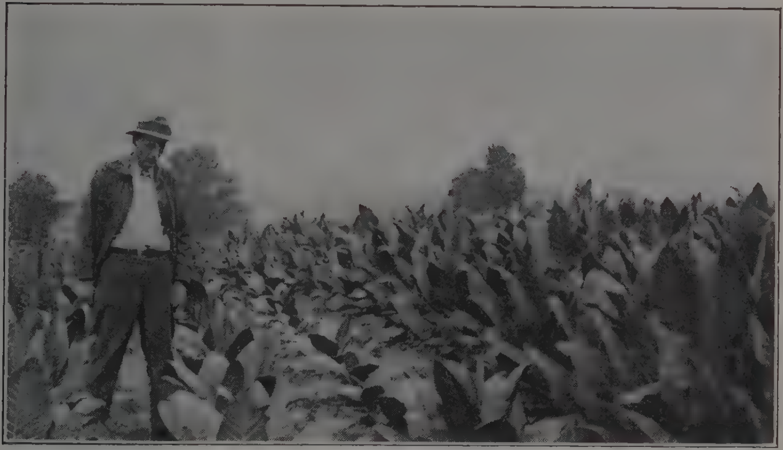
Detasseling plot for the production of hybrid corn.

Winter oats planted in the peach orchard as a cover crop early in September came through the winter in very good condition. A local farmer who purchased seed from the Moses Fell Annex farm and planted it early in September reports that the crop came through the winter in good condition. It is apparent that to be successful in an extremely cold winter these oats should be planted before the middle of September. Many head selections of winter oats were made last year and a few of these have proved hardy in spite of late planting and severe cold. Other selections secured from Tennessee and the U. S. Department of Agriculture show promise of being adapted to southern Indiana. These tests are still in the experimental stage and do not warrant confidence in the adaptability of the crop at this time.

The apple crop last season was the largest that ever was produced on the farm. A good portion of the crop was marketed on the large city markets very satisfactorily, giving further proof that quality fruit produced in southern

Indiana which is well grown, honestly graded and packed can find a market in competition with apples from other production centers.

The severe weather condition in January and February caused extensive winter killing in the peach orchard, many of the trees being entirely killed. Freezing weather during the apple blooming time destroyed much of the fruit prospect for 1936. The Department of Horticulture, however, will go forward with their experimental work and get results of value to apple growers.



Tobacco plots in early August. The plot on the left received no fertilizer and the plot on the right had an application at the rate of 500 pounds per acre.

The poultry work on the farm which has been under the leadership of S. M. Walford of the Department of Poultry Husbandry is being carried forward by Professor Leon Todd. This flock is being improved each year and therefore is becoming increasingly valuable to southern Indiana. Production and feed cost records are kept to show the business side of this enterprise.

The demonstration farm garden project, under the guidance of Professor Gaylord, shows the value of a well grown garden for the farm home. Visit this garden. Planting plans for such a garden are available on request to the Department of Horticulture.

Breeding plots for hybrid corn production are maintained in cooperation with R. R. St. John of the Department of Botany. Interest in hybrid corn has increased very rapidly within the last few years because of the satisfactory performance of hybrids that are adapted to the locality. Years of scientific work are necessary to produce hybrids which meet the requirements of the various sections of this state.

T. E. Heinton of the Department of Agricultural Engineering is continuing the tests with electric brooders for the young chick. The results have been very satisfactory and labor has been utilized more efficiently. Complete cost records are available and will be of interest to poultrymen.

Tobacco experiments are continued on the farm and the results confirm the fact that average yields of 1500 pounds to 1800 pounds of marketable leaf can be produced on this type of soil if fertilized adequately. At least 500 pounds per acre of a good tobacco formula should be applied.

SOILS AND CROPS WORK

The soil fertility experiments carried on under the direction of A. T. Wiancko, Chief, and G. P. Walker, Associate, of the Agronomy Department are showing striking results that are of great value to the farmers of southern Indiana. This phase of the report was prepared by them.

GENERAL SOIL FERTILITY TEST

The field was laid out and tile drained in the spring of 1917. The original rotation was corn, wheat, clover and timothy, but this was changed in 1923 to corn, soybeans, wheat and clover, which is a more suitable rotation for this kind of land. All crops are removed except on plots 6, 7, 8, 10 and 11, where only the ear corn, wheat grain, soybean grain, and clover hay are removed, leaving all the roughage, except the clover hay, on the land in lieu of manure.

The treatments shown in the second column of the table are as follows: L = ground limestone; Res. — crop residue; O = no treatment; M = manure.

All limed plots received 3 tons of ground limestone per acre in the spring of 1917 and an additional 2 tons in 1931. The fertilizers indicated in the table have been applied at the rate of 200 pounds per acre in the row for corn and 400 pounds for wheat since 1929. To the end of 1928 the potash in the fertilizer was 4 per cent and the phosphorus and potash were equally divided between the corn and wheat, but the nitrogen was all applied for wheat, half in the fall and half in the spring.

The manure applications consisted of 6 tons per acre plowed under for the corn in the first round of the rotation. Since then the rate of manuring has been equal to the amount of produce removed during the previous round of the rotation except the wheat grain.

Table I shows the results of different soil treatments begun in 1917.

It will be noted, in comparing with earlier reports and in examining the crops on the experiment field, that the spread between the good and poor treatments is becoming greater year by year, and that the better treatments are becoming more and more profitable. Without soil treatment, the average value of the crops per acre per rotation of corn, soybeans, wheat, and clover, is now $22.39 (plot 14). With lime, manure and fertilizer, the value is $66.50 at an average cash outlay of $9.83 for lime and fertilizer (plot 19).

The most profitable returns have been secured on the limed land, which has received an average of 6.4 tons of manure for corn and 450 pounds of superphosphate per acre divided between the corn and wheat in the rotation of corn, soybeans, wheat, and clover (plot 18). The crop increases from this treatment have averaged 30.7 bushels of corn; 9 3 bushels of soybeans; 12.1 bushels of wheat; and 1925 pounds of hay per acre, valued at $42.89 per rotation at a cash outlay of $9.83 for lime and fertilizer.

Phosphorus is by far the most important plant food need of this soil. Applications of superphosphate have been highly profitable, either alone or in addition to manure. Without manure (plot 2) 225 pounds of 16 per cent superphosphate for corn and for wheat in the four-year rotation has produced average crop increases of 15.9 bushels of corn, 5.2 bushels of soybeans, 8.2 bushels of wheat and 1071 pounds of hay per acre, valued at $24.59, at a cost of $5.04 for the fertilizer. On land receiving an average of 6.4 tons of manure for corn, a similar use of superphosphate has further increased the crop yields by 9.3 bushels of corn, 5.6 bushels of soybeans, and 7.8 bushels of wheat and 1108 pounds of hay, valued at $21.05, at a cost of $5 04 for the phosphate, showing that manure is not sufficient on this land. (Compare plots 16 and 18.)

In recent years, however, potash has become increasingly important on the land which has been receiving only phosphate, showing that the available supply of potash has been so reduced that it has become a limiting factor. It is showing up particularly on the corn and hay. During the last round of the rotation corn has averaged 5.5 bushels more and hay 429 pounds more on plot 3 than on plot 2.

Manure applied at an average rate of 4.7 tons per acre for the corn has produced average crop increases of 15.8 bushels of corn, 1.8 bushels of soybeans, 2.0 bushels of wheat and 399 pounds of mixed hay per acre, valued at $13.53, which amounts to an average return of $2.88 per ton of manure applied. (Compare plots 14 and 15.)

Ground limestone applied at the rate of three tons per acre in 1917 and 2 tons in 1931 has so far produced average crop increases of 5.7 bushels of corn, 1.8 bushels of soybeans, 2.0 bushels of wheat, and 553 pounds of mixed hay per acre, valued at $40.52, up to the present time. (Compare plots 13 and 14.)

Lime and manure together have produced average increases of 21.4 bushels of corn, 3.7 bushels of soybeans, 4.3 bushels of wheat, and 817 pounds of mixed hay per acre, amounting to $21.87 for the rotation. (Compare plots 14 and 16.)

Phosphate and potash on the corn and complete fertilizer on the wheat have produced average increases of 20.0 bushels of corn, 4.4 bushels of soybeans, 10.7 bushels of wheat, and 1254 pounds of mixed hay per acre, amounting to $29.17 at a total cost of $8.40 for the fertilizer. (Compare plots 12 and 14.)

TABLE I—RESULTS OF GENERAL FERTILITY TEST

Plot No.	Treatment	Average Yields Per Acre				Financial Statement Per Rotation			
		Corn bushels 1917-1935	Soybean bushels 1923-1935	Wheat bushels 1918-1935	Hay pounds 1917-1935	Total value of grain and hay	Value of increase due to soil treatment	Cost of treatment	Gain over cost of treatment
1	L.	25.6	8.5	4.8	1395	$30.78			
2	L 0-12-0.	42.0	13.9	13.3	2479	56.11	$33.12	$7.67	$25.45
3	L 0-12-6.	46.4	13.7	13.8	2642	59.47	35.74	9.83	25.91
4	L 2-12-6.	45.5	14.0	15.8	2520	60.53	36.06	11.03	25.03
5	L.	27.8	9.4	5.7	1448	33.74	. . . .	. . . .	. . . .
6	L 2-12-6 Res.	48.0	15.9	16.6	2707	64.89	39.67	11.03	28.64
7	L 0-12-6 Res.	48.9	16.3	15.8	2852	65.56	40.34	9.83	30.51
8	L 0-12-0 Res.	48.5	16.7	14.6	2669	63.86	38.64	7.67	30.97
9	L.	28.4	9.5	5.7	1352	33.76	. . . .	. . . .	. . . .
10	L Res.	29.8	10.2	5.7	1368	35.15	10.71	2.63	8.08
11	—Res.	24.2	9.2	4.8	1127	29.50	5.95	. . . .	5.95
12	—2-12-6.	40.5	11.4	14.0	1993	51.90	29.03	8.40	20.63
13	L.	25.4	8.6	5.2	1272	30.62	8.53	2.63	5.90
14	O.	20.1	6.9	3.3	711	22.39	. . . .	. . . .	. . . .
15	—M.	36.3	8.8	5.4	1102	36.28	13.59	2.35	11.24
16	LM.	42.2	10.8	7.7	1512	44.83	21.84	5.23	16.61
17	L.	26.9	8.9	5.5	1240	31.83	. . . .	. . . .	. . . .
18	LM 0-12-0.	51.5	16.2	15.3	2581	65.38	42.89	10.87	32.02
19	LM 0-12-6.	52.5	15.7	16.0	2664	66.50	44.83	13.03	31.80
20	LM 2-12-6.	49.6	15.0	16.4	2561	64.28	43.43	14.23	29.20
21	L.	25.1	7.8	4.5	1115	28.56	. . . .	. . . .	. . . .
	Av. L checks.	26.5	8.8	5.2	1304	31.52	. . . .	. . . .	. . . .

NOTE.—In computing the financial results, corn has been valued at 55c, wheat at 90c and soybeans at 80c per bushel; and hay at $8.00 per ton. Straw and stover have not been counted. Nitrogen has been charged at 10c, phosphoric acid at 7c and potash at 6c per pound. Ground limestone has been charged at $2.50 per ton. Manure has been charged at 50c per ton for spreading on the land.

Beginning with 1928, the wheat on the west ends of plots 4, 6, 12 and 20 of the General Fertility Test has been given a spring top-dressing of 15 pounds of nitrogen per acre. The average results for the eight years are shown in Table II.

TABLE II—RESULTS OF TOP-DRESSING WHEAT WITH NITROGEN IN SPRING

Plot No.	Treatment	Bushels Wheat Per Acre 1928-1935	Bushels Increase Due to Spring Top-Dressing
4 east end	2-12-6 in fall	15.7	....
4 west end	2-12-6 in fall + 15 lb. N. in April	21.2	5.5
6 east end	2-12-6 in fall	17.3	....
6 west end	2-12-6 in fall + 15 lb. N. in April	23.1	5.8
12 east end	2-12-6 in fall	14.1	....
12 west end	2-12-6 in fall + 15 lb. N. in April	19.5	5.4
20 east end	2-12-6 in fall	18.9	....
20 west end	2-12-6 in fall + 15 lb. N. in April	23.5	4.6

Top-dressing the wheat with 15 pounds of nitrogen per acre in April has increased the yields by 4.6 to 5.8 bushels per acre. This increase has averaged one bushel of wheat for each 2.7 pounds of nitrogen applied. With nitrogen at 10 cents per pound, the increase in yield has been secured at a cost of 27 cents per bushel.

COMPARISON OF DIFFERENT PHOSPHATES

The object of this experiment is to determine the relative values of superphosphate, rock phosphate, bone meal, and basic slag as phosphatic fertilizers. Superphosphate and rock phosphate are also compared in several different proportions with and without lime, manure, nitrogen and potash fertilizers.

This field was laid out and tile drained in the summer of 1915. The crop rotation is corn, wheat and clover, with all produce removed except second growth clover.

The treatments shown in the second column of the table are as follows:
L = ground limestone; M = manure; St.B. = steamed bone meal; BS = basic slag; SP = superphosphate; RP = rock phosphate; N = 12 pounds nitrogen; K = 50 pounds potash.

Ground limestone was applied at the rate of 4 tons per acre in 1915 and an additional 2 tons in 1931.

Manure was applied at the rate of 6 tons per acre for corn in the first round of the rotation and since then in amounts equal to the produce removed except wheat grain. The phosphates are applied at the rate shown in the third column in Table III. The rock phosphate is plowed under for corn, and the other phosphates and the nitrogen and the potash are broadcast and harrowed in before planting. The table shows the results to date of treatments begun in 1916.

The largest returns have been secured from the combination of ground limestone, manure and medium to heavy applications of superphosphate (plots 5 and 26). The heavy treatment (plot 26) has produced average increases of 26.0 bushels of corn, 11.5 bushels of wheat, and 1686 pounds of mixed hay per acre over the average of the untreated land. (Compare plot 26 with 22.)

TABLE III—RESULTS OF PHOSPHATE EXPERIMENT

Plot No.	Treatment	Pounds phos. acid per acre	Average Yields Per Acre			Financial Statement Per Rotation			
			Corn bushels 1916-1935	Wheat bushels 1917-1935	Hay pounds 1918-1935	Total value of grain and hay	Value of increase due to soil treatment	Cost of treatment	Gain over cost of treatment
0	O	......	23.5	4.4	1124	$20.95	....	....	....
1	LM	......	38.1	9.4	1618	34.94	....	....	....
2	LM St. B	48	44.8	13.6	2472	45.41	$25.43	$8.06	$17.37
3	LM BS	48	47.5	15.1	2411	47.85	26.60	8.06	18.54
4	LM	......	40.4	9.7	1742	36.95	....	....	....
5	LM SP	48	48.5	15.5	2642	49.65	27.76	8.30	19.46
6	LM RP	192	48.2	14.4	2555	48.25	25.79	9.24	16.55
7	LM	......	41.6	10.2	1905	38.66	....	....	....
8	—M SP	48	47.1	13.9	2450	46.83	23.96	5.85	18.11
9	—M RP	192	47.1	14.4	2807	48.66	25.95	6.89	19.06
10	LM	......	40.9	10.1	1901	38.18	....	....	....
11	L—SP	48	31.4	10.7	2117	34.30	12.01	5.61	6.40
12	L—RP	192	29.4	8.8	1992	31.18	9.14	6.57	2.57
13	L[1]	......	25.4	6.0	1359	24.21	2.42	2.25	.17
14	—SP	48	32.1	8.6	1662	31.19	9.65	3.36	6.29
15	—RP	192	35.9	10.9	2184	37.21	15.92	4.32	11.60
16	LM	......	39.0	10.0	1804	36.67	....	....	....
17	L— NK SP[2]	48	42.1	12.7	2255	42.34	20.66	9.81	10.85
18	L— NK RP[2]	192	36.3	10.7	2227	37.44	15.12	10.77	4.35
19	LM	......	41.0	10.7	1872	38.60	....	....	....
20	—NK SP[2]	48	41.2	11.5	1968	39.73	17.48	7.56	9.92
21	—NK RP[2]	192	41.1	12.5	2483	42.54	21.00	8.52	12.48
22	LM	......	39.2	9.4	1844	36.46	....	....	....
23	LM SP	24	47.7	14.3	2348	47.07	24.41	6.58	17.83
24	LM RP	96	46.3	13.5	2313	45.52	20.03	7.05	12.98
25	LM	......	43.0	12.5	2078	41.96	....	....	....
26	LM SP	72	50.7	18.0	3004	54.31	28.62	10.26	18.36
27	LM RP	288	49.1	15.8	2835	50.99	25.93	11.56	14.37
28	LM	......	42.0	11.0	2040	40.06	....	....	....
29	LM SP	160[3]	49.3	16.2	2767	51.15	27.78	10.09	17.69
30	LM RP	600[3]	47.8	14.2	2674	48.35	26.03	11.01	15.02
31	LM	......	40.2	9.4	1818	36.90	....	....	....
32	—M	......	34.3	7.3	1152	29.32	8.62	1.84	6.78
33	—	......	20.6	4.3	932	18.50	....	....	....
34	LM	......	37.6	10.1	1612	35.21	15.63	4.50	11.13
	Av. LM checks	......	41.0	10.2	1840	38.07	....	....	....

[1] Plot 13 was manured on Series B in 1916 and Series C in 1917.

[2] Plots 17, 18, 20 and 21 receive 12 pounds of nitrogen and 50 pounds of potash per acre per rotation, all on the corn.

[3] Applied in 1916 and again in 1925 and 1934.

NOTE.—In computing the financial results, corn has been valued at 55c, and wheat at 90c per bushel, and hay at $8.00 per ton. Straw and stover have not been counted. Nitrogen has been charged at 10c, phosphoric acid at 7c and potash at 6c per pound. Rock phosphate (30%) has been charged at $15.00, and ground limestone at $2.50 per ton. Manure has been charged at 50c per ton for spreading on the land.

In combination with lime and manure, superphosphate has been the most profitable source of phosphorus. (Compare plots 5, 3, 2 and 6.) In this comparison, superphosphate, basic slag and steamed bone meal have been applied at the rate of 48 pounds and rock phosphate at 192 pounds of phosphoric acid per acre with manure for each corn crop.

On limed land, superphosphate has been more efficient than rock phosphate in all cases, whether used in large or small amounts, and with or without manure or nitrogen and potash (compare plots 5, 11, 17, 23, 26 and 29 with plots 6, 12, 18, 24, 27 and 30 respectively).

On manured land without lime, rock phosphate has been slightly more profitable than superphosphate (compare plots 8 and 9).

VARIETY TESTS OF FARM CROPS

The selection of hardy, high-yielding varieties of the crops grown in any section is very important. To determine those best adapted for this part of the state, the most promising varieties of several crops have been compared each year for a number of years. Each variety has been harvested separately and the yields determined by weight. The land on which the variety tests are carried has been kept in a good state of fertility by uniform applications of fertilizer on wheat and manure on each corn crop.

TABLE IV—RESULTS OF CROP VARIETY TESTS, 1922-1934

Varieties	Average yields bushels per acre	
	1930-1934	1922-1925
Winter Wheat		
Purkof	26.8	21.9
Selection 21-2-11	26.6	......
Michigan Amber	26.6	19.5
Fulhio	26.7	......
Fultz	27.2	19.1
Poole	......	17.5
Rudy	......	17.4
Red Rock	26.5	17.2
Red Chaff	......	18.2
Red Cross	24.9	......
Trumbull	27.5	......
Gladden	27.2	......
Nabob	27.5	......
Kharkov	25.0	......
American Banner	21.7	......
Winter Rye		
Mammoth Winter	36.0	21.2
Wisconsin Pedigree	......	18.9
Rosen	......	19.0
Winter Barley		
Purdue 21	33.6	20.7
Tennessee Winter	......	19.0

Varieties	Average yields bushels per acre		
	1930-1934	1926-1930	1922-1925
Oats			
Cartier	31.3	......	......
Iowa 103	27.9	33.7	33.4
Fulghum	27.1	33.0	......
Gopher	26.3	......	......
Minota	25.6	35.2	37.2
Iogren	20.5	......	......
Hulless	18.8	......	......
Swedish Select	......	30.4	33.9
Fairfield	......	......	32.7
Big Four	......	......	29.2
Burt	......	......	29.0
Victory	......	......	27.8
Iowar	......	36.3	......
Cornellian	......	31.5	......
Spring Barley	11.5	11.2	10.4
Spring Wheat	4.7	5.8	8.3
Spring Rye	9.4	9.9	13.7
Soybeans	Hay, pounds per acre		Seed, bushels per acre
	1917-1931	1930-1934	1930-1934
Kingwa	......	4130	17.1
Dunfield	4683	3875	13.1
Manchu	4527	......	......
Midwest	5206	3284	14.9
Wilson	4774	3652	14.8
Virginia	4565	......	......
Mansoy	3510	......	......
Illini	......	3673	13.5
Harbinsoy	......	3609	11.5

PASTURE EXPERIMENTS

The improvement of pasture land has a very definite place in the agricultural program for southern Indiana. Large areas of this section are better adapted to pasture purposes than to its present use. There is a considerable area of pasture land that is not producing in a satisfactory way. The development of better pastures will make possible the expansion of the live stock industry from both the beef cattle and the dairy cattle point of view.

Several years ago a series of pasture plots was laid out in one section of the old pasture, and the results of soil treatment are given in Table V.

Grass mixtures including timothy, red top, Kentucky blue grass, orchard grass, alsike clover, sweet clover, alfalfa, and lespedeza were seeded on the plots in April, 1924. The first two years' growth was largely alsike clover, timothy and red top, with scattered clumps of orchard grass, sweet clover and alfalfa.

After 12 years, blue grass and red top persist along with some timothy on the fertilized plots. Blue grass is much better on the limed and phosphated areas than on the unlimed. Most of the lespedeza, both Korean and common, seemed to have disappeared in the extreme drought of 1930, but is slowly coming back. Hop clover, a member of the clover family, gradually came into the mixtures. This early growing legume seems to have some real worth for rolling pasture land of this type.

For new pasture seedings a mixture of timothy, red top, blue grass, alsike clover and lespedeza is recommended for rolling limestone land. On sour, thin land, a mixture of lespedeza and red top seems best.

TABLE V—RESULTS OF PASTURE EXPERIMENT, 1924-1935

Plot No.	Treatment Per Acre*	Green forage pounds per acre 1924	Green forage increase over untreated	1925	Cured forage, pounds per acre re. av. 1926-35	Cured forage increase over untreated
1	Manure	5445	1512	Due to dry weather, growth was small in 1925 and nothing was harvested	1315	357
2	500 lb. 2-12-6	16940	13007		2090	334
3	500 lb. 0-12-6	13613	9680		1651	693
4	500 lb. 0-12-0	13310	9377		1519	561
5	Untreated	3933	....		958	....
6	Limestone, 2 tons	6363	2430		1294	336
7	Lime, 500 lb. 0-12-0	13613	9680		1625	667
8	Lime, 500 lb. 0-12-6	18150	14217		1698	740
9	Lime, 500 lb. 2-12-6	16940	13007		2186	1228
10	Lime, manure	13613	9860		1668	710

* Treatments applied at seeding time in April, 1923, and fertilizer repeated in fall of 1929. Plots 2 and 9 receive top-dressings of 100 pounds of nitrate of soda per acre each spring. Manure is applied each five years.

ROTATION EXPERIMENT

A comparison of clover, alfalfa, sweet clover, Korean lespedeza and timothy in rotation with corn and wheat is being made on 17 quarter-acre plots.

The effect of these crops on succeeding grain crops, their adaptation and dependability as one-year rotation crops, and their productive capacity are being studied.

All plots except those in the lespedeza rotation were limed with three tons of ground limestone per acre in 1927. All wheat receives 300 pounds per acre of 2-12-6 fertilizer and corn 100 pounds of 0-12-6 in the row. Manure equal to the total weight of produce (except wheat grain) in the previous round of the rotation is divided between corn and wheat. The average results for the first four years are shown in Table VI.

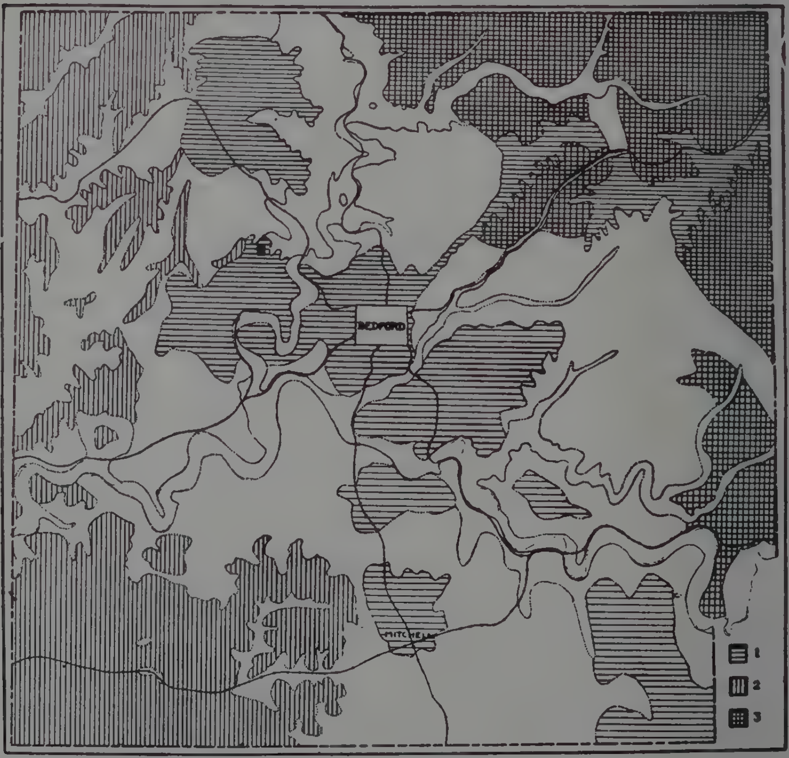
TABLE VI—RESULTS OF CROP ROTATION EXPERIMENTS

Rotations	Average Yields Per Acre, 1932-1935			
	Corn bushels	Wheat bushels	Hay pounds	Legume Seed lbs.
Corn, Wheat, Timothy	33.0	14.3	2274	....
Corn, Wheat, Clover	35.5	19.0	4375	....
Corn, Wheat, Alfalfa	38.2	17.0	1090	....
Corn, Wheat, Sweet Clover	43.3	19.7	....	189
Corn, Wheat, (Sweet Clover Intercrop)	34.7	17.7	....	....
Corn, Wheat, Lespedeza	43.7	16.2	1681	290

It should be noted that the results reported in Table VI cover only the first four years and do not represent a long enough period to warrant definite conclusions.

However, the rotation containing timothy has shown definitely lower corn and wheat yields than those in which legumes are grown.

Map Showing Soil Types Similar to Experiment Field



Region	Principal Soil Characteristics
No. 1.	Yellowish limestone land like Bedford experimental field.
No. 2.	Yellowish "freestone" land.
No. 3.	Like No. 1 on ridge tops and like No. 2 on lower slopes.

Stands of alfalfa seeded in wheat have not been as good as those of clover and sweet clover, which accounts for the low hay yield reported and probably also accounts for the rather low corn and wheat yields in the alfalfa rotation.

The rotation in which lespedeza is used has produced good corn yields in comparison with the rotations where the larger legumes are used. The stand of lespedeza has always been very thick.

The results of the Moses Fell Annex farm can be applied to the greater part of Lawrence County and surrounding territory.

The soil survey made in this county in 1922 enabled the Department of Agronomy to classify the soils of this section and to indicate the types which can benefit most from the experimental work on this farm.

The results will apply to all similar land in the county, which is indicated by shading No. 1 on the map. They will also apply fully as well to the areas indicated by shading No. 2, and more or less fully to the areas indicated by shading No. 3 where the hilltops are like No. 1 and the lower slopes like No. 2.

Portions of the unshaded area would doubtless respond to similar treatments, but most of it does not need either lime or fertilizer to the same extent as the shaded areas.

HORTICULTURAL WORK

The Horticultural Department is carrying on a number of lines of work of special interest to Indiana fruit growers. These projects are under the direction of Dr. Laurenz Greene. Most of the work is being carried out by C. E. Baker, F. C. Gaylord, J. A. McClintock and C. L. Burkholder.

Plum and Prune Variety Block

The first plantings were made in 1929. In most cases three trees of a variety have been considered sufficient for a test of hardiness and regional desirability. Late spring frosts in 1934 and again in 1935 reduced or entirely killed the crop on a number of varieties. It is worth while to note, however, that several varieties such as Stanley, Roberts Prune and French Damson came through these adverse weather conditions with a part or full crop each year. The actual yield by variety of the oldest varieties is shown below:

PRODUCTION RESULTS—1934 AND 1935

Variety	Date Harvested	Age	Number of Gallons		
			1934*	1935**	Number of Trees
Sugar Prune	Aug. 17, 1935	7	0 gals.	30 gals.	3
Bradshaw	Aug. 17, 1935	7	0 gals.	30 gals.	3
Pacific	Aug. 23, 1935	7	0 gals.	14 gals.	3
German Prune	Aug. 23, 1935	7	6 gals.	4 gals.	21
Diamond	Aug. 27, 1935	7	4 gals.	26 gals.	3
Grand Duke	Sept. 5, 1935	7	12 gals.	104 gals.	9
Stanley	Sept. 5, 1935	7	21 gals.	56 gals.	3
French Damson	Sept. 5, 1935	7	75 gals.	46 gals.	21
President	Sept. 5, 1935	7	8 gals.	56 gals.	3
Hungarian Prune	Sept. 5, 1935	7	0 gals.	16 gals.	3
Roberts Prune	Sept. 5, 1935	7	0 gals.	32 gals.	3
Hall Prune	Sept. 5, 1935	7	0 gals.	16 gals.	3
Reine Claude	Sept. 12, 1935	7	4 gals.	32 gals.	21
Yellow Egg	Aug. 23, 1934	7	3 gals.	0 gals.	3
Imperial Epineuse	....	7	0 gals.	0 gals.	12

* A temperature of 26° occurred just after petal fall and is responsible for the low production on some varieties in 1934.

** A temperature of 27° occurred in full bloom in 1935.

It is important that the tops of the tree be properly sprayed if disease and insect control is to be effective. This type of nozzle enables the operator to reach all parts of the tree.

Pear Blight Plot

Almost all pear plantings in the state have been destroyed by pear blight. The two-acre pear planting on the Moses Fell Annex farm has been made with the idea of testing blight resistant root systems, bodies and scaffolds and also to test varieties when grafted on these blight resistant stocks. This planting was made in 1930 and about two-thirds of the trees have now been top-worked and will soon be old enough to begin to set fruit buds.

Codling Moth Control

New methods of codling moth control, especially new and promising spray materials and schedules of application, are being tested each year in this orchard. In 1935 six first brood cover sprays were applied, five of which contained one-half per cent summer oil and lead arsenate. The last application was finished by July 4th and no further insecticidal sprays were applied. In half of the orchard in which one-half pound of soap was used with the arsenate of lead oil combination there was 11/100 of one per cent of infestation in the picked fruit and 53/100 per cent where the soap was omitted.

In 1936 the present plan is to use a new type of calcium arsenate and zinc arsenate in place of lead arsenate after the third cover spray on two 10-acre blocks.

Spray Residue

The schedule of six cover sprays, with the last spray finished by July 4th, resulted in higher residue loads than anticipated. The actual 1935 harvest loads on Grimes and Winesap are shown below.

	Grimes		Winesap	
	Av. No. apples per pound		Av. No. apples per pound	
	4.04		4.07	
	Lead	Arsenic	Lead	Arsenic
Lead-oil	.1210	.0490	.1000	....
Lead-oil-soap	.1962	.0554	.1558	.0531

It was necessary to use 1½ per cent acid at a temperature of 90° to 100° to clean this fruit below the tolerance. All of the crop was put through an underbrush-flood type washer. The time of exposure was usually 20 seconds and it was found that the percentage removal of lead and arsenic was increased very little by using the longer or 30-second gear—the longer exposure being responsible for about a 90 per cent removal compared to 88 per cent removal using the 20-second exposure gear.

Mechanical injury to the fruit was increased by washing, but no injury resulted from the action of the cleaning materials when acid strengths even as high as 2¼ per cent were used at 100° for 20 seconds.

The lead load on this fruit was much more difficult to bring below the federal tolerance than the arsenic. With this fact in mind, two promising non-lead arsenicals will be used on two large blocks of trees in 1936 with the idea of greatly reducing the harvest lead load as well as to study the effect of these sprays on codling moth control and possible injury to the fruit and foliagle of the trees.

Stationary vs. Portable Spraying

In 1929 the north half of the apple orchard was piped for stationary spraying and a new, large-capacity portable rig was purchased to spray the south half of the orchard. During the five-year period 1929-1934 the lowest yearly application cost per 100 gallons of spray for portable spraying was 70 cents and for stationary spraying 50 cents.

In the spring of 1935 the entire orchard was piped and hooked up to the stationary plant. By this new distribution of interest on investment and depreciation over the entire orchard, the cost of spraying the north block was reduced to 34 cents per 100 gallons in 1935 and of the south block to 39 cents, while the cost of spraying the entire orchard was 36⅗ cents per 100 gallons. A reduction of even 30 cents per 100 gallons in spraying costs over the portable method would result in an actual saving of $555.60 in 1935 or nearly one-fourth of the total cost of the complete stationary spraying equipment for the entire orchard.

Peach Orchard

The main area of the peach orchard is now in its eighteenth growing year. The site was never desirable for peach production, and winter injury from time to time has greatly reduced the vigor of the trees. The extremely low temperatures of January, 1936, so severely injured this planting that it is questionable if the older trees are worth an effort to renovate. Nevertheless all but one row of trees were pruned during the week of May 10th and each tree was given nitrate application earlier in the season.

Farm Garden

A good layout for a farm garden is demonstrated in a practical way by Mr. Hall and Mr. Gaylord. The garden plot is divided into two nearly equal plots. One-half is manured and planted to soybeans each year and the following season this area is planted in vegetables, and the other half receives the manure-soybean treatment.

An attempt will be made in 1936 to operate a small irrigation system. using the stationary spray plant to supply the water pressure.

Apple Storage Work

Investigations in the management of an experimental air-cooled apple storage have shown that in the latitude of Bedford and the southern third of the state, high fall temperatures make such storages impractical for use with varieties of apples as Jonathan, Grimes and Delicious that ripen previous to October.

Ice has been used in an attempt to reduce these early fall temperatures in a practical way, where a short storage period was desirable to bridge the gap between harvest and cold weather when air-cooled storages can be successfully operated.

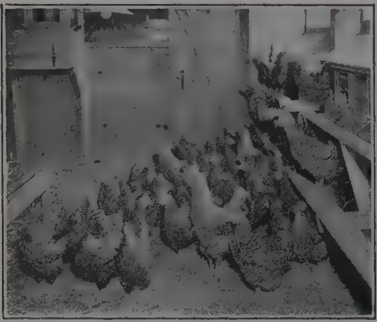
For an average seasonal expenditure of 20.8 cents per bushel it has been possible to secure an average storage temperature of about 45 degrees in an insulated storage room during this warm period prevailing during September and October, which is a reduction of from 10 to 16 degrees over a similar room but uninsulated, cooled by ventilation.

An ice bunker, utilizing cracked ice and salt, has been developed that is considerably more efficient in its use of ice.

By this method it has been possible to prolong the storage period of Grimes and Jonathan until prices have risen sufficiently to make the operation profitable in event of a price rise near the holiday season. Under similar conditions uniced fruit was in poor condition several weeks earlier.

During the past season a small portable humidifyer, operating by a motor-driven air compressor, has given excellent results in maintaining a satisfactory humidity in the ventilated storage room where shriveling of fruit occurs rapidly when dry periods prevail.

POULTRY



The poultry flock, consisting of 800 Barred Plymouth Rock layers and 1,000 growing pullets, has continued to be a practical demonstration of the value of good breeding and management practices. There were 545 pullets housed in the fall of 1935, and of this number 63 laid 150 or more eggs each to April 1st, 1936.

Four special breeding pens were mated, each containing females with records from 210 to 290 eggs, mated to well bred pedigreed males. Approximately 550 individually pedigreed chicks were obtained from these special pens.

A total of 8,071 chicks were started during the past four years. Through the use of a three-year range rotation, testing for Pullorum Disease and adequate equipment, it was possible to raise 95 per cent of the chicks to eight weeks of age. In recent years no fowl paralysis has been detected in the flock.

Records for the past four years show that electric hovers were satisfactory for brooding chicks. Six hovers were used, consuming an average of one-half kilowatt hour of electric energy per chick.

Mr. Stephen M. Walford of the Poultry Extension Division advised regarding the breeding and management of the flock. On February 15, 1936, Mr. Walford resigned and the advisory work is now being done by Leon Todd of the Poultry Extension Division.

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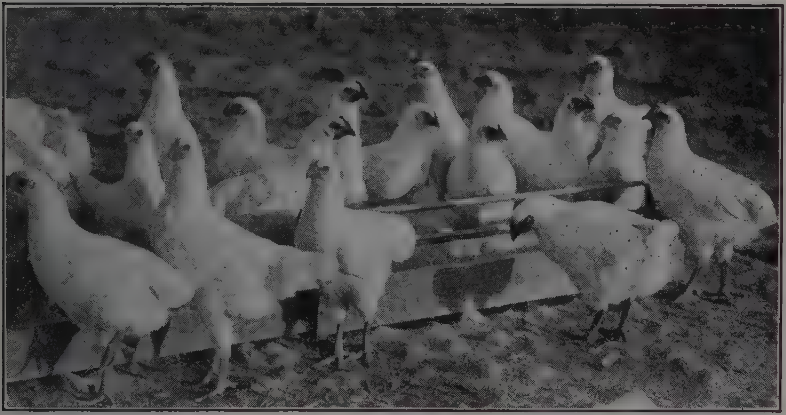
COMMERCIAL FEEDING STUFFS



A Large Tonnage of Poultry Feeds is Sold Each Year. This Publication Reports on the Analysis of Commercial Feeds Inspected by the State Chemist During the Past Year

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PURDUE UNIVERSITY
AGRICULTURAL EXPERIMENT STATION
LAFAYETTE, IND.

Otis Sidney Roberts, Inspector in the State Chemist Department for more than twenty-eight years including twenty-five years as Chief Inspector and one year as Acting State Chemist, died December 19, 1935. In the passing of Mr. Roberts, the fertilizer, feed and seed industries, as well as the Agricultural interests of Indiana, have suffered a distinct loss of a loyal friend and an able worker.

Herein is presented a condensed report of the commercial feed inspection in Indiana for the year 1935.

Table 1 shows the estimated tonnage based on the sale of inspection tags and the retail value of each class of feed sold in Indiana in 1935.

Table 2 gives the estimated annual total tonnage and expenditures for commercial feeding stuffs since 1911.

Table 3 shows the shipments withdrawn from sale and the reasons for taking such action.

Table 4 states the names and addresses of the manufacturers whose feeds were sampled and analyzed in 1935 and the number of samples passed and not passed.

Table 5 gives the calcium and phosphorus content of feeding stuffs.

Table 6 contains the analyses of cereals and by-products for formulating guarantees.

Definitions of the various classes of feeding stuffs and explanation of the terms used in the analysis of them are given.

COMMERCIAL FEEDING STUFFS

H. R. KRAYBILL, State Chemist
P. B. CURTIS, Associate Chemist O. S. ROBERTS,* Chief Inspector
Assistant Chemists, C. C. Yund, G. E. Halliday, D. M. Doty
Assistant Inspectors, C. M. Cohee, J. W. Jackman

The manufacture and distribution of commercial feeding stuffs have reached large proportions. The increased use of such feeds has been due largely to the demand for balanced rations created by greater knowledge of feed values and of the varied requirements of livestock. In order to furnish information and protection to purchasers of commercial feeds, the Indiana feeding stuffs control law was enacted in 1907. This law is essentially a correct labeling law. It requires the feed manufacturer to label each sack or container of concentrated commercial feeding stuff, sold or offered for sale in Indiana, with an Official Indiana State tag showing the minimum percentage guarantees of crude protein and crude fat, a maximum percentage guarantee of crude fiber and the specific name of each ingredient used in preparing the feed. The term "Concentrated commercial feeding stuff" includes all feeding materials used for food for domestic animals, condimental feeds, poultry feeds, and stock feeds but does not include straw, unmixed whole seeds, unmixed whole grains and unmixed meals made from whole seeds or grains. Before Indiana tags or labels can be issued for a brand of feed it must be registered with the State Chemist.

There is no registration fee but a minimum order for Indiana tags of $5.00 must accompany each certificate of registration. In mineral feeds for which no nutritional properties other than those of a mineral nature are claimed, the usual chemical guarantees need not be stated. However, a declaration should be made of each ingredient contained therein and the minimum percentages of calcium (Ca), phosphorus (P), iodine (I), and the maximum percentage of salt (NaCl). These percentages must also be stated when mixed feeds contain both feed and more than 5 per cent of total mineral ingredients.

AMENDMENT OF FEEDING STUFFS LAW

The Indiana Feeding Stuffs Law as amended in 1933 permits the manufacturer or agent desiring to sell any concentrated commercial feeding stuff in packages or containers of five pounds or less to register such feeding stuff under an annual registration fee of $20.00. If this method of registration is chosen it is unnecessary for the manufacturer to attach an Indiana State label to each container of five pounds or less but it is necessary that the same information as required on the Indiana tag be stated on the private label or wrapper of the container. Appropriate Official Indiana tags or labels must always be attached to all containers over five pounds. Copies of circular 75 entitled "The Feeding Stuffs Control Law and How to Comply with It" may be procured by making application to the State Chemist.

ESTIMATED SALES OF COMMERCIAL FEEDING STUFFS IN 1935

During the year 1935, 2,827 samples were collected from all parts of the State. One inspection sample was secured from approximately each 154 tons of commercial feed sold in Indiana. This is computed from the estimated tonnage shown in Table 1. Based on the sale of Official State tags it is estimated that 436,219 tons of commercial feed with a retail value of $18,255,212 were sold in the State during the year 1935. Compared with the sales of 1934 there was an increase of 23 per cent in tonnage and a corresponding increase of 39 per cent in expenditures. In practically all classes of feed there were greater tonnages sold but the greatest percentage increases in tonnage were for soybean oil meal, brewers and distillers dried grains, proprietary feeds, cottonseed meal, dried and condensed milk products and poultry mash in the order named.

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*Deceased December 19, 1935.

From Table 2 it may be seen that the total tonnage of all classes of feed sold in 1935 was the highest since 1930 and was almost identical with that sold in 1927 although the total expenditures were not nearly so great.

TABLE 1—Estimated Sales of Commercial Feeding Stuffs in Indiana.

KIND OF FEED	Estimated Tons			Estimated Retail Values, Dollars	
	1933	1934	1935	1934	1935
Alfalfa meal and leaf meal	3,125	3,313	4,531	108,666	165,835
Animal by-products (tankage, meat scraps, etc.)	38,531	39,313	36,438	1,486,031	1,588,697
Brewers', distillers' and yeast dried grains	1,750	1,969	5,031	62,220	143,384
Condimental poultry and stock feeds*	625	688	656	98,590	109,552
Corn feed meal	1,313	1,250	875	34,375	28,700
Corn germ meal	188	813	656	24,390	20,336
Corn gluten meal and feed	1,969	2,594	1,875	86,380	66,000
Corn and oats chop and miscellaneous chops	3,219	4,406	2,656	132,180	94,022
Cottonseed meal	5,875	4,625	7,875	177,600	291,375
Dried buttermilk, dried skimmed milk, condensed, etc.	8,375	4,531	7,344	421,836	757,901
Hominy meal and hominy feed	28,000	42,250	40,250	1,233,700	1,384,600
Linseed oil meal	3,782	3,563	4,406	153,209	169,631
Mill by-products—wheat bran, middlings, rye feeds, etc., with and without screenings	94,438	96,125	96,625	2,917,394	2,947,063
Mineral feeds	3,719	3,063	3,906	177,654	234,360
Oat meal by-products—oat shorts, oat hulls, oat middlings, oat groats, etc.	1,313	1,375	969	37,537	27,132
Poultry scratch feed—with and without grit	14,938	15,281	19,750	531,779	853,200
Poultry mash	82,938	91,938	136,344	3,852,202	6,476,340
Proprietary feeds—					
Cattle and dairy feeds	12,906	21,625	33,625	730,925	1,163,425
Hog and pig meals	7,406	6,875	18,688	294,250	882,074
Horse and mule feeds	719	1,750	2,063	58,275	80,457
Small animal and pet feeds (rabbit, dog, etc.)	2,656	2,656	3,125	229,213	428,125
Calf meals	438	500	906	37,000	60,702
Sheep feeds	63	31	313	1,085	14,711
Soybean oil meal	938	1,031	5,906	43,096	206,710
Miscellaneous—beet pulp, rice bran, processed garbage, sunflower seed oil meal, kelp, peanut oil meal, etc	3,094	3,000	1,406	158,700	60,880
Totals†	322,318	354,565	436,219	13,088,287	18,255,212

*Not all condimental feeds come under the law.
†Does not include feeds registered under annual registration fee.

RESULTS OF INSPECTION

All of the 2,827 official samples were examined microscopically in order to check the ingredients and 2,532 were analyzed chemically for percentages of moisture, crude protein, crude fat, crude fiber, ash and nitrogen free extract. Forty-six samples of mineral feed were analyzed for lime (CaO), phosphoric acid (P_2O_5), iodine (I) and salt (NaCl) content. Of the 2,827 samples examined, 476 of them were found to be technically misbranded while only 300 of them were classified as being seriously deficient or misbranded. This latter group of samples representing 10.6% of the total samples are listed in Table 4 under the heading of "Number of Samples Not Passed". This record is similar to that of the previous year.

REFUNDS AND WITHDRAWALS FROM SALE

Shipments or batches of feed found to be seriously misbranded or deficient were removed from sale immediately and the manufacturers were required to replace or rebuild such deficient lots to meet their guarantees or relabel them with correct guarantees. Where deficient feed had already been sold, refunds were made to the dealers and consumers. In some instances where no records

TABLE 2—Summary of the Annual Tonnage and Expenditures for Commercial Feeding Stuffs Since 1911

YEAR	1911	1912	1913	1914	1915
Estimated Sales, tons	179,000	196,752	217,689	271,751	270,339
Estimated Retail value, dollars	5,056,906	6,371,571	6,406,645	8,461,751	8,221,684
YEAR	1916	1917	1918	1919	1920
Estimated Sales, tons	317,664	379,152	439,152	506,958	390,078
Estimated Retail value, dollars	10,316,516	21,700,101	26,717,086	33,013,463	27,014,049
YEAR	1921	1922	1923	1924	1925
Estimated Sales, tons	283,256	340,197	389,971	419,441	408,713
Estimated retail value, dollars	11,716,745	14,244,175	18,026,682	19,720,313	20,945,026
YEAR	1926	1927	1928	1929	1930
Estimated Sales, tons	337,298	440,534	524,476	498,887	512,096
Estimated retail value, dollars	16,837,512	24,173,605	29,818,566	26,491,777	24,293,652
YEAR	1931	1932	1933	1934	1935
Estimated Sales, tons	322,125	244,909	322,318	354,565	436,219
Estimated retail value, dollars	11,939,153	6,853,043	10,373,772	13,088,287	18,255,212

of the consumers were kept the refunds were turned over to a local charitable organization in the particular community in which the feed was sold. In all cases receipts were required to be filed with the State Chemist. The sum of $819.96 was refunded on 78 shipments or batches of feed by 47 different feed manufacturers. Of the 78 shipments or batches, 37 of them were either tankage or meat and bone scraps. Other most common classes of feed represented in the refunded group include cottonseed meal, alfalfa leaf meal, poultry mash, dairy feed, hog feed and condensed buttermilk. While the payment of a refund does not remove the violation it does indicate the manufacturer's willingness to do what he can to compensate the purchaser for the deficiency.

The most frequent violation of the Indiana Feeding Stuffs Law is in the matter of non-tagging (Table 3). Of the 472.6 tons of commercial feed withdrawn from sale, 369.7 tons were removed because of the absence of Indiana State tags. Proper tagging of feeding stuffs cannot be emphasized too

TABLE 3—Withdrawals From Sale

Number of Shipments Withdrawn from Sale	Number of Manufacturers Represented	REASONS FOR WITHDRAWAL FROM SALE	Amount Withdrawn Tons
222	135	Not tagged	369.7
34	30	Misbranded	32.7
27	19	Deficient in crude protein	62.9
5	3	Deficient in crude protein and crude fat	3.9
2	2	Mutilated tags	2.4
1	1	Short weight	1.0
291	190	Totals	472.6

strongly. Neglect on the part of the manufacturer, distributor, or dealer in attaching the official tag to each bag of feed may lead to serious violations of the Indiana Feeding Stuffs Law. On conviction the penalty of such violations is fifty dollars for the first offense and one hundred dollars for each subsequent offense.

RESULTS OF INSPECTION OF CANNED DOG FOOD

During the year 1935, 53 samples of canned dog and cat food were analyzed. Practically all of these products were registered under the annual registration fee method. Of the 53 samples, 16 of them were found to be seriously misbranded. The average analysis of the 53 samples and the range in analyses are as follows:

Moisture	73.1%	(61.1—79.9)
Protein	9.9%	(4.8—17.3)
Fat	3.3%	(0.8—11.0)
Crude Fiber	0.7%	(0.3— 1.5)
Ash	1.9%	(0.7— 8.0)
Nitrogen Free Extract	11.1%	(3.1—15.3)

Table 4 gives the standing of the various feed manufacturers whose feeds were inspected during the year 1935. This summary of feed inspection may be of considerable value to purchasers of commercial feeds in that it shows just how careful the different manufacturers were in maintaining their guarantees and also in tagging their feeds.

TABLE 4—Summary of Feed Inspection

January 1, 1935 to December 31, 1935.

NAME AND ADDRESS OF MANUFACTURER	Number of Samples Examined	Number of Samples Passed	Number of Samples Not Passed	Number of Samples Not Tagged
Abbott Feed Co., Chicago, Ill.	1	....	1	....
Ace Feed Store, Indianapolis, Ind.	3	3	....	....
Acme-Evans Co., Indianapolis, Ind.	19	19	....	2
Advance Grain Co., Advance, Ind.	2	2	....	....
A. G. Creamery Co., Arcadia, Wis.	1	....	....	1
Allan, J. P., Farmersburg, Ind.	1	1	....	....
Allied Mills, Inc., Chicago, Ill.	49	49	....	12
American Maize-Products Co., New York, N. Y.	1	1	....	....
American National Mineral Corp., Hillsboro, Ind.	9	9	....	....
Amo Milling Co., Amo, Ind.	7	7	....	1
Anchor Milling Co., Rochester, Ind.	6	6	....	....
Anderson Hatchery, Mabel, Noblesville, Ind.	2	2	....	....
Anderson Reduction Plant, Anderson, Ind., R. R. 5	1	....	1	....
Andrews Elevator, Andrews, Ind.	1	1	....	1
Andry Bros. Flour Mill, Birdseye, Ind.	1	1	....	....
Angola Flour Mills, Angola, Ind.	2	2	....	....
Animal By-Products Corp., New Carlisle, Ind.	2	2	....	....
Arcady Farms Milling Co., Chicago, Ill.	14	12	2	4
Archer-Daniels-Midland Co., Minneapolis, Minn.	3	2	1	1
Armour & Co., Chicago, Ill.	12	11	1	3
Armour Creameries, Chicago, Ill.	4	1	3	....
Asdell & Co., Sullivan, Ind.	1	1	....	....
Ashcraft Wilkenson Co., Atlanta, Ga.	4	4	....	2
Atkinson Milling Co., Minneapolis, Minn.	1	1	....	....
Aubrey & Co., Louisville, Ky.	3	2	1	1
Auburn Hammer Mill, Auburn, Ind.	1	1	....	1
Aukerman Bros. Co., Peru, Ind.	8	7	1	....
Aurora Flour & Feed Co., Aurora, Ind.	8	8	....	....
Bahler Grain & Feed Co., Galveston, Ind.	2	2	....	....
Baker Feed Store, Mackey, Ind.	1	1	....	1
Balanced Pet Foods Co., Chicago, Ill.	3	....	3	....
Baldwin & Co., Jay J., Crown Point, Ind.	2	2	....	....
Ballard Packing Co., Marion, Ind.	4	2	2	....
Barr Grain Co., O. L., Bicknell, Ind.	2	1	1	....
Bash & Co., Inc., C. E., Huntington, Ind.	1	1	....	....
Bashore Feed Store & Hatchery, N. Manchester, Ind.	1	1	....	....
Bashore Feed Store & Hatchery, Silver Lake, Ind.	1	1	....	....
Bashore Feed Store & Hatchery, Warsaw, Ind.	7	7	....	....
Batesville Fertilizer Co., Batesville, Ind.	3	2	1	....
Batesville Roller Mills, Batesville, Ind.	1	1	....	....

TABLE 4—Summary of Feed Inspection—Continued.
January 1, 1935 to December 31, 1935.

Name and Address of Manufacturer	Number of Samples Examined	Number of Samples Passed	Number of Samples Not Passed	Number of Samples Not Tagged
Battle Creek Dog Food Co., Battle Creek, Mich.	7	4	3	
Bauman's Feed Mill, DeMotte, Ind.	2	2		
Bausback Fertilizer Co., Shelbyville, Ind.	4	4		
Beck Grain & Feed Co., Shelbyville, Ind.	7	4	3	
Beckley Feed Co., Goodland, Ind.	1	1		
Benz Company, Inc., The, Batesville, Ind.	2	1	1	
Berghoff Brewing Corp., Fort Wayne, Ind.	1	1		
Berne Equity Exchange Co., Berne, Ind.	2	2		
Big 4 Elevator Co., Mattoon, Ill.	1			1
Bisbee Linseed Co., Chicago Heights, Ill.	8	6	1	3
Bisbee Linseed Co., Philadelphia, Pa.	2	2		1
Blair Milling Co., Atchison, Kans.	1		1	
Blanton Feed Store, Jasonville, Ind.	1	1		
Blanton Mills, Clayton, Ind.	2	1	1	
Blatchford Calf Meal Co., Waukegan, Ill.	4	4		2
Blish Milling Co., Seymour, Ind.	5	5		
Bloomfield Mill & Elevator Co., Bloomfield, Ind.	1	1		
Bloomingdale Milling Co., Bloomingdale, Ind.	3	2	1	
Bloomington Packing Co., Bloomington, Ind.	3	3		
Blue River Reduction Co., Edinburg, Ind.	2	2		
Bluff City Mills & Elevator Co., Mt. Carmel, Ill.	2	1		2
Blytheville Cotton Oil Co., Blytheville, Ark.	1			1
Board of Sanitary Commissioners, Indianapolis, Ind.	1	1		
Bohnert & Son, A. M., Jasper, Ind.	2	2		
Boldt Milling Co., Waynetown, Ind.	4	3	1	
Boonville Milling Co., Boonville, Ind.	8	7	1	
Bortz Feed Store, LaPorte, Ind.	1	1		
Boston Grain Co., Boston, Ind.	1	1		
Bourbon Elevator & Feed Mill, Bourbon, Ind.	2	2		
Bowling Green Milling Co., Bowling Green, Ind.	1	1		
Brazil Flour & Feed Co., Brazil, Ind.	4	3	1	
Brazil Tankage Co., Brazil, Ind., R. R. 4	2	2		
Bremen Custom Grinding Co., Bremen, Ind.	1	1		
Bremen Roller Mills, Bremen, Ind.	2	2		
Brewer Milling Co., Gosport, Ind.	1	1		
Bridgeport Supply Co., Bridgeport, Ind.	1	1		
Bristow Milling Co., Bristow, Ind.	4	3	1	
Brizius Co., The Chas. W., Evansville, Ind.	9	9		
Brizius Co., The Chas. W., Newburgh, Ind.	1	1		
Brode Corporation, The, Memphis, Tenn.	1		1	
Bronson Grain Co., Bronson, Mich.	1	1		
Brothers Feed Store, Hymera, Ind.	1			1
Brown Bros., Indianapolis, Ind.	1	1		
Brown Ice & Fuel Co., West Terre Haute, Ind.	2	2		
Buchsieb, Inc., E. G., Columbus, Ohio	8	8		2
Buckeye Cotton Oil Co., Louisville, Ky.	6	6		
Buhner Fertilizer Co., Seymour, Ind.	3	3		
Bundy Bros. Mill Co., Medora, Ind.	6	6		
Bundy Bros. Mill Co., Vallonia, Ind.	6	6		
Burk Elevator Co., Decatur, Ind.	1		1	
Burnettsville Elevator Co., Burnettsville, Ind.	2	1	1	
Burrough's & Parr, Indianapolis, Ind.	1	1		
Busenbark Grain Co., Crawfordsville, Ind.	6	4	2	
Butler Feed Store, Oakland City, Ind.	2	2		
Butt & Co., L. T., Center Point, Ind.	8	5	3	
Byrer, Homer A., Etna Green, Ind., R. 1	1	1		
Cadick Milling Co., Grandview, Ind.	2	2		
Cairo Meal & Cake Co., Cairo, Ill.	24	19	4	4
California Animal Products Co., Oakland, Calif.	1		1	
Cambridge Feed Mills, Inc., Cambridge City, Ind.	7	6	1	3
Campbellsburg Milling Co., Campbellsburg, Ind.	2	2		
Campbellsburg Milling Co., Salem, Ind.	2	2		2
Capitol Flour Mills, Minneapolis, Minn.	2	2		
Carman Supply Co., Lynn, Ind.	5	4	1	
Carney Hatcheries, Inc., Shelbyville, Ind.	7	7		
Cascade Mills, Valparaiso, Ind., R. 5	1	1		1
Cauble, O. L., Pekin, Ind.	2	2		
Cayuga Milling Co., Cayuga, Ind.	5	3	2	
Centlivre Brewing Corp., Fort Wayne, Ind.	2	1	1	
Central Soya Co., Inc., Decatur, Ind.	4	4		2
Central States Elevator Corp., Montezuma, Ind.	2		2	
Chalmers Grain Co., Chalmers, Ind.	1	1		
Champion Animal Food Co., Minneapolis, Minn.	1	1		1
Chapin & Co., Hammond, Ind.	1	1		
Chapman-Doake Co., Decatur, Ill.	12	8	4	

TABLE 4—Summary of Feed Inspection—Continued

January 1, 1935 to December 31, 1935

NAME AND ADDRESS OF MANUFACTURER	Number of Samples Examined	Number of Samples Passed	Number of Samples Not Passed	Number of Samples Not Tagged
Chappel Bros., Inc., Rockford, Ill.	7	6		1
Charlestown Milling Co., Charlestown, Ind.	3	3		
Checkerboard Elevator Co., St. Louis, Mo.	1			1
Chicago Meat Products Co., Chicago, Ill.	18	15	3	1
Choctaw Sales Co., Kansas City, Mo.	3	2	1	2
Churubusco Hatchery, Churubusco, Ind.	1		1	
Clay County Farm Bureau Cooperative Association, Inc., Brazil, Ind.	2	2		
Clay County Farm Bureau Cooperative Association, Inc., Clay City, Ind.	1		1	
Claypool Feed Store, Claypool, Ind.	2	2		
Clendenin & Co., Richmond, Ind.	1	1		
Cloverleaf Creameries, Inc., Decatur, Ind.	1	1		
Cloverleaf Mills, Kokomo, Ind.	8	7	1	
Cohee & Clark, Kempton, Ind.	1	1		
Columbian Hog & Cattle Powder Co., Kansas City, Mo.	2		2	
Columbus Milling Co., Columbus, Ind.	9	8	1	1
Columbus Sanitary Reduction Co., Columbus, Ind.	3	3		
Commander-Larabee Corp., Minneapolis, Minn.	2	2		1
Commercial Solvents Corp., Terre Haute, Ind.	2	1	1	
Community Mill, Edinburg, Ind.	2			2
Community Mill, Newberry, Ind.	1	1		
Conkey Co., G. E., Cleveland, Ohio	3	2	1	3
Consolidated Products Co., Danville, Ill.	2	2		1
Constantine Coop. Creamery Co., Constantine, Mich.	1	1		
Consumers Feed Store, Indianapolis, Ind.	6	6		
Consumers Import Co., Inc., New York, N. Y.	2	2		
Consumers Supply Co., Fulton, Ind.	1	1		
Continental Packing Co., Covington, Ky.	2	1		2
Cooperative Elevator Co., Winamac, Ind.	1	1		
Corn Belt Feed Co., Boswell, Ind.	8	6	2	
Corn Belt Hatchery, Oxford, Ind.	1	1		
Corn Products Refining Co., New York, N. Y.	5	5		5
Corunna Feed Mill, Corunna, Ind.	1	1		
Cottrell Bros., Terre Haute, Ind.	3	2	1	
Crabbs Reynolds Taylor Co., Lafayette, Ind.	13	9	4	
Cripe, C. F., New Waverly, Ind.	1	1		
Cripe, Frank W., Rossville, Ind., R. R. 1	1	1		
Cross Alfalfa Milling Co., H. V., Huntsville, O.	13	1	12	
Cross Plains Mills, Cross Plains, Ind.	2	1	1	
Culver City Grain and Coal Co., Culver, Ind.	2	1	1	
Cynthiana Reduction Plant, Cynthiana, Ind.	7	7		
Daniel Bros., Inc., Columbia City, Ind.	1	1		
Danville Electric Hatchery, Danville, Ind.	2	2		
Darling & Co., Chicago, Ill.	15	14	1	
Daviess County Farm Bureau Cooperative Association, Inc., Washington, Ind.	7	7		
Davis Elevators, G. G., Atlanta, Ind.	3	3		
Davis, G. G., Tipton, Ind.	3	2	1	
Davis, S. P., Little Rock, Ark.	1	1		
Dawes Products Co., Denver, Colo.	1		1	1
Decatur County Cooperative Co., Greensburg, Ind.	7	6	1	
Decatur Milling Co., Decatur, Ill.	5	5		
Deck, James H., Roann, Ind.	2	2		
Dehydrating Process Co., Boston, Mass.	1			1
Denver Alfalfa Milling & Products Co., Lamar, Colo.	2	2		1
Denver Farm Bureau, Denver, Ind.	3	3		
Depoy Feed Mill, Ben., Muncie, Ind.	3	2	1	
Dewey Bros. Co., Blanchester, Ohio	4	2	2	3
Dewig Bros., Haubstadt, Ind.	1		1	
Dextora Co., Indianapolis, Ind.	3	3		
Diamond Feed Mill, Cedar Grove, Ind.	2	2		
Dickey, H., Parker, Ind.	3	3		
Dickinson Co., The Albert, Chicago, Ill.	6	6		2
Dietrick & Gambrill, Inc., Frederick, Md.	1	1		
Doyle Packing Co., Los Angeles, Calif.	1		1	
Doyle Packing Co., Momence, Ill.	7	1	6	3
Dryfus Packing & Provision Co., Lafayette, Ind.	1	1		
Dry Milk Products Co., Columbus, Ohio	1	1		
Dubois County Farm Bureau, Inc., Huntingburg, Ind.	2	1	1	
Dubois Milling Co., Dubois, Ind.	1	1		
Dutschke Milling Co., Cannelton, Ind.	3	3		
Dwiggins & Sons, Waynetown, Ind.	3	3		1
Eagle Roller Mill Co., New Ulm, Minn.	1	1		
Early & Daniel Co., The, Cincinnati, Ohio	9	9		

TABLE 4—Summary of Feed Inspection—Continued.
January 1, 1935 to December 31, 1935

NAME AND ADDRESS OF MANUFACTURER	Number of Samples Examined	Number of Samples Passed	Number of Samples Not Passed	Number of Samples Not Tagged
Eavey Co., The, Richmond, Ind.	1		1	1
Eckhart Milling Co., B. A., Chicago, Ill.	1	1		1
Edwards Milk Products Co., Chicago, Ill.	10	9	1	2
Egloff Milling Co., The, Vincennes, Ind.	5	5		
Elkhart Packing Co., Elkhart, Ind.	3	3		
Elkhorn Mills, Boonville, Ind.	2	2		1
Emge & Sons, Fort Branch, Ind.	15	8	7	
Empire Beef & Provision Co., Chicago, Ill.	1	1		
Engle, Russell, Dyer, Ind.	5	1		4
English Milling Co., English, Ind.	3	3		
Enos Grain Co., Morocco, Ind.	4	4		
Erwin Feed Mill, J. R., Daylight, Ind.	3	3		
Etna Lumber & Elevator Co., Etna Green, Ind.	3	2		1
Evans Milling Co., Indianapolis, Ind.	11	11		
Ewer Lowell, Fulton, Ind.	1	1		
Ewing Mill Co., Brownstown, Ind.	4	4		
Ewing Mill Co., Ewing, Ind.	1	1		
Excelsior Milling Co., Minneapolis, Minn.	4	2	2	4
Fairmount Creamery Co., Omaha, Nebr.	2	2		
Fall Creek Flour & Feed Co., Indianapolis, Ind.	5	5		
Fanciers' Foods, Inc., Chicago, Ill.	3	3		3
Farm Aid Limestone Co., Huntington, Ind.	1			1
Farm Bureau Cooperative, Aurora, Ind.	1	1		
Farm Bureau Elevator & Supply Co., Crawfordsville, Ind.	6	5	1	
Farm Bureau Mills, Inc., Auburn, Ind.	2	1	1	
Farm Bureau Service, Inc., Columbus, Ind.	6	6		
Farm Products Association, Indianapolis, Ind.	5	5		
Farmers Coal & Feed Co., Goshen, Ind.	1	1		
Farmers Cooperative Co., Centerville, Ind.	1	1		
Farmers Cooperative Co., Cicero, Ind.	2	2		1
Farmers Cooperative Co., LaFontaine, Ind.	2	1	1	
Farmers Cooperative Co. of Selma, Selma, Ind.	1	1		
Farmers Cooperative Co., Sheridan, Ind.	4	4		
Farmers Cooperative Co., Shideler, Ind.	3	2	1	
Farmers Cooperative Co., Southport, Ind.	5	5		2
Farmers Cooperative Co., Yorktown, Ind.	2	1	1	1
Farmers Cooperative Elevator Co., Seymour, Ind.	11	11		
Farmers Cooperative Elevator, Winamac, Ind.	3	3		
Farmers Feed & Coal Co., Bloomington, Ind.	1	1		
Farmers Feed Store, Dunkirk, Ind.	2	2		
Farmers Grain & Coal Co., Frankton, Ind.	3	3		
Farmers Grain & Supply Co., Windfall, Ind.	1	1		
Farmers Grain Co., Pershing, Ind.	1	1		
Farmers Marketing Association, Columbus, Ind.	2	2		
Farmers Mill, The, Huntingburg, Ind.	3	2	1	1
Farmers Mill & Elevator Co., Columbia City, Ind.	6	5		1
Farmers Mill & Elevator, Ferdinand, Ind.	2	2		
Farmers Produce Co., Salem, Ind.	1	1		
Farmers Supply Co., Boston, Ind.	12	11	1	
Farmers Supply Co., Mooresville, Ind.	1	1		1
Farmers Tankage Co., Newberry, Ind.	5	5		
Feed Dealers Exchange, Argos, Ind.	4	4		1
Finch & Co., E. P., Hillsboro, Ind.	6	6		
Finch & Weisel Elevator Co., Portland, Ind.	2	2		
Fisher-Lambert Feed & Coal Co., Anderson, Ind.	1		1	
Fishers Grain Co., Inc., Fishers, Ind.	5	4	1	
Flora Electric Hatchery, Flora, Ind.	1	1		
Forrest Park Mills, North Terre Haute, Ind.	2	2		
Foster-Kendall Co., Carmel, Ind.	9	8	1	
Fouts Farms, Taylor, Camden, Ind.	2		2	
Frankfort Electric Hatchery, Frankfort, Ind.	2	2		
Frankfort Rendering Co., Frankfort, Ind.	2	2		
Franklin Grain Co., Franklin, Ind.	2	2		
Frantz, Geo., Chicago, Ill.	1	1		
Freese's Sons, George, Nappanee, Ind.	1	1		
French Lick Milling Co., French Lick, Ind.	3	3		
Fretz Feed Co., R. C., Waterloo, Ind.	1	1		
Fridley, William, Middletown, Ind.	1	1		
Frierson III, John S., Mount Pleasant, Tenn.	1	1		
Fuhrer-Ford Milling Co., Mt. Vernon, Ind.	2	2		
Fulks & Sons, Willard, Columbus, Ind.	1	1		
Fyke Milling Co., Kendallville, Ind.	4	3	1	
G. & M. Feed & Seed Co., Muncie, Ind.	2	2		1
Gaines Food Co., Sherburne, N. Y.	1	1		1
Garland Milling Co., Greensburg, Ind.	2	2		

TABLE 4—Summary of Feed Inspection—Continued.

January 1, 1935 to December 31, 1935.

NAME AND ADDRESS OF MANUFACTURER	Number of Samples Examined	Number of Samples Passed	Number of Samples Not Passed	Number of Samples Not Tagged
Garrett, Harold, Owensville, Ind.	1	1		
Garten Feed Co., Indianapolis, Ind.	23	21	2	1
Geabes Milling Co., Clay City, Ind.	6	6		
General Mills, Inc., Minneapolis, Minn.	2	2		2
Geneva Milling & Grain Co., Geneva, Ind.	7	6	1	
Gentner Packing Co., South Bend, Ind.	2	2		
Gingrich Groceries & Markets, Lafayette, Ind.	1		1	
Glenmore Distilleries Co., Owensboro, Ky.	1	1		
Glidden Co., The, Cleveland, O.	2	2		
Goeke Sons, Edward F., Evansville, Ind.	33	29	4	
Goldblatt Bros. Corp., Hammond, Ind.	2	1	1	
Gold Medal Foods, Inc. of General Mills, Inc., Minneapolis, Minn.	2	2		1
Goldrich Fertilizer Manufacturing Corp., Marion, Ind.	1	1		
Holser & Co., B. I., Walkerton, Ind.	6	4	2	
Home Packing & Ice Co., Terre Haute, Ind.	2	2		
Honeymead Products Co., Cedar Rapids, Ia.	2		1	1
Hoosier Abattoir, Indianapolis, Ind.	3	3		
Hoosier Mineral Feed Co., Greenwood, Ind.	3	3		1
Hoosier Products Co., Alexandria, Ind.	2	2		
Hornung's Mill, Greensburg, Ind.	1	1		
Hubbard Milling Co., Mankato, Minn.	1	1		
Hubinger Co., The, Keokuk, Ia.	2	2		
Hughes-Curry Packing Co., Anderson, Ind.	9	9		
Hult's Feed Store, Terre Haute, Ind.	2	2		
Humphreys-Godwin Co., Memphis, Tenn.	9	7		2
Hunter Packing Co., East St. Louis, Ill.	1	1		1
Huntertown Grain & Lumber Co., Huntertown, Ind.	1	1		
Huntington Equity Exchange Co., Huntington, Ind.	3	3		
Huntington Fertilizer, Huntington, Ind.	7	7		
Huntington Mill Co., Huntington, Ind.	4	4		
Igleheart Bros., Evansville, Ind.	3	2	1	
Illinois Cereal Mills, Inc., Paris, Ill.	21	20	1	1
Imperial Mills, Cambridge City, Ind.	2	2		
Indiana Dairy Marketing Association, Muncie, Ind.	2	1	1	
Indiana Farm Bureau Cooperative Association, Inc., Indianapolis, Ind.	124	117	7	2
Indiana Feed & Seed Co., Fort Wayne, Ind.	1	1		
Indiana Flour & Feed Co., Muncie, Ind.	6	5	1	
Indiana Provision Co., Indianapolis, Ind.	3	3		
Indiana State Milling Co., South Bend, Ind.	6	4	2	
Iroquois Roller Mills, Rensselaer, Ind.	1	1		
Irwin Feed Store & Hatchery, Madison, Ind.	2	2		
Jacobs Feed & Supply Co., Jasonville, Ind.	1	1		
Jacobson, Soren, Young America, Ind.	3	3		
Jackson County Farm Bureau Cooperative Association, Inc., Seymour, Ind.	2	2		
Jefferson County Farm Bureau Cooperative Association, Inc., Madison, Ind.	1	1		
Jem Animal Food Co., Brooklyn, N. Y.	1	1		1
Jennings County Farm Bureau Cooperative Association, Inc., North Vernon, Ind.	3	3		
Jersee Co., The, Minneapolis, Minn	1	1		
Johnson Feed & Supply Co., Linton, Ind.	7	6	1	
Johnston & Sons Milling Co., Prairieton, Ind.	8	7	1	
Jones, Hiram, West Lebanon, Ind.	2	1		1
Jones & Son, J. W., Heltonville, Ind.	1	1		
Joslin-Schmidt Corp., Cincinnati, Ohio	6	6		1
Kahn Sons Co., The E., Cincinnati, Ohio	1	1		
Kaiser, W. F., West Harrison, Ind.	3	3		
Karsell Co., The, Bloomington, Ind.	5	4	1	
Kasch, Louis, Logansport, Ind.	1	1		
Kehoe, Inc., James E., Chicago, Ill.	2			2
Kelco Co., Chicago, Ill.	2	2		
Kell, R. C., Oakland City, Ind.	6	6		
Kellogg & Sons, Inc., Spencer, Buffalo, N. Y.	2	2		1
Kelly Milling Co., The William, Hutchinson, Kans.	1	1		
Kennel Food Supply Co., Fairfield, Conn.	1			1
Kentucky Chemical Manufacturing Co., Covington, Ky.	7	5	2	2
Kerlin Bros. & Co., Delphi, Ind.	2	2		
Kern & Kirtley Grain Co., Whitestown, Ind.	1	1		1
Kibler, F. M., West Terre Haute, Ind.	2	1	1	
Kiefer Feed & Supply Co., Elwood, Ind.	6	5	1	
King Elevator Co., Wabash, Ind.	3	3		
King Flour Mills Co., H. H., Minneapolis, Minn.	1	1		1

TABLE 4—Summary of Feed Inspection—Continued

January 1, 1935 to December 31, 1935

NAME AND ADDRESS OF MANUFACTURER	Number of Samples Examined	Number of Samples Passed	Number of Samples Not Passed	Number of Samples Not Tagged
Kingan & Co., Indianapolis, Ind.	8	7		1
Kingsbury & Co., Indianapolis, Ind.	1	1		
Kinne Milling Co., Valparaiso, Ind.	4	4		
Kirk Feed Company, Indianapolis, Ind.	1	1		
Klondike Milling Co., Danville, Ind.	3	3		
Knapp & Co., C. E., South Bend, Ind.	3	3		
Knecht Milling Co., Hartford City, Ind.	1	1		
Knight & Sons, A. H., Zanesville, Ind.	5	5		
Knox County Farm Bureau, Vincennes, Ind.	1	1		
Knox County Fertilizer Co., Vincennes, Ind.	1	1		
Kokomo Electric Hatchery, Kokomo, Ind.	4	4		
Kopp's Feed Store, Rockport, Ind.	1		1	
Koschnick & Co., Indianapolis, Ind.	1	1		
Kosciusko County Farm Bureau Cooperative Association, Inc., Warsaw, Ind.	4	4		
Krause Milling Co., Chas. A., Milwaukee, Wis.	6	6		2
Kroger Grocery & Baking Co., Cincinnati, Ohio	5	5		2
Kuhner Packing Co., Muncie, Ind.	15	12	3	
LaBudde Feed & Grain Co., Milwaukee, Wis.	3		1	2
Lafayette Cooperative Elevator Co., Lafayette, Ind.	11	11		
Lafayette Milling Co., Lafayette, Ind.	7	7		
Lagrange County Farm Bureau Cooperative Association Inc., Lagrange, Ind.	1	1		
Lake Milling Co., Richland, Ind.	2	1	1	
LaPaz Grain Co., LaPaz, Ind.	1	1		
LaPorte County Hatcheries, LaPorte, Ind.	4	3	1	
Larabee Flour Mill Co., The, Kansas City, Mo.	1	1		1
Larkin & Denny, Cloverdale, Ind.	3	2	1	
Lash Milling Co., Farmersburg, Ind.	6	6		
Laurentz & Hartshorn Packing Co., Ft. Wayne, Ind.	1		1	
Lawrence Coal & Grain Co., Lawrence, Ind.	3	3		3
Lawrenceburg Roller Mills Co., Lawrenceburg, Ind.	1	1		
Lemon Milling Co., Bedford, Ind.	5	5		
Letterman's Hatchery, Sullivan, Ind.	1	1		
Levy Grain Co., Ben, New Haven, Ind.	1	1		
Liberty Mills, Liberty, Ind.	4	4		
Livonia Milling Co., Livonia, Ind.	1	1		
Lizton Grain & Lumber Co., Lizton, Ind.	2	2		
Logansport Elevator Co., Logansport, Ind.	3	2	1	
Loughry Bros. Milling & Grain Co., Monticello, Ind.	1	1		
Lovitt & Co., L. B., Memphis, Tenn.	14	12	2	
Lowell Grain & Hay Co., Lowell, Ind.	3	3		
Lucas Cash Store, Brownstown, Ind.	2	2		
Lyon & Greenleaf Co., Ligonier, Ind.	1	1		
McCarty Seed Co., J. A., Evansville, Ind.	26	26		
McComas & Pritchard, Mohawk, Ind.	2	2		
McIntire & Hopping, Leipsic, Ind.	2	2		
McKenzie Milling Co., Quincy, Mich.	3	2		2
McMillen Feed Mills, Inc., Fort Wayne, Ind.	17	16	1	
Macdonald, C. L., Marion, Ind., R. 3	5	3	2	1
Major Bros. Packing Co., Mishawaka, Ind.	4	4		
Majot Mills, E. C., Michigan City, Ind., R. R. 2	2	1	1	
Marengo Milling Co., Marengo, Ind.	2	1	1	
Marianna Sales Co., Memphis, Tenn.	7	5	2	2
Markle Elevator Co., Markle, Ind.	1	1		1
Markleville Elevator Co., Markleville, Ind.	1	1		1
Marlatt Feed Store, Attica, Ind.	3	3		
Marshall County Farm Bureau Cooperative Association Plymouth, Ind.	1	1		
Marshall Feed & Grain Co., Marshall, Ind.	4	3	1	
Martin, John D., Lafayette, Ind.	12	10	2	
Martin Feed Store, Elkhart, Ind.	1		1	1
Martin Grain Co., A. B., LaFontaine, Ind.	1		1	
Martindale's Mill & Feed Store, Bloomfield, Ind.	1	1		
Martinsville Milling Co., Martinsville, Ind.	4	4		
Mascott Packing Co., Chicago, Ill.	1			1
Max Grain Co., Lebanon, Ind., R. R. 4	3	3		2
Mayer Grain Co., South Whitley, Ind.	2	2		
Mayflower Mills, Fort Wayne, Ind.	4	4		
Meat Products Co., The, Cleveland, Ohio	1	1		1
Medaryville Cooperative Co., Medaryville, Ind.	2	2		
Meier Packing Co., Indianapolis, Ind.	4	3	1	
Meloy, W. A., Argos, Ind.	1	1		
Melody, Dr. G. C., Greensburg, Pa.	1	1		1
Merchants Distilling Corp., Terre Haute, Ind.	1	1		

TABLE 4—Summary of Feed Inspection—Continued.
January 1, 1935 to December 31, 1935.

Name and Address of Manufacturer	Number of Samples Examined	Number of Samples Passed	Number of Samples Not Passed	Number of Samples Not Tagged
Merchant's Service Corp., Chicago, Ill.	1	1		1
Mexico Elevator Co., Mexico, Ind.	2	2		
Mexico Roller Mills, Mexico, Ind.	2	2		
Meyer Products Co., Kansas City, Mo.	1	1		
Midland Flour Milling Co., Kansas City, Mo.	2	2		
Miesenhelder Bros., Inc., Palestine, Ill.	1	1		
Mighton Bros., Ltd., Cleveland, O.	1			1
Milan Milling Co., Milan, Ind.	1	1		
Milford Grain & Milling Co., Milford, Ind.	2	2		
Miller, A. J., Montpelier, Ind.	1	1		
Miller, Fred, West College Corner, Ind.	5	5		
Miller & Thomas, Jonesboro, Ind.	4	4		
Miller Cereal Mills, Omaha, Nebr.	1	1		
Miller Grain Co., Inc., Bainbridge, Ind.	16	15	1	
Milliken Tomlinson Co., Portland, Maine	1			1
Miracle Mills, Inc., Mt. Carmel, Ill.	1	1		
Mishawaka Grain & Coal Co., Mishawaka, Ind.	2	2		
Missouri Cotton Oil Co., Cairo, Ill.	6	6		
Moellering's Flour Mill, Fort Wayne, Ind.	4	4		
Monroe County Farm Bureau Cooperative Association, Inc., Bloomington, Indiana	2	2		
Monroe Grain Co., Monroe, Ind.	2	2		
Monroeville Cooperative Equity Union Exchange, Inc., Monroeville, Ind.	1	1		
Moore Bros., Kirklin, Ind.	2	2		2
Morrell & Co., John, Ottumwa, Ia.	3	3		
Morris & Co., Chicago, Ill.	18	17	1	
Morris Flour Mills, Morris, Ind.	3	3		
Morrison-Teagarden Co., Saratoga, Ind.	1		1	
Morrow Grain Co., Wabash, Ind.	2		2	
Moutoux, H. L., Evansville, Ind.	1	1		
Moutoux, P. E., Evansville, Ind.	1	1		
Mt. Jackson Feed & Seed Co., Indianapolis, Ind.	7	6	1	
Mt. Vernon Feed & Seed Co., Mt. Vernon, Ind.	4	4		
Mt. Vernon Milling Co., Mt. Vernon, Ind.	4	4		
Muff Grain & Coal Co., Liberty, Ind.	1	1		
Mulberry Grain Co., Mulberry, Ind.	4	4		
Muncie Tanking Co., Muncie, Ind.	2	2		
Murphy Products Co., Burlington, Wis.	14	11	3	
Mutschler Packing Co., Decatur, Ind.	2		2	
Myers & Smith, Chili, Ind.	1	1		
Naber & Co., Chas. F., Fairmount, Ind.	1	1		
Nading Grain Co., Wm., Greensburg, Ind.	1	1		
Napoleon Feed Mill, Napoleon, Ind.	1	1		
Nappanee Milling Co., Nappanee, Ind.	3	3		
National Biscuit Co., New York, N. Y.	1	1		
National Live Stock Remedy Co., Chicago, Ill.	3	3		
National Yeast Co., Inc., Findlay, O.	1	1		1
Neal, E. H., Jonesboro, Ind.	1		1	
Nebraska Consolidated Mills Co., Omaha, Nebr.	1	1		1
Nedderman, Roy, Sunman, Ind.	1	1		
Nelson Feed Co., Princeton, Ind.	12	11	1	
New Century Co., The, Chicago, Ill.	3	2	1	2
New Palestine Elevator Co., New Palestine, Ind.	1		1	
New Paris Creamery Co., New Paris, Ind.	2	2		
New Paris Elevator Co., New Paris, Ohio	6	4	2	
New Paris Feed & Coal Co., New Paris, Ind.	9	8	1	
New Richmond Roller Mills Co., New Richmond, Wis.	1	1		
New Ross Grain & Lumber Co., New Ross, Ind.	7	6	1	
Newsome Feed & Grain Co., Pittsburgh, Pa.	3	3		
Nickle Plate Elevator, Argos, Ind.	1	1		
Nierman & Thistlewaite Feed Store, Richmond, Ind.	1	1		
Noblesville Electric Hatchery, Noblesville, Ind.	1	1		
Noblesville Milling Co., Noblesville, Ind.	4	4		
Noblesville Rendering Co., Noblesville, Ind.	1	1		
Nora Grain & Coal Co., Nora, Ind.	12	9	2	2
Norman & Roberts, G. M., Bedford, Ind.	1	1		
North Manchester Fertilizer Co., N. Manchester, Ind.	3	3		
North Webster Mills, North Webster, Ind.	2	2		
Northern Indiana Cooperative Association, Inc., Mentone, Ind.	4	4		1
Northfield Milling Co., Minneapolis, Minn.	1	1		
Nowak Milling Corp., Hammond, Ind.	16	16		3
Nunn & Sons Milling Co., Chas., Evansville, Ind.	18	18		
Oakland City Milling Co., Oakland City, Ind.	7	7		

TABLE 4—Summary of Feed Inspection—Continued.

January 1, 1935 to December 31, 1935

NAME AND ADDRESS OF MANUFACTURER	Number of Samples Examined	Number of Samples Passed	Number of Samples Not Passed	Number of Samples Not Tagged
Odon Milling Co., Odon, Ind.	4	3	1	
Ohio Valley Seed Co., Evansville, Ind.	1	1		
Old Trusty Dog Food Co., Needham Heights, Mass.	1	1		1
Page Mill Co., The Thomas, Topeka, Kans.	1	1		
Park, Inc., Phillip R., San Pedro, Calif.	3	3		
Parke County Farm Bureau Cooperative Association, Inc., Rockville, Ind.	6	6		1
Paxson, C. E., Elkhart, Ind.	2	2		
Pearl Packing Co., Inc., Madison, Ind.	8	8		
Pecos Valley Alfalfa Milling Co., Hagerman, New Mexico	4	4		4
Pedrick Laboratories, Inc., Tulsa, Okla.	1		1	
Peet Manufacturing Co., E. M., Council Bluffs, Ia.	11	9	2	
Pennington Feed Store, Bloomington, Ind.	3	3		
Pennville Milling Co., Pennville, Ind.	8	6	2	
Perfection Food Co., Battle Creek, Mich.	1		1	
Perkins Oil Co., Inc., Memphis, Tenn.	1	1		
Perry County Farm Bureau, Tell City, Ind.	1	1		
Peru Grain & Coal Co., Peru, Ind.	1	1		
Peru Hatchery, Peru, Ind.	2	2		
Petersburg Milling & Grain Co., Petersburg, Ind.	6	6		
Philadelphia Seed Co., Inc., Philadelphia, Pa.	2	2		2
Piel Bros. Starch Co., Indianapolis, Ind.	1	1		
Pine Village Feed Co., Pine Village, Ind.	6	6		
Pinola Cooperative Co., Pinola, Ind.	2	2		
Pioneer Elevator Co., Worthington, Ind.	2	2		
Plymouth Fertilizer Co., Plymouth, Ind., R. R. 1	2	2		
Poland Roller Mills, Poland, Ind.	1	1		
Portland Fertilizer Plant, Portland, Ind.	2	1	1	
Poseyville Grain & Feed Co., Inc., Poseyville, Ind.	7	5	2	
Postum Co., Inc., Battle Creek, Mich.	1	1		
Prairie Creek Mills, Prairie Creek, Ind.	4	3	1	1
Pratt Food Co., Hammond, Ind.	4	4		
Price Fertilizer Co., Converse, Ind.	1		1	
Pritchard & Rafert, Inc., Pendleton, Ind.	1	1		
Producers Creamery, Marion, Ind.	4	4		
Purcell Seed Co., Inc., Evansville, Ind.	9	9		
Quaker Oats Co., Chicago, Ill.	6	6		
Ragsdale & Co., Chas., Bedford, Ind.	2	2		
Rainbow Stores, Stanford, Ind.	3	3		
Ralston Purina Co., St. Louis, Mo.	41	38		4
Rankin & Co., M. G., Milwaukee, Wis.	1	1		
Rauh & Sons Animal Feed Co., E., Indianapolis, Ind.	6	4	2	
Read Phosphate Co., New Albany, Ind.	3	3		
Records, James L., Edinburg, Ind.	4	4		
Red Cedar Alfalfa Milling Co., Williamston, Mich.	1	1		
Reed Elevator Co., Decatur, Ind.	5	3	2	
Reid, Volney T., Salem, Ind.	1	1		
Republic Food Products Co., Chicago, Ill.	1	1		
Rich Products Corp., Chicago, Ill.	1	1		
Richmond Grain Co., Richmond, Ind.	4	3	1	
Ritter's Feed Store, Washington, Ind.	1	1		
Rival Packing Co., Chicago, Ill.	2	2		
Riverdale Products Co., Chicago, Ill.	16	14	1	4
Riverside Mills, Clinton, Ind.	3	2	1	
Robertson Grain Co., Williamsport, Ind.	1	1		
Robinson Feed Co., Perrysville, Ind.	2	2		
Robinson Milling Co., Perrysville, Ind.	11	11		3
Rochester Cooperative Elevator Co., Rochester, Ind.	9	9		2
Rochester Fertilizer & Tankage Co., Rochester, Ind.	3	3		
Rolling Prairie Lumber & Grain Co., Rolling Prairie, Ind.	2	2		
Roper & Brown, Inc., Hobart, Ind.	4	4		
Rose Feed Mills, Rushville, Ind.	1	1		
Rosedale Elevator Co., Rosedale, Ind.	3	3		
Rowe Sons Co., A., Terre Haute, Ind.	4	4		
Royal Hatchery & Supply Co., Union City, Ind.	1	1		
Rund Packing Co., Inc., Lafayette, Ind.	1		1	
Rush County Mills, Rushville, Ind.	12	9	3	2
Rush Service Co., Inc., Rushville, Ind.	2	2		
Russell, J. A., Elkhart, Ind.	2	1	1	
Russell & Martin, Elkhart, Ind.	1	1		
Russellville Flour & Feed Co., Russellville, Ind.	1	1		
Russiaville Milling Co., Russiaville, Ind.	5	5		
Ryde & Co., Chicago, Ill.	8	8		3
Sample, John L., Madison, Ind.	2	2		
Santa Fe Elevator Co., Santa Fe, Ind.	3	3		

TABLE 4—Summary of Feed Inspection—Continued

January 1, 1935 to December 31, 1935

Name and Address of Manufacturer	Number of Samples Examined	Number of Samples Passed	Number of Samples Not Passed	Number of Samples Not Tagged
Sauers Milling Co., Evansville, Ill.	1	1		1
Saunders Mills, Inc., Toledo, Ohio	7	6	1	
Schaefer, John H., Columbus, Ind.	5	5		
Scheer's Electric Hatchery, Boonville, Ind.	7	7		
Schenkel Milling Co., Brookville, Ind.	2	2		
Schlemmer Feed Co., Harrison, Ohio	7	7		
Schlensker, C. F., Daylight, Ind.	3	3		
Schlosser Bros., Frankfort, Ind.	1	1		
Schmadel Packing & Ice Co., Evansville, Ind.	8	4	4	1
Schnaible Co., The M. & J., Lafayette, Ind.	2	2		
Schulte, W. C., Freelandville, Ind.	2	1	1	
Schultz-Baujan & Co., Beardstown, Ill.	1		1	1
Schultz Bros., Elberfeld, Ind.	9	9		
Schussler Corp., Indianapolis, Ind.	3	2	1	
Schwill & Co., Chicago, Ill.	1			1
Sea Pride Packing Corp., Ltd., San Francisco, Calif.	1		1	
Sears Roebuck & Co., Chicago, Ill.	3	2	1	
Shaver's Hatchery & Feed Store, Crawfordsville, Ind.	3	3		
Shelby County Farm Bureau Cooperative Association, Shelbyville, Ind.	1		1	
Shellabarger Grain Products Co., Decatur, Ill.	2	2		2
Shores Co., Inc., The, Cedar Rapids, Ia.	3	3		
Siberia Mill Co., Siberia, Ind.	1	1		1
Silver Lake Elevator, Silver Lake, Ind.	1	1		
Simpson Products Co., Terre Haute, Ind.	1	1		
Sims Milling Co., Frankfort, Ind.	3	3		
Small Hay & Grain Co., The W. J., Neodesha, Kans.	1			1
Smith Agricultural Chemical Co., Indianapolis, Ind.	3	3		1
Smith Coal & Feed Co., Inc., Muncie, Ind.	1	1		
Smock & Co., W. C., Burrows, Ind.	1			1
Southern Indiana Reduction Co., Salem, Ind.	5	4	1	
Sowash Grain Co., Inc., E. K., Crown Point, Ind.	5	5		
Sparks Milling Co., Terre Haute, Ind.	3	3		
Spencer County Farm Bureau Cooperative Association, Inc., Chrisney, Ind.	1	1		
Sprague-Warner & Co., Chicago, Ill.	1	1		
Spratt's Patent (American) Ltd., Newark, N. J.	3	2	1	
St. Joe Flour Mill, St. Joe, Ind.	4	4		
Stadler Products Co., Cleveland, Ohio	7	7		
Stahl Packing Co., Evansville, Ind.	2	2		
Standard Brands, Inc., New York, N. Y.	1	1		1
Standard Fertilizer Co., Greensburg, Ind.	1	1		
Standard Food Stores, Indianapolis, Ind.	1		1	
Standard Hatcheries, Decatur, Ill.	1	1		
Standard Hatcheries, Terre Haute, Ind.	11	10	1	1
Standard Kennel Food Co., Battle Creek, Mich.	2	2		2
Stanley Feed Co., Salem, Ind.	2	2		
Star Milling Co., Shoals, Ind.	1	1		
Star Roller Mills, Burlington, Ind.	3	3		
Starr Mills, South Bend, Ind.	6	6		
Steckley's Feed Mill, Kendallville, Ind.	4	4		
Sterling Brewers, Inc., Evansville, Ind.	2	2		1
Steventon Bros., Rockville, Ind.	3	2	1	
Stiefel Grain Co., Fort Wayne, Ind.	1	1		
Stockton Co., Morgantown, Ind.	4	4		
Stoll & Sons, Anton, Richmond, Ind.	3	2	1	
Stoops Bros., Wabash, Ind.	3	3		
Strait & Son Milling Co., Asa, Williamston, Mich.	1		1	
Strauch, Albert H., Royal Center, Ind.	3	3		
Struven Co., Chas. M., Baltimore, Md.	4	4		1
Success Mills, Inc., Chicago, Ill.	1	1		
Sucher Packing Co., Chas., Dayton, O.	1			1
Suckow Milling Co., Franklin, Ind.	4	3	1	
Sullivan Fertilizer Co., Sullivan, Ind.	2	2		
Sullivan's Hatchery, Peru, Ind.	3	3		
Sunnyside Milling Co., Evansville, Ind.	6	6		
Sunshine Feed Store, Rushville, Ind.	2	1	1	
Swayzee Grain Co., Swayzee, Ind.	2	2		
Swift & Co., Chicago, Ill.	52	41	10	2
Swift & Co. Oil Mill, Memphis, Tenn.	1	1		
Syler & Syler, Nappanee, Ind.	3	3		
Syler & Syler, Plymouth, Ind.	2	2		
Tarkio Molasses Feed Co., Kansas City, Mo.	1	1		1
Tell City Flouring Mills, Tell City, Ind.	5	4	1	

TABLE 4—Summary of Feed Inspection—Continued.

January 1, 1935 to December 31, 1935.

Name and Address of Manufacturer	Number of Samples Examined	Number of Samples Passed	Number of Samples Not Passed	Number of Samples Not Tagged
Terre Haute Abattoir & Stock Yards Co., Terre Haute, Ind.	2	2		
Terre Haute Tallow & Grease, Terre Haute, Ind.	5	3	2	
Thomas & Son, A. R., Markle, Ind.	2	2		
Thomas Milling Co., Marion, Ind.	10	10		
ThoroBread Co., The, Cincinnati, Ohio	1	1		
Thornburgh Milling & Elevator Co., Martinsville, Ind.	1	1		
Tipton County Farm Bureau Cooperative Association, Inc., Tipton, Ind.	1	1		
Tipton Milling Co., Tipton, Ind.	8	5	2	2
Tri County Farm Bureau Cooperative Association, Inc. Evansville, Ind.	2	2		
Tri State Fertilizer & Feed Mills, Inglefield, Ind.	1	1		
Trow Co., W., Madison, Ind.	2	2		
Uhl-Snider Milling Co., Connersville, Ind.	4	4		
Ultra-Life Laboratories, Inc., East St. Louis, Ill.	3	3		
Union Starch & Refining Co., Columbus, Ind.	1	1		
United By-Products Co., Chicago, Ill.	1	1		1
Valentine & Co., Terre Haute, Ind.	3	3		
Valparaiso Feed Store, Valparaiso, Ind.	2	2		
Vermillion County Farmers, Inc., Dana, Ind.	2	2		
Victoria Mill & Elevator Co., Jasper, Ind.	3	3		
Vigo County Farm Bureau Cooperative Association, Inc., Terre Haute, Ind.	1	1		
Vitality Mills, Inc., Chicago, Ill.	3	3		1
Vitamont Sales Co., Butte, Montana	1			1
Vogel Brothers, Seymour, Ind.	3	3		
Wachtel Co., John, Indianapolis, Ind.	12	11	1	
Walgreen Co., Chicago, Ill.	2	2		
Walker & Co., P. M., Washington, Ind.	1	1		
Walker Milling Co., Loogootee, Ind.	3	2	1	
Wall, N. A., Pittsboro, Ind.	3	3		
Walsh & Co., Inc., James, Lawrenceburg, Ind.	3	3		
Walter Grain Co., Auburn, Ind.	1	1		
Walter Grain Co., Spencerville, Ind.	1	1		
Walton Elevator Co., Walton, Ind.	1	1		
Ward Dry Milk Co., St. Paul, Minn.	1	1		
Warren Feed & Coal Co., Redkey, Ind.	1	1		1
Warsaw Feed Store, Warsaw, Ind.	1	1		1
Warsaw Milling & Grain Co., Warsaw, Ind.	2	2		
Washington County Farm Bureau, Pekin, Ind.	1			1
Washington County Farm Bureau Cooperative Association, Inc., Salem, Ind.	2	2		
Waterloo Mills, Gratz & Lemmlie, Waterloo, Ind.	2	2		
Watkins Co., The J. R., Winona, Minn.	1			1
Wayne Dairy Products Co., Richmond, Ind.	1	1		
Wayne Distributors, Inc., Fort Wayne, Ind.	1	1		
Weaver's Feed Store, Hobart, Oaklandon, Ind.	3	2	1	1
Weber Milling Co., Sunman, Ind.	3	3		
Welborn-Holland Co., Frankton, Ind.	2	2		
Wellington Milling Co., Anderson, Ind.	9	9		
Western Feed & Coal Exchange, Newcastle, Ind.	1	1		
Westville Hammer Mill, Westville, Ind.	2	2		
Wheatland Grain Co., Wheatland, Ind.	3	3		
White & Co., Sherman, Goodland, Ind.	1	1		
Williams Electric Hatchery, Elwood, Ind.	1	1		
Wilson & Co., Chicago, Ill.	11	11		
Wilson & Son, Russellville, Ind.	3	3		
Wilson Grain & Coal Co., Rochester, Ind.	6	6		
Wilson Grain Co., Sulphur Springs, Ind.	1	1		
Wolcott Grain Co., Wolcott, Ind.	2	2		
Wolf, C. G., North Liberty, Ind.	5	5		
Wolf & Son Hatchery & Feed, North Judson, Ind.	4	4		
Wolferman, E. F., Milford, Ind.	1	1		1
Wolfram Grain Co., Brownsburg, Ind.	5	5		
Woodbury-Elliott Grain Co., Muncie, Ind.	1		1	
Woodstock Mills, Seymour, Ind.	2	2		1
Worthington Grain Co., Worthington, Ind.	3	2	1	
Wright, John H., Clinton, Ind.	1	1		
Ziliak & Schafer Milling Co., Evansville, Ind.	24	22	2	
Ziliak & Schafer Milling Co., Haubstadt, Ind.	3	3		
Zionsville Grain Co., Zionsville, Ind.	9	9		

ATTENTION MANUFACTUERS, DEALERS AND CONSUMERS!

Shipments of commercial feeding stuffs made to manufacturers in Indiana to be used for the purpose of mixing feeding stuffs are not required to be registered and tagged with Indiana tags when such manufacturers use these products only as ingredients in the mixing of feeding stuffs that are properly registered in Indiana or when such manufacturers have those ingredients registered in Indiana under their own name.

Shipments of commercial feeding stuffs made to manufacturers who do custom mixing or who offer such feeding stuffs for resale must be registered in Indiana and properly tagged, unless such manufacturers have such feeding stuffs registered under their own name.

Batch mixing is permitted without registering and tagging of the final product, only when the purchaser or his agent actually comes to the mixing plant, makes a bona fide purchase of properly tagged ingredients, sees them before the mixing is done, and also assures himself that they are mixed according to the formula furnished. Unless the above conditions are fulfilled, all feed mixed according to formulas submitted must be registered for sale in Indiana and properly tagged with Official Indiana State tags.

Feeds sold or offered for sale in containers of five pounds or less and registered under the annual registration fee method need not be labeled with Indiana State labels but the same information as required on the Indiana tag must be stated on the container.

When commercial mixed feeds contain less than 20% of a concentrate composed of a large number of ingredients the exact percentage of the concentrate must be stated.

When commercial mixed feeds contain materials of little or no feeding value the exact percentage of each such material must be stated by the manufacturer. This group of materials includes cottonseed hulls, rice hulls, peanut

TABLE 5—Calcium and Phosphorus Content of Feeding Stuffs.

MATERIAL	Calcium (Ca)%	Lime (CaO)%	Phosphorus (P)%	Phosphoric Acid ($P_2O\%_5$)
Alfalfa meal	1.22	1.70	0.23	0.53
Brewers' dried grains	0.16	0.22	0.45	1.03
Buttermilk dried	2.43	3.40	0.96	2.20
Corn	0.01	0.02	0.28	0.65
Corn gluten feed	0.25	0.35	0.27	0.62
Cottonseed meal	0.26	0.37	1.26	2.89
Cowpeas	0.10	0.14	0.45	1.02
Distillers' grain corn	0.04	0.06	0.29	0.67
Fish meal (20.0% ash)	6.65	9.30	3.50	8.00
Hominy feed	0.03	0.04	0.45	1.03
Linseed oil meal	0.36	0.51	0.72	1.65
Malt sprouts	0.15	0.21	0.70	1.61
Meat and bone scraps (30.0% ash)	11.18	15.64	5.06	11.58
Meat scraps (22.0% ash)	8.19	11.46	3.71	8.49
Oats	0.10	0.14	0.37	0.85
Skimmed milk dried	1.29	1.80	0.96	2.20
Soybeans	0.21	0.29	0.60	1.37
Soybean oil meal	0.27	0.38	0.76	1.75
Tankage digester (20.0% ash)	7.10	9.93	3.21	7.35
Wheat	0.04	0.06	0.38	0.86
Wheat bran	0.09	0.13	1.20	2.74
Wheat middlings	0.07	0.10	0.90	2.06
Wheat red dog flour	0.12	0.17	0.85	1.95
Bone meal steamed	28.60	40.00	13.11	30.00
Bone black	28.60	40.00	13.11	30.00
Dicalcium phosphate	22.88	32.00	17.48	40.00
Rock phosphate	28.60	40.00	13.11	30.00
Super phosphate 16%	17.16	24.00	6.99	16.00
Super phosphate 20%	17.88	25.00	8.74	20.00
Phosphatic limestone	35.75	50.00	4.37	10.00
Limestone (95% calcium carbonate)	37.90	53.00	....	....
Oyster shells (95% calcium carbonate)	37.90	53.00	....	....
Wood ashes	21.45	30.00	....	....
Gypsum	25.03	35.00	....	....

shells, corn cob meal, oat hulls, clipped oat by-product, screenings refuse and other similar substances.

When registering mineral feeds manufacturers should note the following change which is to become effective not later than January 1, 1937. Instead of guaranteeing minimum percentages of lime (CaO) and phosphoric acid (P_2O_5), it will be necessary to state minimum percentages of calcium (Ca) and phosphorus (P). To derive these percentages the percentage of lime (CaO) must be multiplied by 0.7 and the percentage of phosphoric acid (P_2O_5) by 0.44. Table 5 gives the calcium and phosphorus content of the mineral ingredients and also the more common feed ingredients.

Table 6, entitled "Analyses of Cereals and By-Products", may also be helpful to manufacturers in calculating safe guarantees for their feed formulas. Although the percentages of Ash and Nitrogen Free Extract are not required on the official tag they are included in Table 6 for reference purposes.

TABLE 6—Analyses of Cereals and By-Products

MATERIAL	POUNDS IN ONE HUNDRED				
	Crude Protein	Crude Fat	Crude Fiber	Ash	Nitrogen Free Extract
Alfalfa leaf meal	20.0	2.5	18.0	12.0	40.0
Alfalfa meal	13.0	1.5	33.0	9.0	35.0
Alfalfa stem meal	9.0	0.8	40.0	7.5	32.0
Barley	11.0	1.8	6.0	2.5	69.0
Beet pulp	8.5	0.9	19.0	3.5	59.0
Blood meal	80.0	0.5	....	3.3	3.0
Bone meal raw	23.0	3.0	2.0	60.0	3.0
Bone meal steamed	6.0	0.5	2.0	80.0	2.0
Brewers dried grains	26.0	6.0	15.0	3.8	41.0
Buckwheat	10.5	2.5	10.0	2.0	62.0
Buckwheat middlings	28.8	7.3	6.0	4.8	43.0
Buckwheat mixed feed	13.0	3.2	28.5	3.2	40.0
Buttermilk condensed	10.0	2.0	....	3.7	12.0
Buttermilk dried	32.0	5.0	....	12.0	43.0
Cane seed	9.0	2.5	2.5	2.0	71.0
Charcoal	....	....	80.0	3.5	....
Cocoanut oil meal	22.0	8.0	9.0	5.5	45.0
Cod liver oil	....	100.0	....	....	....
Corn	9.5	4.0	2.0	1.5	72.0
Corn ear	8.0	3.5	8.0	1.5	67.0
Corn cob	2.0	0.5	32.0	1.5	54.0
Corn bran	7.0	2.5	10.0	2.5	67.0
Corn feed meal	9.0	3.5	1.5	1.0	74.0
Corn mill feed	11.0	7.5	4.0	2.5	65.0
Corn germ meal	20.0	8.0	8.0	2.5	50.0
Corn gluten feed	25.0	2.5	7.0	2.0	53.0
Corn gluten meal	40.0	1.0	2.0	1.0	46.0
Cottonseed meal 43% protein	43.0	5.2	12.0	5.5	27.0
Cottonseed meal 41% protein	41.0	5.0	13.0	5.7	28.0
Cottonseed meal 36% protein	36.0	4.5	16.0	6.1	29.5
Cottonseed feed	23.0	4.0	22.0	4.5	35.0
Cottonseed hulls	4.5	1.8	44.0	2.7	37.0
Cowpeas	23.0	1.5	4.0	3.5	56.0
Distillers dried grains corn	28.0	9.0	12.0	3.0	40.0
Emmer (spelt)	11.5	2.0	10.0	3.0	63.0
Fish meal	60.0	5.0	2.0	20.0	3.0
Flax plant by-product	15.0	2.0	31.0	5.0	38.0
Flaxseed	22.0	32.0	7.0	4.5	23.0
Flaxseed screenings	14.0	8.0	14.0	8.5	45.0
Hominy feed or meal	11.0	6.0	6.0	3.0	65.0
Kafir corn	10.5	2.5	2.5	1.7	70.0
Kelp dried	8.0	1.0	9.0	42.0	32.0
Linseed oil meal old process	34.0	6.0	8.0	5.5	36.0
Malt sprouts	27.0	1.3	12.5	6.0	45.0
Meat and bone scraps	50.0	6.0	3.0	30.0	2.0
Meat scraps 55% protein	55.0	9.0	3.0	22.0	2.0
Millet seed	11.0	3.5	9.5	3.2	64.0
Milo	10.5	2.5	2.5	1.7	70.0
Molasses beet	3.0	....	....	10.0	63.0
Molasses cane	3.0	....	....	8.0	65.0
Oats	11.0	4.0	11.0	3.5	60.0
Oat-clipped by-product	9.0	2.0	30.0	12.0	40.0
Oat greats or meal	15.0	6.5	2.0	2.0	67.0
Oat hulls	4.0	1.5	32.0	6.0	51.0

TABLE 6—Analyses of Cereals and By-Products—Continued.

MATERIAL	POUNDS IN ONE HUNDRED				
	Crude Protein	Crude Fat	Crude Fiber	Ash	Nitrogen Free Extract
Oat middlings	15.0	5.0	5.0	3.2	62.0
Oat mill feed	6.0	2.0	28.0	5.0	52.0
Peanut oil feed	30.0	6.0	25.0	4.5	23.0
Peanut oil meal	40.0	6.0	6.0	5.0	30.0
Peanut shells or hulls	5.5	1.2	70.0	5.5	12.0
Rice	8.0	2.0	9.0	4.0	67.0
Rice bran	12.0	12.0	12.0	10.0	45.0
Rice hulls	3.0	0.5	36.0	16.5	34.0
Rye	11.5	1.5	2.0	2.0	73.0
Rye feed	16.0	3.5	5.0	4.0	62.0
Skimmed milk dried	34.0	0.5	....	8.0	50.0
Soybeans	36.0	19.0	5.0	5.0	26.0
Soybean oil meal	41.0	6.0	6.0	5.0	32.0
Sunflower seed	16.0	19.0	30.0	3.0	22.0
Sunflower seed oil meal	21.0	10.0	32.0	4.0	28.0
Tankage 60% protein	60.0	6.0	3.0	20.0	2.0
Velvet bean feed	19.0	4.0	17.0	4.0	48.0
Wheat	12.0	2.0	2.4	1.9	71.0
Wheat bran soft	14.5	3.5	10.0	6.0	56.0
Wheat standard middlings	16.0	4.0	9.5	4.5	56.0
Wheat flour middlings	16.0	4.0	6.0	3.5	60.0
Wheat white middlings	14.0	3.0	3.5	1.5	68.0
Wheat reddog flour	15.0	3.0	4.0	1.5	67.0
Wheat low grade feed flour	12.0	1.5	1.5	1.0	74.0
Wheat mixed feed	15.0	3.5	8.5	5.0	58.0
Whey dried	12.0	0.5	....	8.0	72.0

METHOD FOR CALCULATING CHEMICAL ANALYSIS GUARANTEE OF A MIXED FEED

Ingredients in Batch of Feed	Pounds	Pounds of Protein	Pounds of Fat	Pounds of Fiber
Ground yellow corn	400	38.00	16.00	8.00
Soft wheat bran	100	14.50	3.50	10.00
Wheat flour middlings	100	16.00	4.00	6.00
Meat and bone scraps	75	37.50	4.50	2.25
Dried buttermilk	35	11.20	1.75	......
Alfalfa leaf meal	40	8.00	1.00	7.20
	750	125.20	30.75	33.45

Explanation—

(1) List the ingredients and amount of each used in batch.

(2) By using the information in Table 6 calculate the number of pounds of protein, fat and fiber furnished by each ingredient.
Example—400 lbs. of corn × 9.5% protein in corn = 38.00 lbs. of protein in 400 lbs. of corn.

(3) The sum of each column gives the total number of pounds of protein, fat and fiber in the particular batch.

(4) By dividing each total by the total pounds in the batch, the percentages of protein, fat and fiber are obtained.

Example—$\frac{125.20 \times 100}{750} = 16.7\%$ protein

$$\frac{30.75 \times 100}{750} = 4.1\% \text{ fat}$$

$$\frac{33.45 \times 100}{750} = 4.4\% \text{ fiber}$$

From these percentages a safe guarantee would be 16.5% protein, 4.0% fat and 4.5% fiber.

It is important that all of the terms used in the analysis of feeding stuffs and also the definitions of the various classes of feeding stuffs be thoroughly understood by the feed trade; therefore, this information is given in detail on the remaining pages of this circular.

EXPLANATION OF TERMS USED IN THE ANALYSIS OF FEEDING STUFFS

Moisture is the varying quantity of water occurring in feeding stuffs which can be driven off by heat at the temperature of boiling water. The amount of water present varies with the temperature, moisture content of the air, processes of manufacture and the character of the substance. In most concentrates this value ranges from 5 to 15 per cent.

Crude Fat consists mainly of fats and oils with small amounts of waxes, resins, coloring matter and similar substances, dissolved from feeding stuffs by dry ether. In calculating the heat and energy value of a feed, the fat is considered 2.25 times greater than that of either carbohydrates or protein.

Crude Protein is the term applied to the nitrogenous constituents of a feeding stuff. It is obtained by multiplying the total nitrogen by 6.25. Protein is the most important as well as the most costly constituent in a feed. Plants have the power of building up protein from the inorganic elements of the soil and air while animals must secure their protein from the plants or other animals. The plant proteins contain varying amounts of the essential amino acids; therefore, it is necessary to carefully select a variety of feeds which will furnish the essential amino acids economically.

Crude Fiber is the woody portion of a feeding stuff, for the most part cellulose, and is insoluble in dilute acids and alkalis. Most of the common seeds and grains contain very little fiber while the hulls, husks and stems are high in this constitutent. In poultry and swine, crude fiber, when present in considerable quantities, exerts a retarding influence on the digestion of nutrients present.

Ash, the mineral matter of plants, is the residue left after burning a feeding stuff at low redness. It consists chiefly of the phosphates, sulphates, chlorides and carbonates of sodium, potassium, calcium and magnesium. The calcium and phosphorus are absolutely essential for the proper nutrition of the animal.

Nitrogen Free Extract consists of sugars, starches, pentoses, non-nitrogenous organic acids, etc., and is determined by subtracting the sum of moisture, crude fat, crude protein, crude fiber and ash from 100.

Carbohydrates is the sum of the crude fiber and nitrogen-free extract.

DEFINITIONS OF FEEDING STUFFS*

ALFALFA PRODUCTS

1. **Chopped Alfalfa** is the entire alfalfa hay, chopped and not ground finely enough to become a meal. It must not contain an admixture of alfalfa straw or other foreign material. (Adopted prior to 1928).

2. **Alfalfa Meal** is the product obtained from the grinding of the entire alfalfa hay, without the addition of any alfalfa stems, alfalfa straw or foreign material, or the abstraction of leaves. It must be reasonably free from other crop plants and weeds, and must not contain more than 33 per cent of crude fibre. (Adopted 1928).

3. **Alfalfa Leaf Meal** is the ground product consisting chiefly of leafy materials separated from alfalfa hay. It must be reasonably free from other crop plants and weeds and must not contain more than 18 per cent of crude fibre. (Adopted 1928).

4. **Alfalfa Stem Meal** is the ground product remaining after the separation of the leafy material from alfalfa hay or meal. It must be reasonably free from other crop plants and weeds. (Adopted 1928).

ANIMAL PRODUCTS

5. **Blood Meal** is ground, dried blood. (Adopted 1926).

6. **Blood Flour** is dried blood, prepared by special processes and reduced to a fine powder. (Adopted prior to 1928).

7. **Digester Tankage, Meat Meal Tankage or Feeding Tankage** is the residue from animal tissues exclusive of hoof, horn, manure and stomach contents, except in such traces as might occur unavoidably in good factory practice, especially prepared for feeding purposes by tanking under live steam or by dry rendering or a mixture of the products made suitable by drying and grinding. It must not contain more than 10 per cent of phosphoric acid (expressed as P_2O_5). If it bears a name descriptive of its kind, composition or origin, the material must correspond thereto. (Adopted 1928—Amended 1933).

8. **Digester Tankage with Bone, Meat and Bone Meal Digester Tankage, Meat and Bone Meal Tankage, or Feeding Tankage with Bone** is the residue from animal tissues exclusive of hoof, horn, manure and stomach contents, except in such traces as might occur unavoidably in good factory practice, especially prepared for feeding purposes by tanking under live steam or by dry rendering or a mixture of the products made suitable by drying and grinding, and containing more than 10 per cent of phosphoric acid (expressed as P_2O_5). If it bears a name descriptive of its kind, composition or origin, it must correspond thereto. (Adopted 1928—Amended 1933).

9. **Meat Scraps** is the ground, dry-rendered residue from animal tissues exclusive of hoof, horn, manure and stomach contents. except in such traces as might occur unavoidably in good factory practice. When this product contains more than 10 per cent of phosphoric acid (expressed as P_2O_5), it shall be designated Meat and Bone Scrap. If it bears a name descriptive of its kind, composition or origin it must correspond thereto. (Adopted 1928).

10. **Raw Bone Meal** is the dried, ground product suitable for animal feeding, obtained by cooking in water at atmospheric pressure, undecomposed bone, just enough to remove excess fat and meat. It must not contain less than 23 per cent of protein. (Adopted 1929).

11. **Steamed Bone Meal** is the dried. ground product suitable for animal feeding, obtained by cooking bones with steam under pressure. (Adopted 1929).

12. **Special Steamed Bone Meal** is the dried, ground product suitable for animal feeding, obtained by cooking dried bone after the removal of grease and meat fibre with steam under pressure in the process of obtaining gelatine or glue. (Adopted 1929).

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*These definitions have been adopted by the Association of American Feed Control Officials.

APPLE PRODUCTS

13. **Dried Apple Pomace** is the sound, dried residue obtained by the removal of cider from apples. (Adopted 1929).

14. **Dried Apple Pectin Pulp** is the sound, dried residue obtained by the removal of pectin from apple products. (Adopted 1929).

BARLEY PRODUCTS

15. **Barley Hulls** is the product consisting of the outer coverings of the barley. (Adopted prior to 1928).

16. **Barley Feed** is the entire by-product resulting from the manufacture of pearl barley from clean barley. (Adopted prior to 1928).

17. **Barley Mixed Feed** is the entire offal from the milling of barley flour from clean barley and is composed of barley hulls and barley middlings. (Adopted prior to 1928).

18. **Ground Barley** is the entire product obtained by grinding clean sound barley, containing not less than 90 per cent of pure barley and not more than 10 per cent of other grains, weed seeds and other foreign material and not more than 6 per cent of crude fibre; provided that no portion of this stated 10 per cent of other grains, weed seeds or other foreign material shall be intentionally added. (Adopted prior to 1928).

19. **Mixed Feed Barley** is the entire product obtained by grinding country run barley containing not less than 75 per cent of pure barley and not more than 25 per cent of other grains, weed seeds and other foreign material; provided that no portion of this stated 25 per cent of other grains, weed seeds or foreign material shall be intentionally added. The ingredients must be stated as barley, other grains, weed seeds and foreign material. (Adopted prior to 1928).

BEET PRODUCTS

20. **Dried Beet Pulp** is the dried residue from sugar beets which have been cleaned and freed from crowns, leaves and sand, and from which the sugar has been extracted. (Adopted prior to 1928).

BREWERS' AND DISTILLERS' PRODUCTS

21. **Brewers' Dried Grains** is the dried residue obtained in the manufacture of beer. (Adopted prior to 1928).

22. **Distillers' Corn Dried Grains or Distillers' Rye Dried Grains** is the dried residue obtained in the manufacture of alcohol and distilled liquors. The product must bear the designation indicating the cereal predominating. (Adopted prior to 1928).

23. **Distillers' Corn Solubles** is a by-product from the manufacture of alcohol from corn solids obtained by the evaporation of the mash liquor after the removal of the alcohol and wet grains. (Adopted prior to 1928).

24. **Distillers' Rye Solubles** is a by-product from the manufacture of alcohol from rye solids obtained by the evaporation of mash liquor after the removal of the alcohol and wet grains. (Adopted prior to 1928).

25. **Distillers' Corn and Rye Solubles** is a by-product from the manufacture of alcohol from corn and rye solids obtained by the evaporation of mash liquor after the removal of the alcohol and wet grains. (Adoption prior to 1928).

26. **Malt Sprouts** are the sprouts of the barley grain obtained from malted barley. Sprouts derived from any other malted cereal must be designated by the name of that cereal. (Adopted prior to 1928).

27. **Yeast Dried Grains or Vinegar Dried Grains** is the properly dried residue from the mixture of cereals, malt and malt sprouts (sometimes cottonseed meal) obtained in the manufacture of yeast or vinegar, and consists of corn or corn and rye from which most of the starch has been extracted, together with malt added during the manufacturing process to change the starch

to sugars, and malt sprouts (sometimes cottonseed meal) added during the manufacturing process to aid in filtering the residue from the wort and to serve as a source of food supply for the yeast. (Adopted prior to 1928).

BUCKWHEAT PRODUCTS

28. **Buckwheat Shorts or Buckwheat Middlings** are the portions of the buckwheat grain immediately inside the hull secured after separation from the flour. (Adopted prior to 1928).

CHOP

29. **Chop** is a ground or chopped feed composed of one or more different cereals or by-products thereof. If it bears a name descriptive of the kind of cereals, it must be made exclusively of the entire grains of those cereals. (Adopted prior to 1928).

COCOANUT PRODUCTS

30. **....Per Cent Protein Cocoanut Oil Meal or ....Per Cent Protein Copra Oil Meal** is the ground residue from the extraction of part of the oil from the dried meat of the cocoanut. (Adopted prior to 1928).

CORN PRODUCTS

31. **Corn Meal** is finely ground, unbolted corn. (Adopted prior to 1928).

32. **Corn Bran** is the outer coating of the corn kernel, with little or none of the starchy part or germ. (Adopted 1931).

33. **Corn Feed Meal** is the fine siftings obtained in the manufacture of screened corn chop, screened ground corn or screened cracked corn, with or without its aspiration products added. (Adopted 1931).

34. **Corn Chop, Ground Corn or Cracked Corn** is the entire product made by grinding, cutting or chopping the grains of sound Indian corn, and may be fine, medium or coarse, and must not contain more than 4 per cent of foreign material. (Adopted 1931).

35. **Screened Corn Chop, Screened Ground Corn, or Screened Cracked Corn** is the coarse portion of corn chop, ground corn or cracked corn from which most of the fine particles have been removed. and must not contain more than 4 per cent of foreign material. (Adopted 1931).

36. **Corn Grits or Hominy Grits** is the product consisting of the fine or medium sized, hard flinty portions of sound Indian corn containing little or none of the bran or germ. (Adopted 1931).

37. **Ear Corn Chops** is corn and cob chopped, without the husk, with no greater proportion of cob than occurs in the ear corn in its natural state. (Adopted prior to 1928).

38. **Corn Gluten Meal** is that part of commercial shelled corn that remains after the separation of the larger part of the starch, the germ and the bran, by the processes employed in the manufacture of corn starch. It may or may not contain corn solubles. (Adopted prior to 1928).

39. **Corn Gluten Feed** is that part of commercial shelled corn that remains after the separation of the larger part of the starch and the germs by the processes employed in the manufacture of corn starch. It may or may not contain corn solubles. (Adopted prior to 1928)..

40. **Maltose Process Corn Gluten Feed** is the dried residue from degermed corn. after removal of the starch in the manufacture of malt syrup. (Adopted prior to 1928).

41. **Hominy Feed** is a mixture of corn bran, corn germ and a part of the starchy portion of either white or yellow corn kernels or mixture thereof as produced in the manufacture of pearl hominy, hominy grits or table meal, and shall contain not less than 5 per cent of crude fat. If prefixed with the words "white" or "yellow". the product must correspond thereto. (Adopted 1935).

42. **Corn Oil Cake** consists of the corn germ from which part of the oil has been pressed and is the product obtained in the wet milling process of

manufacture of corn starch, corn syrup, and other corn products. (Adopted prior to 1928).

43. **Corn Oil Meal** is ground corn oil cake. (Adopted prior to 1928).

44. **Corn Germ Cake** consists of corn germ with other parts of the corn kernel from which part of the oil has been pressed, and is the product obtained in the dry milling process of manufacture of corn meal, corn grits, hominy feed, and other corn products. (Adopted prior to 1928).

45. **Corn Germ Meal** is ground corn germ cake. (Adopted prior to 1928).

46. **Corn Screenings** is the product consisting of the small light grains of corn, parts of grains of corn and/or other cereals, and other materials having feeding value, obtained by screening shelled corn, excluding sand, dirt and other similar inert materials. (Adopted 1931).

COTTONSEED PRODUCTS

47. **Cottonseed Meal** is a product of the cottonseed only, composed principally of the kernel with such portion of the hull as is necessary in the manufacture of oil; provided that nothing shall be recognized as cottonseed meal that does not conform to the foregoing definition and that does not contain at least 36 per cent of protein. Cottonseed meal shall be graded and classed as follows: (Adopted prior to 1928).

48. **....Per Cent Protein Cottonseed Meal, Prime Quality.** Cottonseed meal, prime quality, must be finely ground, not necessarily bolted, of sweet odor, reasonably bright in color, yellowish, not brown or reddish, free from excessive lint, and shall contain not less than 36 per cent of protein. It must be designated and sold according to its protein content. Cottonseed meal with 36 per cent of protein must be termed "36 per cent Protein Cottonseed Meal, Prime Quality", and higher grades similarly designated (as "43 per cent Protein Cottonseed Meal, Prime Quality"), etc. (Adopted prior to 1928).

49. **....Per Cent Protein Cottonseed Meal, Off Quality.** Cottonseed meal not fulfilling the above requirement as to color, odor and texture must be graded "36 per cent Protein Cottonseed Meal, Off Quality", and higher grades similarly designated. (Adopted prior to 1928).

50. **Cottonseed Feed** is a mixture of cottonseed meal and cottonseed hulls, containing less than 36 per cent of protein. (Adopted prior to 1928).

51. **....Per Cent Protein Whole Pressed Cottonseed, Prime Quality** is the product resulting from subjecting the whole, sound, mature, clean undecorticated cottonseed to pressure for the extraction of oil, and includes the entire cottonseed less the oil extracted and the lint removed. It must be designated and sold according to its protein content. (Adopted 1932).

52. **....Per Cent Protein Ground Whole Pressed Cottonseed, Prime Quality** is whole pressed cottonseed, ground. It must be designated and sold according to its protein content. (Adopted 1932).

GARBAGE

53. **Processed Garbage** is composed of dried animal and vegetable waste from garbage collected sufficiently often that harmful decomposition has not set in, and separated from material such as crockery and glass. Its odor must not be suggestive of the presence of decomposition and it must contain less than one per cent of glass. None of it shall contain knife-like or needle-like particles, and the maximum percentage of glass should be stated on the label when present in excess of one-fifth of one per cent. (Adopted prior to 1928).

IVORY NUT PRODUCTS

54. **Ivory Nut Meal** is the ground waste material resulting from the manufacture of buttons and similar articles from the vegetable ivory nut. (Adopted prior to 1928).

LINSEED AND FLAX PRODUCTS

55. ....**Per Cent Protein Linseed Cake or Linseed Meal** is the product obtained in the removal of the oil from flaxseed; provided that the final product contains less than 6 per cent of weed seeds and other foreign materials; and provided, further, that no portion of the stated 6 per cent of weed seeds and other foreign materials shall be deliberately added. It shall not contain more than 0.5 per cent of acid insoluble ash. (Adopted 1933).

56. ....**Per Cent Protein Old Process Oil Meal or ....Per Cent Protein Old Process Linseed Meal** is oil meal as defined below, produced by crushing cooking and hydraulic pressure. (Adopted prior to 1928).

57. ....**Per Cent Protein New Process Oil Meal or ....Per Cent Protein New Process Linseed Meal** is oil meal as defined below produced by crushing, heating and the use of solvents. (Adopted prior to 1928).

58. **Flax Plant By-Products** is that portion of the flax plant remaining after the separation of the seed, the bast fibre and a portion of the shives, and consists of flax shives, flax pods, broken and immature flax seeds, and the cortical tissues of the stem. (Adopted prior to 1928).

59. **Ground Flaxseed or Flaxseed Meal** is the product obtained by grinding flaxseed which has been screened and cleaned of weed seeds and other foreign materials by the most improved commercial process; the final product must contain less than 4 per cent of weed seeds and other foreign materials, and no portion of the stated 4 per cent of weed seeds and other foreign materials shall be intentionally added. (Adopted prior to 1928).

60. **Unscreened Faxseed Oil Feed Cake** is the product obtained by extraction of part of the oil from unscreened flaxseed by crushing, cooking and hydraulic pressure, or by crushing, heating and the use of solvents. The ingredients must be stated as "partially extracted flaxseed and foreign seeds (wheat, wild buckwheat, pigeon grass, wild mustard, etc.)". Adopted prior to 1928).

61. **Ground Unscreened Flaxseed Oil Feed** is the ground unscreened flaxseed oil feed cake. (Adopted prior to 1928).

62. **Screenings Oil Feed** is the ground product obtained after extraction of part of the oil by crushing, cooking and hydraulic pressure, or by crushing, heating and the use of solvents from the smaller imperfect flaxseed, weed seeds and other foreign materials having feeding value, separated in cleaning flaxseed. The name of the grain from which the screenings are separated must be prefixed to "screenings oil feed." (Adopted prior to 1928).

63. ....**Per Cent Protein Oil Cake** is the product obtained after the extraction of part of the oil by crushing, cooking and hydraulic pressure, or by crushing, heating and the use of solvents, from flaxseed which have been screened and cleaned of weed seeds and other foreign materials by the most improved commercial process. When used alone the term "Oil Cake" shall be understood to designate linseed cake as defined. When used to cover any other product the name of the seed from which it is obtained must be prefixed to the words "Oil Cake". (Adopted prior to 1928).

64. ....**Per Cent Protein Oil Meal or ....Per Cent Protein Ground Oil Cake** is oil cake ground to a meal. (Adopted prior to 1928).

MARINE PRODUCTS

65. **Fish Meal** is clean, dried, ground tissues of undecomposed whole fish and/or fish cuttings with or without the extraction of part of the oil, and contains not more than 3 per cent of salt (NaCl). If it contains more than 3 per cent of salt (NaCl) the amount of salt must constitute a part of the brand name, provided that in no case shall the salt content of this product exceed 7 per cent. (Adopted 1933).

66. **Fish Residue Meal** is the clean, dried, undecomposed residue from the manufacture of glue from non-oily fish, and contains not more than 3 per cent of salt (NaCl). If it contains more than 3 per cent of salt (NaCl) the amount of salt must constitute a part of the brand name, provided that

in no case shall the salt content of this product exceed 7 per cent. (Adopted 1933).

67. **Crab Meal** is prepared from the undecomposed dried waste of the crab industry and contains the shell, viscera and part or all of the flesh. It contains not less than 25 per cent of protein and not more than 3 per cent of salt (NaCl). If it contains more than 3 per cent of salt (NaCl) the amount of salt must constitute a part of the brand name, provided that in no case shall the salt content of this product exceed 7 per cent. (Adopted 1933).

68. **Shrimp Meal** is prepared from the undecomposed dried waste of the shrimp industry and contains the head, hull and/or the whole shrimp and not more than 3 per cent of salt (NaCl). If it contains more than 3 per cent of salt (NaCl) the amount of salt must constitute a part of the brand name, provided that in no case shall the salt content of this product exceed 7 per cent. (Adopted 1933).

69. **Whale Meal** is prepared from the clean, dried undecomposed flesh of the whale, after part of the oil has been extracted. It contains not more than 3 per cent of salt (NaCl). If it contains more than 3 per cent of salt (NaCl) the amount of salt must constitute a part of the brand name, provided that in no case shall the salt content of this product exceed 7 per cent. (Adopted 1933).

70. **Cod Liver Oil** is the product obtained by extraction of part of the oil from cod livers. (Adopted 1932).

71. **Sardine Oil or Pilchard Oil** is the product obtained by extraction of part of the oil from the whole Pacific sardine or pilchard or from cannery refuse of this species of fish. (Adopted 1932).

72. **Salmon Oil** is the product obtained by extraction of part of the oil from the cannery refuse of salmon. (Adopted 1932).

73. **Tuna Oil** is the product obtained by extraction of part of the oil from the cannery refuse of tuna. (Adopted 1932).

74. **Menhaden Oil** is the product obtained by extraction of part of the oil from whole menhaden. (Adopted 1932).

75. **Herring Oil** is the product obtained by extraction of part of the oil from the whole herring or part of the herring. (Adopted 1933).

76. **Salmon Liver Oil** is the product obtained by extraction of part of the oil from salmon livers. (Adopted 1933).

77. **Stearine** is the solid material obtained by filtration from an animal or vegetable oil after chilling or freezing in the process of refining. When this product is sold as a feed, the term shall be prefixed by the name of the oil from which it is obtained. (Adopted 1934).

MILK PRODUCTS

78. **Dried Buttermilk** is the product resulting from the removal of water from clean, sound buttermilk derived from natural cream to which no foreign substances have been added, excepting such as are necessary and permitted in the manufacture of butter. It contains not more than 8 per cent of moisture, not more than 13 per cent of mineral matter (ash), and not less than 5 per cent of butterfat, as determined by the Roese-Gottlieb method. (Adopted 1932).

79. **Evaporated Buttermilk, Concentrated Buttermilk** or **Condensed Buttermilk** is the product resulting from the removal of a considerable portion of water from clean, sound buttermilk derived from natural cream to which no foreign substances have been added excepting such as are permitted and necessary in the manufacture of butter. It contains not less than 27 per cent of total solids, not less than 2 per cent of butterfat, and not more than .14 per cent of ash for each per cent of solids. This definition does not prohibit the use of a distinctive trade name, provided it is followed by one of the names given. (Adopted prior to 1928).

80. **Dried Skimmed Milk** is the product resulting from the removal of

water from clean, sound skimmed milk. It contains not more than 8 per cent of moisture. (Adopted 1930).

81. **Dried Soured Skimmed Milk** is the product resulting from the removal of water from clean, sound skimmed milk which has been soured by a suitable culture of lactic bacteria. It contains not more than 8 per cent of moisture. (Adopted 1932).

82. **Evaporated Soured Skimmed Milk, Concentrated Soured Skimmed Milk** or **Condensed Soured Skimmed Milk** is the product resulting from the removal of a considerable portion of water from clean, sound skimmed milk which has been soured by a suitable culture of lactic bacteria. It contains not less than 27 per cent of total solids. (Adopted 1932).

83. **Condensed Skimmed Milk** is the product resulting from the removal of a considerable portion of water from clean, sound skimmed milk. It contains not less than 27 per cent of total solids. (Adopted 1930).

84. **Milk Sugar Feed or Dried Whey** is the by-product from the manufacture of cheese and should contain at least 70 per cent of lactose (milk sugar). (Adopted 1932).

85. **Dried Whey** is the by-product from the manufacture of cheese and/or casein. This product shall contain at least 65 per cent of lactose (milk sugar). (Adopted 1934).

86. **Cheese Rind** is cooked, partially defatted cheese rind. (Adopted 1935).

MINERAL FEEDS

87. Mixed feeds containing both feed and more than 5 per cent of mineral ingredients require, in addition to the usual declaration of the chemical feed analysis, a declaration of each ingredient contained therein and the minimum percentages of lime expressed as CaO, phosphoric acid expressed as P_2O_5, iodine (I), and the maximum percentage of salt (NaCl) if same be present. If minerals predominate in the mixture, the usual declaration of the chemical feed analysis, with the exception of protein, may be omitted.

In mineral feeds containing no organic ingredient, the usual chemical feed guarantee need not be made. A declaration should be made of each ingredient contained therein and the minimum percentage of lime expressed as CaO, phosphoric acid expressed as P_2O_5, iodine (I), and the maximum percentage of salt (NaCl) if same be present.

The mineral ingredients should be stated in the common English terms, if any such terms exist.

It being impossible to classify separately the drug ingredients and the mineral ingredients, be it resolved:

(a) That all mixtures containing mineral ingredients generally regarded as dietary factors essential for the normal nutrition of animals and which are sold or represented for the primary purpose of supplying these minerals as additions to rations in which these same mineral factors may be deficient, be classified as mineral feeds.

(b) That all other preparations which are sold or represented primarily for the cure, mitigation or prevention of disease be classified by this Association as drugs, medicines or specifics. (Adopted prior to 1928).

MINERAL FEEDS

(NOTE)—This change is to become effective not later than January 1, 1937.

88. Mixed feeds containing both feed and more than 5 per cent of mineral ingredients require, in addition to the usual declaration of the chemical feed analysis, a declaration of each ingredient contained therein and the minimum percentages of calcium (Ca), phosphorus (P), iodine (I), and the maximum percentage of salt (NaCl) if same be present. If minerals predominate in the mixture, the usual declaration of the chemical feed analysis, with the exception of protein, may be omitted.

In mineral feeds for which no nutritional properties other than those of a mineral nature are claimed, the usual chemical guarantees need not be declared. A declaration should be made of each ingredient contained therein and the minimum percentage of calcium (Ca), phosphorus (P), iodine (I), and the maximum percentage of salt (NaCl) if same be present.

The mineral ingredients should be stated in the common English terms, if any such terms exist.

It being impossible to classify separately the drug ingredients and the mineral ingredients, be it resolved:

(a) That all mixtures containing mineral ingredients generally regarded as dietary factors essential for the normal nutrition of animals and which are sold or represented for the primary purpose of supplying these minerals as additions to rations in which these same mineral factors may be deficient, be classified as mineral feeds.

(b) That all other preparations which are sold or represented primarily for the cure, mitigation or prevention of disease be classified by this Association as drugs, medicines or specifics. (Adopted 1935).

OAT PRODUCTS

89. **Oat Hulls** is the product consisting of the outer covering of the oat. (Adopted prior to 1928).

90. **Oat Middlings** is the product consisting of the floury portions of the oat groat obtained in the milling of rolled oats. (Adopted prior to 1928).

91. **Oat Shorts** is the product consisting of the covering of the oat grain lying immediately inside the hull, being a fuzzy material carrying with it considerable portions of the fine floury part of the groat obtained in the milling of rolled oats. (Adopted prior to 1928).

92. **Oat Chop, Ground Oats, Pulverized Oats, Crushed Oats, or Crimped Oats** consists of the entire product made by chopping, cutting, grinding, crushing, or crimping whole oats. (Adopted 1931).

93. **Oat Groats** are the kernels produced from cleaned and dried oats in the process of manufacturing oat meal. (Adopted 1931).

94. **Hulled Oats, or Undried Oat Groats** are the kernels produced from the undried grain in the process of hulling oats. (Adopted 1931).

95. **Oat Meal, or Ground Oat Groats** is the product produced by cutting, cracking or grinding oat groats. (Adopted 1931).

96. **Rolled Oat Groats or Rolled Oats** is the product obtained in the process of rolling oat groats. (Adopted 1931).

97. **Clipped Oat By-Products** is the by-product obtained in the manufacture of clipped oats. It may contain the light chaffy material broken from the end of the hulls, empty hulls, light immature oats and dust. It must not contain an excessive amount of oat hulls. (Adopted prior to 1928).

98. **Oat Mill Feed** (Oat Hulls, Oat Shorts and Oat Middlings) is the entire by-product produced in the manufacture of oat groats and consists of oat hulls, oat shorts and oat middlings. If used in a mixed feed, it shall be called Oat Mill Feed (Oat Hulls, Oat Shorts and Oat Middlings). (Adopted 1932).

PALM PRODUCTS

99. **Palm Kernel Oil Meal** is the ground residue from the extraction of part of the oil by pressure or solvents from the kernel of the fruit of Elaeis guineensis or Elaeis molanococco. (Adopted prior to 1928).

PEANUT PRODUCTS

100. **....Per Cent Protein Peanut Oil Cake** is the residue after the extraction of part of the oil by pressure or solvents from peanut kernels. (Adopted prior to 1928).

101. **....Per Cent Protein Peanut Oil Meal** is ground peanut oil cake. (Adopted prior to 1928).

102. **Unhulled Peanut Oil Feed** is the ground residue obtained after extraction of part of the oil from whole peanuts, and the ingredients must be designated as **Peanut Meal and Hulls.** (Adopted prior to 1928).

RICE PRODUCTS

103. **Rice Bran** is the pericarp or bran layer of the rice, with only such quantity of hull fragments as is unavoidable in the regular milling of rice. (Adopted prior to 1928).

104. **Rice Hulls** is the product consisting of the outer coverings of the rice. (Adopted prior to 1928).

105. **Rice Polish** is the finely powdered material obtained in polishing the kernel. (Adopted prior to 1928).

106. **Rice Meal** is ground brown rice or ground rice after the hull has been removed. (Adopted prior to 1928).

107. **Ground Rough Rice** is ground rice from which the hull has not been removed or ground paddy rice. (Adopted prior to 1928).

108. **Rice Stone Bran** is the siftings from the materials secured in removing hulls from rice and contains rice germs, broken rice and some rice hulls. (Adopted prior to 1928).

109. **Rice Huller Bran** is a product secured by the huller and cones from brown rice and consist mostly of the bran and germs. (Adopted prior to 1928).

RYE PRODUCTS

110. **Rye Bran** is the course outer covering of the rye kernel as separated from the cleaned and scoured rye. (Adopted prior to 1928).

111. **Rye Feed** is a by-product obtained in the usual process of the milling of rye flour from cleaned and scoured rye grain, consisting principally of the mill-run of the outer covering of the rye grain and the germ with small quantities of flour and aleurone. (Adopted prior to 1928).

112. **Rye Red Dog** is a by-product obtained in the usual process of the milling of rye flour, consisting principally of aleurone with small quantities of flour and fine bran particles and must not contain more than 3.5 per cent of crude fibre. (Adopted prior to 1928).

113. **Rye Low-Grade Feed Flour** consists principally of dark rye flour and small quantities of aleurone and fine bran particles and must not contain more than 1.5 per cent of crude fibre. (Adopted prior to 1928).

114. **Rye Middlings** consists of rye feed and rye red dog combined in the proportions obtained in the usual process of milling rye flour. (Adopted prior to 1928).

115. **Rye Flour Middlings** consist of rye feed, rye red dog and pure dark rye flour combined in the proportions obtained in the milling of rye flour and must not contain more than 5 per cent of crude fibre. (Adopted prior to 1928).

SCREENINGS

116. **Screenings** consist of a mixture of mill or elevator run materials or a combination of varying amounts of materials obtained in the process of cleaning grain and/or seed, such as inferior, light or broken grain or seeds, weed seeds, hulls, chaff, joints, straw, elevator dust, floor sweepings. They must be relatively free of unpalatable or injurious weed seeds, sand and dirt. They must not contain more than 14 per cent of fibre or more than 6.50 per cent of ash. If they bear a name descriptive of their kind or origin, they must correspond thereto. (Adopted 1935).

117. **Screenings—Grain** consist of inferior, light or broken grain and/or seed obtained in the process of cleaning grain or seed or recleaning screennings. They must be relatively free of weed seeds, chaff, straw, hulls, joints, sand and dirt, and other foreign materials. If they bear a name descriptive of their kind or origin, they must correspond thereto. (Adopted 1935).

118. **Screenings Waste or Screenings Refuse** is a mixture of materials of little or no feeding value, or injurious as a feed, obtained in the process of cleaning grain and/or seed, or recleaning screenings, such as weed seeds which may be unpalatable or injurious, chaff, hulls, straw, sticks, joints, elevator dust, floor sweepings, sand and dirt. (Adopted 1935).

119. **Scourings** consist of such portions of the cuticle, brush, white caps, dust, smut and other materials as are separated from the grain in the usual commercial process of scouring. (Adopted prior to 1928).

(NOTE)—If to any of the wheat or rye by-product feeds there should be added screenings or scourings—as above defined, either ground or unground, bolted or unbolted, such brand shall be so registered, labeled and sold as clearly to indicate this fact. The word "Screenings", or "Scourings", as the case may be, shall appear as part of the name or brand and shall be printed in the same size and face of type as the remainder of the brand name. When the word "Screenings" appears it is not necessary to show also on the labeling the word "Scourings". (Adopted prior to 1828).

SORGHUM PRODUCTS

120. **Head Chops** is the product consisting of the entire heads of the grain sorghums chopped, and should bear the name of the sorghum from which it is made. This includes, among others, kaffir head chops, milo head chops, feterita head chops, and sorghum head chops. (Adopted prior to 1928).

121. **Head Stems** is the product consisting of the stems from the heads of the grain sorghums after the grain has been removed, and should bear the name of the sorghum from which it is made. (Adopted prior to 1928).

SOYBEAN PRODUCTS

122. **Ground Soybeans** is the product obtained by grinding whole soybeans without cooking or removing any of the oil. (Adopted 1933).

123. **....Per Cent Protein Soybean Oil Cake or Soybean Oil Chips** is the product obtained by crushing, cooking and removing part of the oil from soybeans. (Adopted 1933).

124. **....Per Cent Protein Soybean Oil Meal** is ground soybean oil cake or ground soybean oil chips. (Adopted 1933).

VELVET BEAN PRODUCTS

125. **Velvet Bean Meal** is ground velvet beans containing only an unavoidable trace of hulls or pods. (Adopted prior to 1928).

126. **Ground Velvet Bean and Pod** is the product derived by grinding velvet beans with the pod. It contains no additional pods or other materials. (Adopted prior to 1928).

WHEAT PRODUCTS

127. **Wheat Bran** is the coarse outer covering of the wheat kernel as separated from cleaned and scoured wheat in the usual process of commercial milling. (Adopted prior to 1928).

128. **Wheat Standard Middlings** consist mostly of fine particles of wheat bran, wheat germ, and very little of the fibrous offal obtained from the "tail of the mill". This product must be obtained in the usual commercial process of milling and must not contain more than 9.5 per cent of crude fibre. (Adopted prior to 1928).

129. **Wheat Flour Middlings** shall consist of wheat standard middlings and wheat red dog combined in the proportions obtained in the usual process of milling and must not contain more than 6.0 per cent of crude fibre. (Adopted prior to 1928).

130. **Wheat Red Dog** is a by-product obtained in the usual commercial process of flour milling, consisting principally of aleurone with small quantities of wheat flour and fine wheat bran particles and must not contain more than 4.0 per cent of crude fibre. (Adopted prior to 1928).

131. **Wheat Low-Grade Feed Flour** is a by-product obtained in the usual commercial process of flour milling, consisting principally of wheat flour

with small quantities of aleurone and fine wheat bran particles and must not contain more than 1.5 per cent of crude fibre. (Adopted prior to 1928).

132. **Wheat Bran and Wheat Standard Middlings** consist of the two commodities as defined above, mixed in the proportions obtained in the usual process of commercial milling. (Adopted prior to 1928).

133. **Hard Wheat Mixed Feed** (mill-run wheat feed) consists of wheat bran and wheat flour middlings combined in the proportions obtained in the usual process of commercial milling. This product must not contain more than 9.5 per cent of crude fibre. (Adopted prior to 1928).

134. **Wheat Brown Shorts** (Wheat Red Shorts) consists mostly of the fine particles of wheat bran, wheat germ and very little of the fibrous offal obtained from the "tail of the mill". This product must be obtained in the usual commercial process of milling and must not contain more than 7.5 per cent of crude fibre. (Adopted prior to 1928).

135. **Wheat Gray Shorts** (Wheat Gray Middlings or Wheat Total Shorts) consists of the fine particles of the outer bran, the inner bran or bee-wing bran, the germ and the offal or fibrous materials obtained from the "tail of the mill". This product must be obtained in the usual process of commercial milling and must not contain more than 6.0 per cent of crude fibre. (Adopted prior to 1928).

136. **Wheat White Shorts or Wheat White Middlings** consists of a small portion of the fine wheat bran particles and the wheat germ and a large portion of the fibrous offal obtained from the "tail of the mill". This product must be obtained in the usual process of flour milling and must not contain more than 3.5 per cent of crude fibre. (Adopted prior to 1928).

137. **Wheat Mixed Feed** (mill-run wheat feed) consists of wheat bran and the gray or total shorts combined in the proportions obtained in the usual process of commercial milling. This product must not contain more than 8.5 per cent of crude fibre. (Adopted prior to 1928).

RECOGNIZED ENGLISH NAME AND ENGLISH SYNONYM, IF ANY	ARTICLE OR SUBSTANCE INDICATED BY THE NAME AND SYNONYM.
Capsicum; Red Pepper	The dried, ripe fruit of any species of Capsicum.
Cupric Sulphate; Copper Sulphate	Crystallized copper sulphate with impurities not exceeding commercial grade.
Ferric Oxide; Red Oxide of Iron	Ferric oxide with impurities not exceeding commercial grade.
Ferrous Sulphate	Crystallized ferrous sulphate with impurities not exceeding commercial grade.
Dextrose	A refined, crystallized sugar obtained chiefly by the hydrolysis of starch or or a starch-containing substance.
Glucose	A syrup obtained by the incomplete hydrolysis of starch or of a starch-containing substance.
Lactose; Milk Sugar	A sugar obtained from cow's milk.
Magnesium Sulphate; Epsom Salt	Magnesium sulphate with impurities not exceeding commercial grade.
Potassium Bitartrate; Cream of Tartar	Potassium bitartrate with impurities not exceeding commercial grade.
Potassium Nitrate; Saltpeter	Potassium nitrate with impurities not exceeding commercial grade.
Sodium Nitrate; Chili Saltpeter	Sodium nitrate with impurities not exceeding commercial grade.

Sodium Bicarbonate	Sodium bicarbonate with impurities not exceeding commercial grade.
Sodium Chloride; Common Salt	Sodium chloride with impurities not exceeding commercial grade.
Sodium Sulphate; Glauber's Salt	Sodium sulphate with impurities not exceeding commercial grade.
Sulphur	Sulphur with impurities not exceeding commercial grade.
Calcium Phosphate	Tricalcium salt of phosphoric acid with impurities not exceeding commercial grade.
Dicalcium Phosphate	Dicalcium salt of phosphoric acid with impurities not exceeding commercial grade.
Bone Ash	The ash obtained by burning bones with free access of air and containing 35-38% of P_2O_5.
Precipitated Calcium Carbonate; Precipitated Chalk	Precipitated calcium carbonate with impurities not exceeding commercial grade.
Rock Phosphate	Ground phosphate rock of commercial grade.
Phosphatic Limestone	Ground phosphate—containing limestone of commercial grade.
Limestone; Calcite	Ground calcium limestone of commercial grade.
Dolomitic Limestone; Dolomite	Ground calcium-magnesium limestone of commercial grade.
Shell	Ground shells of oysters or of other mollusks.
Oyster shell	Ground shells of oysters.

(Adopted 1935)

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Circular No. 221 May, 1936

CHOPPING AND STORING ALFALFA HAY

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Operating electric motor-driven hay chopper under test at Purdue University dairy barn.

PURDUE UNIVERSITY
AGRICULTURAL EXPERIMENT STATION
LAFAYETTE, INDIANA

CHOPPING AND STORING ALFALFA HAY

T. E. Hienton and J. H. Hilton
Dep'ts. of Agricultural Engineering & Dairy Husbandry

Chopping hay before storing it in the barn has a number of advantages and, consequently, many questions are being asked about this method of handling the hay crop. In an attempt to answer some of these questions, a three-year study of the value of chopping alfalfa hay was made using the University dairy herd. This method of storing hay has been studied from the standpoint of (1) the moisture content, (2) saving in mow space, (3) ease of handling and feeding, (4) saving in hay and (5) the power requirement and cutting capacity of a 15-inch cutter.

Approximately 300 tons of alfalfa hay made from the first, second and third cuttings were chopped, stored and fed to cows and heifers in the University herd. The hay was cured in the field in the regular way and pitched directly from the truck or wagon into the cutter. On the average, it required two men to pitch the hay off the load and a third man to feed the cutter. The hay was cut with a 15-inch combination hay chopper and ensilage cutter operated with either a 5- or 7.5-horsepower electric motor.

Tests were conducted to determine the capacity of the cutter when operated by a 5- or 7.5-horsepower electric motor. The capacity, when driven by the 5-horsepower motor, was 2.55 tons per hour, and, with the 7.5-horsepower unit, 3.5 tons per hour with hay cut one inch in length. In these tests each motor carried an overload of approximately 10 per cent, so that the capacities would be slightly less under conditions where the motors were delivering their rated output. Motors under ordinary operating conditions should not be required to carry a constant overload. The smaller motor used 2.0 kilowatt-hours and the larger motor 2.2 kilowatt-hours per ton of hay chopped.

The following observations were made as a result of this study:

1. Hay containing 19 per cent moisture at the time of cutting and storing came through the storage period with a good green color. Hay containing 25 to 28 per cent moisture at time of storage mow-burned badly, and hay, containing 30 per cent moisture when stored, became badly charred. When this charred hay was fed to dairy cows, it produced digestive disturbances which caused a marked decrease in their daily milk production. There is also the danger of spontaneous combustion when hay containing a high moisture content is stored in barns.

Claims that chopped hay can be successfully stored when only partially cured are not based on facts and should never be made. Hay that is to be chopped and stored should be as dry or drier than long hay as it is normally stored in barns. The upper limit of moisture content to guard against spoilage of the hay is probably about 22 per cent with a one-inch cut as employed in these tests.

The hay should be distributed in the mow by adjusting the blower, and should not under any conditions be packed or tramped.

When equipment is available, chopped hay is more conveniently handled and is easier to feed than long hay.

2. Chopping alfalfa hay before storing will save approximately 55 per cent in mow space. When hay is chopped and blown into barns, care should be exercised to see that the mows are properly supported to take care of this additional weight.

3. In the University barn, the chopped hay proved to be more easily handled and also easier to feed than long hay. The hay was thrown from the mow into a silage cart and then fed from this cart. This method of feeding may not be practical in barns without concrete alleys and where the hay chute is some distance from the cows.

4. Most of the hay stored in this study was of good quality and no significant saving in feed was observed in these studies. There would undoubtedly be some saving in feed effected by chopping coarse hay.

5. It required slightly less time to store the hay by chopping than to store it in the regular way. The electric power cost at 4 cents per kilowatt-hour to operate the cutter was between 8 and 9 cents per ton. The fuel and oil costs in operating a 15-inch cutter with a tractor unit would be similar. The manufacturer's recommendation on the size of tractor required to drive this machine is 14 to 20 horse-power. If this larger size of power unit is used, it may be possible to secure a larger capacity than was obtained with either of the motors used in these tests.

LIBRARY
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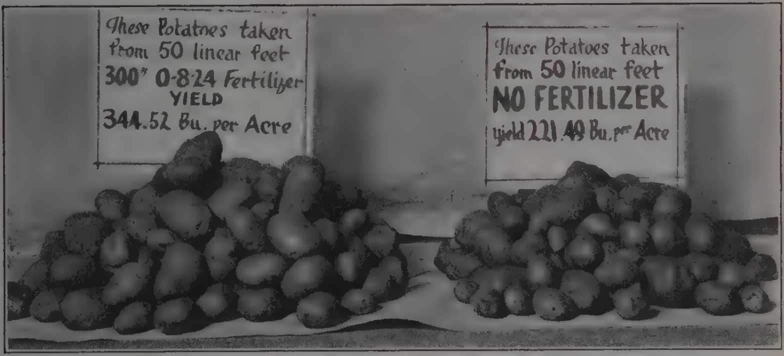
Circular No. 222 June, 1936

COMMERCIAL FERTILIZERS


These Potatoes taken from 50 linear feet
300# 0-8-24 Fertilizer
YIELD
344.52 Bu. per Acre
These Potatoes taken from 50 linear feet
NO FERTILIZER
yield 221.49 Bu. per Acre

Effect of Fertilizer on Yield of Potatoes
This circular gives the results of the inspection of 1,481 official samples of fertilizer.

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PURDUE UNIVERSITY
AGRICULTURAL EXPERIMENT STATION
LAFAYETTE, INDIANA

Otis Sidney Roberts, Inspector in the State Chemist Department for more than twenty-eight years including twenty-five years as Chief Inspector and one year as Acting State Chemist, died December 19, 1935. In the passing of Mr. Roberts the fertilizer, feed and seed industries, as well as the Agricultural interests of Indiana, have suffered a distinct loss of a loyal friend and an able worker.

This circular is a report of the inspection of commercial fertilizers for the year 1935. The inspectors visited every county in the state in both the spring and fall seasons and collected 1,481 official samples. This represents one sample for each 131 tons of fertilizer that were sold.

The Indiana Fertilizer Law is essentially a correct labeling act. It protects the honest and efficient manufacturer, dealer and agent as well as the consumer. In order to obtain maximum protection the consumer must read carefully and understand thoroughly the information on the state tag or label.

Refunds amounting to $346.64 were paid by 22 manufacturers on 61 shipments of fertilizers that were deficient in analysis.

Table 1 shows the average composition of common fertilizer materials as well as their comparative values per ton.

Table 3 gives the tonnages of the different analyses that were sold in largest amounts. The tonnage of 2-12-6 amounted to 40 per cent of all the fertilizer sold. More than 81 per cent of the total tonnage was confined to 33 analyses while less than 19 per cent was divided among the 119 other grades as reported by the manufacturers.

Table 5 shows the tonnage, retail value and pounds per ton of plant food. The cost per pound of plant food was slightly less than for 1934. The average content of plant food (N, P_2O_5 and K_2O) was 485 pounds per ton. The average analysis of all fertilizer sold was 2.1 per cent nitrogen, 13.0 per cent available phosphoric acid and 7.7 per cent water soluble potash.

Table 6 gives the classified tonnage sales of low and high analysis fertilizers for the last 21 years. Table 12 shows the standing of manufacturers as determined by the inspection for the year 1935. Table 13 shows the analysis of each of the 1,481 official samples collected.

COMMERCIAL FERTILIZERS

H. R. Kraybill, *State Chemist*
O. W. Ford, *Assistant Chemist* *O. S. Roberts, *Chief Inspector*
Assistant Chemists, L. E. Horat, M. H. Thornton
Assistant Inspectors, C. M. Cohee, J. W. Jackman

This circular presents the results of the inspection of commercial fertilizers sold in Indiana during the year 1935. It is estimated from tag sales that 194,944 tons of commercial fertilizer were sold. From the manufacturers' reports a tonnage of 190,067 is indicated. It is believed that the latter figure represents more nearly the actual tonnage sold. The difference between the two estimates is apparently due to the fact that the manufacturers increased their stocks of tags on hand during the year. The estimated tonnage for 1935 is about 30 per cent larger than for 1934.

Inspectors from the department visited every county in the state in both the spring and fall seasons and collected 1,481 official samples. This represents one sample for each 131 tons of fertilizer that were sold. Of these samples 1,399 were equal to or above the guarantee in value; 77 were within 10 per cent of the guaranteed value and 5 were 10 per cent or more below the guaranteed value. Seven of the 950 samples that contain nitrogen showed the presence of inferior nitrogen. The sources of nitrogen of these 7 samples were as follows: tobacco stems, dried manure and dried muck.

INDIANA FERTILIZER LAW

The Indiana Fertilizer Law is essentially a correct labeling act. The intent of the law is not to determine what type of fertilizer may be sold. High quality as well as low quality fertilizer may be sold provided it is correctly labeled. The law is designed to furnish the purchaser with a true statement of certain information on the state tag that will enable him to decide whether or not the fertilizer is the type that will meet his needs. The state tag shows the guaranteed percentages of total nitrogen, total or available phosphoric acid and water soluble potash. With this information available the purchaser should be able to judge whether the fertilizer offered for sale meets his requirements. *In order to do this the consumer must read carefully and understand thoroughly the information on the state tag.*

The Indiana Fertilizer Law protects the honest and efficient manufacturer, dealer and agent, as well as the consumer. Full co-operation on the part of the manufacturer, dealer, agent and consumer is necessary to accomplish the purpose of the law.

A copy of the full text of the law will be sent to persons making request for the same to the State Chemist, Purdue University Agricultural Experiment Station, Lafayette, Indiana.

REFUNDS

When deficiencies in analysis amounting to $1.00 or more per ton are found refunds are calculated and indicated on the report of analysis that is sent to the manufacturer and to the consumer. Refunds on mixed fertilizers are usually calculated when one ingredient is deficient to the extent of $1.00 or more per ton regardless of the excess in amounts of other ingredients. Nitrogen, phosphoric acid and potash play definite roles in crop production. An excess of the one ingredient will not necessarily compensate for a deficiency of another.

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* Deceased December 19, 1935.

All refunds are required to be distributed to the consumer wherever possible, and receipts for the same must be filed with the State Chemist. In case there are no records as to the consumer the refunds may be turned over to a local charitable organization, but receipts for the same in either case must be filed with the State Chemist.

The payment of a refund by the manufacturer to the consumer does not remove the violation of the law, but it does indicate good intentions on the part of the manufacturer and shows his willingness to do what he can to correct the violation. However, the payment of the refund does not nullify the right of anyone in this state to call a deficiency of analysis to the attention of the prosecuting attorney.

Sixty-one of the 1,481 samples analyzed showed deficiencies in analysis sufficiently large to warrant the calculation of a refund. These errors are frequently due to carelessness in mixing or in attaching the tags. Manufacturers should guard against such errors. Refunds amounting to $346.64 were paid by 22 manufacturers on 61 shipments of deficient fertilizer in 1935.

MANUFACTURERS

The term "Commercial Fertilizer" is defined by law to include all materials used for manurial purposes except barnyard manure, marl, lime, wood ashes and plaster. Barnyard manure, sheep manure and muck when dried or processed in any way come under the provisions of the law. Before any commercial fertilizer is exposed or offered for sale or sold in the state it is necessary to register the fertilizer with the State Chemist and tag it properly with Indiana State Tags or Labels. Bulk shipments must be accompanied with sufficient labels to cover the total weight of the material.

Manufacturers should not ship fertilizer without having it properly tagged with Indiana State Tags. Experience has shown that when this is done it is difficult to avoid the sale of untagged fertilizer. The State Chemist has no authority to grant permission to a manufacturer to ship unlabeled fertilizer.

AGENTS, DEALERS AND DISTRIBUTORS

Agents should familiarize themselves with the provisions of the Indiana Fertilizer Law. Each package of fertilizer offered or exposed for sale or sold in Indiana must have attached to it the Indiana State Tag bearing the facsimile signature of the State Chemist (see reproduction, page 6). *In case you receive a car of untagged fertilizer, wire the manufacturer for tags and notify the State Chemist. Do not accept the shipment until proper tags are furnished.*

Since local agents are responsible for the fertilizer that they offer for sale they should deal only with those manufacturers who agree to assume full responsibility in cases where the fertilizer fails to meet the requirements of the law.

When inspection reports show that fertilizer in your possession is deficient enough so that a refund is calculated on it, withdraw it from sale at once and notify the State Chemist, giving the date and the amount withdrawn from sale.

CONSUMERS

The Indiana State Tag is your guarantee of the fertilizer that you purchase. Read the tag. Let the analysis on the state tag be your guide rather than the brand name. Refuse to accept any fertilizer which does not have the Indiana State Tag attached to each package.

When analysis of a fertilizer is desired, do not forward a sample, but notify the State Chemist, telling how much you have on hand and send in a copy of the official label which is attached to the fertilizer.

Purchase the type of fertilizer that will meet the plant food requirements of your crops. Consult Circular No. 162 of the Purdue University Agricultural Experiment Station, entitled "Fertilizers for Indiana Soils and Crops."

CAUTION

The consumer should remember that the presence of the Indiana state label with the facsimile signature of the State Chemist does not mean that the State Chemist recommends the fertilizer. Poor quality fertilizer may be sold legally, provided it is correctly labeled. The consumer should be guided by the analysis of the fertilizer.

MEANING OF ANALYSIS

Nitrogen.—In recent years water soluble forms of nitrogen have largely taken the place of the organic materials used years ago in mixed fertilizers. Today most of the nitrogen carrying mixed fertilizers have more than 80 per cent of their nitrogen content in water soluble form.

A few of the sources of water soluble forms of nitrogen are as follows: Nitrate of soda (Natural and synthetic), ammonium sulphate, cal-urea, cal-nitro, urea, cyanamid and calcium nitrate.

Since water soluble forms of nitrogen are considered as readily available for plant growth, if 60 per cent of the guaranteed nitrogen in a fertilizer is water soluble the nitrogen is regarded as of satisfactory quality.

If less than 60 per cent of the guaranteed nitrogen content is water soluble, the activity of the insoluble organic nitrogen is determined by the alkaline permanganate method. In this case, if the active water insoluble nitrogen is equal to or greater than the inactive, the nitrogen is classed as satisfactory. If less than half of the insoluble nitrogen is active, the nitrogen is classed as inferior. Manures, peat and garbage tankages that have not been acidulated will show an inferior quality of nitrogen. When these products are sold as manure and garbage tankage the manufacturer is not held responsible for the quality of the nitrogen.

Phosphoric Acid.—The phosphorus in superphosphate is linked up as chemical compounds with calcium, iron and aluminum. It may be present as mono-, di- or tricalcium phosphate.

As monocalcium phosphate $CaH_4(PO_4)_2$ it is water soluble and readily available to plants for growth.

As dicalcium phosphate $Ca_2H_2(PO_4)_2$ it is soluble in the soil solution and rendered available to plants for growth.

As tricalcium phosphate $Ca_3(PO_4)_2$ it is somewhat less available to plants.

As a complex tricalcium phosphate combined with fluorine and lime (raw rock phosphate) it is much less available to plants and becomes available only slowly in the soil.

The bulk of the fertilizer sold today contains mixtures of large amounts of mono- and dicalcium phosphate and some tricalcium phosphate. This is in contrast to the earlier years when most of the fertilizer used was bone where the phosphorus is present as tricalcium phosphate.

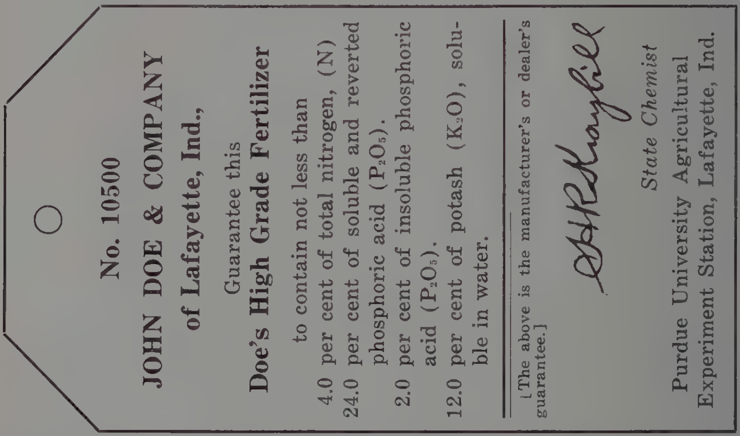
In acidulated goods the phosphorus is sold only on the basis of the available phosphoric acid (P_2O_5) content. The available is the sum of the soluble and reverted phosphoric acid (P_2O_5).

In bone and rock phosphate, when sold as such, the phosphorus is sold only on the basis of the total phosphoric acid (P_2O_5) content. It is only fair to state, however, that about 60 to 75 per cent of the total phosphoric acid (P_2O_5) content of bone is available by the neutral ammonium citrate method, while only from three to six per cent of the total phosphoric acid (P_2O_5) of rock phosphate is available by the same method.

Potash.—Potash, as the official label states, must be soluble in water, in which form it is considered directly available for plant use.

No difference in crop growth has been noted in the use of American, French or German potash. Muriate of potash (KCl) being the cheapest has largely supplanted other potash salts for general crops.

OFFICIAL STATE LABEL



No. 10500

JOHN DOE & COMPANY

of Lafayette, Ind.,

Guarantee this

Doe's High Grade Fertilizer

to contain not less than

4.0 per cent of total nitrogen, (N)

24.0 per cent of soluble and reverted phosphoric acid (P_2O_5).

2.0 per cent of insoluble phosphoric acid (P_2O_5).

12.0 per cent of potash (K_2O), soluble in water.

[The above is the manufacturer's or dealer's guarantee.]

H R Kraybill

State Chemist

Purdue University Agricultural Experiment Station, Lafayette, Ind.

The only label recognized under the law is that bearing the facsimile signature of the State Chemist. (See reproduction.) The label as issued is always printed and contains all the facts required by law; any alteration thereon constitutes a violation of the law.

Label No. 10500 guarantees that each 100 pounds of fertilizer will contain at least 4.0 pounds of total nitrogen (N), 24.0 pounds of soluble and reverted phosphoric acid (P_2O_5), 2.0 pounds of insoluble phosphoric acid (P_2O_5), and 12.0 pounds of water soluble potash (K_2O).

We hope that it will not again be necessary to file affidavits against agents for distributing unlabeled fertilizer. There can be no excuse for shipping unlabeled fertilizer. Agents receiving same should protect themselves by refusing to accept the car. Wire the manufacturer for official labels and write the State Chemist fully concerning the unlabeled shipment.

AVERAGE COMPOSITION OF FERTILIZER MATERIALS

Table 1 gives the average composition of some of the more common fertilizer materials and their comparative values per ton.

TABLE 1. Average Composition and Comparative Evaluation of the Common Fertilizing Materials

MATERIAL	Nitrogen Per Cents							Phosphoric Acid Per Cents			Water Soluble Potash Per Cent	*Comparative Value Per Ton
	Total	Water Soluble Organic	Water Soluble Ammonia	Water Soluble Nitrate	Water Insoluble Organic	Active Insoluble Organic	Inactive Insoluble Organic	Total	Insoluble	Available		
Sodium Nitrate	15.5			15.5								$31.00
Calcium Nitrate	14.0			14.0								28.00
Ammonium Sulphate	20.5		20.5									41.00
Cyanamid	22.0	21.6			0.40							44.00
Garbage Tankage	3.3	0.63			2.70	0.66	**2.04**	4.5	2.5	2.0	0.75	10.10
Cattle Manure	2.50	0.52			1.98	0.72	**1.26**	1.6			1.6	7.72
Sheep Manure	2.50	0.57			1.93	0.62	**1.31**	1.8			2.2	8.46
Poultry Manure	4.3	1.90	0.60		1.80			3.1			1.7	12.47
Muck	2.0	0.13			1.90	0.34	**1.56**					4.00
Activated Sewage	6.0	0.84			5.11	3.54	1.57	2.2				13.54
Raw Bone	3.6	0.84			2.80	2.03	0.77	23.4	9.2	14.2		24.16
Steamed Bone	2.2	0.42			1.79	1.41	0.38	27.5	10.4	17.1		24.62
Animal Tankage	6.0	1.50			4.50	2.98	1.52	12.0	4.0	8.0		21.20
Bone Black	1.3				1.30	0.09	**1.21**	30.3	23.4	6.9		16.52
Basic Slag								17.7	2.7	15.0		15.93
Raw Rock Phosphate								33.4	31.1	2.3		10.02
Superphosphate—												
0-40-0								41.0	1.0	40.0		40.00
0-24-0								25.0	1.0	24.0		24.00
0-20-0								21.0	1.0	20.0		20.00
0-16-0								17.0	1.0	16.0		16.00
Muriate of Potash											50.0	50.00
Sulphate of Potash											48.0	48.00
Manure Salts											20.0	20.00
Kainit											14.0	14.00
Tobacco Dust	1.50	0.31		0.39	0.80	0.17	**0.63**	0.50			5.4	8.75
Coal Ash								0.4			0.1	0.38
Corn Cob Ash								4.9			31.0	34.43
Hard Wood Ash								2.2			10.2	11.80
Soft Wood Ash								3.1			4.3	6.47

*Comparative values per ton calculated from table of comparative values for 1934.
Values appearing in the Inactive Insoluble Organic column in heavy type indicate an inferior source of nitrogen.

CLASSIFIED FERTILIZER SALES SINCE 1883

Table 2 illustrates the changes that have occurred in the types of fertilizers sold during the past 53 years.

TABLE 2. Classified Fertilizer Sales Since 1883 (From Tag Sales)

YEAR	Total Tons	Tons Nitrogen Salts	Tons Potash Salts	Tons Super-phosphate	Tons Bone	Tons Raw Phosphate Rock	Tons Phosphate Potash	Tons Ammoniated Super-phosphate	Tons Complete
1883	8,000	.....	.....	...	8,000	.....	.....	.....	.....
1888	10,000	....	....	‡	10,000	....	‡	‡	‡
1893	38,000	....	....	1,000	14,000	....	1,000	4,000	18,000
1895	45,000	....	....	1,000	15,000	....	2,800	3,800	20,300
1897	49,400	....	....	7,200	13,950	50	1,550	5,200	21,450
1909	134,064	268*	2,146	8,111	10,323	804	18,769	1,005	89,287
1914	219,139	123*	3,586	12,878	7,748	2,400	40,451	1,184	144,126
1918	244,446	82*	....	57,984	12,586	1,079	3,839	83,111	78,302
1923	195,702	1,550†	3,251	49,501	8,356	....	35,394	4,309	91,220
1927	240,498	3,530†	5,200	32,041	4,456	719	41,785	520	151,112
1928	221,082	1,350†	1,700	26,997	1,907	968	40,451	....	145,709
1929	291,193	3,140	1,800	21,655	2,650	844	45,000	62	214,010
1930	219,684	2,950	1,900	12,208	1,976	1,500	34,657	....	163,136
1931	170,777	4,325	2,100	12,790	3,437	1,313	25,262	....	119,841
1932	79,400	1,750	950	7,605	1,093	93	9,188	....	57,626
1933	99,755	1,550	1,100	11,314	757	63	9,750	188	73,895
1934	152,824	2,400	2,200	18,201	3,647	437	17,906	406	106,501
1935	194,944	3,400	4,550	21,546	2,778	656	23,358	125	137,306

*Largely Nitrate of Soda.
†Nitrate of Soda and Ammonium Sulphate.
‡Light Sales.

MANY GRADES UNNECESSARY

Table 3 shows the tonnage of fertilizer sold under the different grades of analyses. In 1935 more than 80 per cent of the tonnage was represented by 33 grades, while less than 20 per cent were distributed over 119 different analyses. Considerable saving in cost could be made by the manufacturer if the number of grades were reduced materially.

TABLE 3. Tons Sold Under 33 Analyses for Past Eight Years

ANALYSIS	Year* 1928	Year* 1929	Year* 1930	Year* 1931	Year* 1932	Year* 1933	Year* 1934	Year* 1935	Report by Mfgrs. Year 1935
Nitrate of Soda	500	1,740	1,150	2,200	600	350	1,300	1,250	435
Ammonium Sulphate	900	1,400	1,800	2,100	950	950	950	1,800	1,379
0-16-0	8,053	6,241	3,937	5,780	2,625	3,719	5,607	4,775	4,303
0-20-0	13,000	12,826	6,781	5,753	4,875	7,188	11,031	15,032	14,212
0-40-0	3,689	1,563	750	838	313	188	750	1,219	598
Potash Salts	1,600	1,800	1,750	2,100	1,350	1,100	2,200	4,550	1,319
Raw Bone	813	869	750	1,249	625	538	2,369	1,278	333
Steamed Bone	1,094	1,781	1,250	2,188	531	219	1,278	1,500	944
2-8-2	594	2,063	1,094	563	688	563	931	181	147
2-8-5	1,906	1,531	563	744	531	469	344	438	282
2-8-10	1,125	1,463	1,094	781	625	1,031	1,875	3,366	2,143
2-8-16	2,531	3,919	4,063	2,719	1,625	2,000	3,363	2,519	2,546
2-10-4	2,169	1,146	406	782	375	594	644	588	374
2-12-2	43,606	36,550	19,313	17,063	9,469	16,344	21,075	20,934	18,519
2-12-4	2,906	2,688	1,375	219	31	125	125	31	97
2-12-6	43,078	74,850	78,894	56,344	29,375	38,500	53,506	79,501	77,771
2-14-4	2,760	9,906	3,719	1,219	438	125	1,031	1,219	1,253
2-16-2	2,813	2,575	844	281	....	63	250	375	378
2-16-8	2,250	2,769	3,594	2,156	781	688	937	1,309	916
4-24-4	3,603	4,150	2,619	1,781	344	756	781	1,281	1,140
4-24-12	3,331	7,853	6,806	5,625	1,250	1,725	2,656	4,181	4,736
0-8-24	1,681	1,750	3,444	2,563	1,375	1,063	2,531	2,525	2,203
0-10-10	11,969	7,744	7,206	6,000	2,438	2,969	3,844	6,025	5,555
0-12-12	3,438	6,813	6,500	6,063	2,500	2,844	4,875	5,619	5,939
0-20-20	2,281	1,313	2,181	2,063	656	531	719	1,275	1,318
0-12-6	5,312	1,954	1,000	813	281	437	563	844	474
0-14-4	3,750	1,625	719	500	719	231	63	343	263
0-14-6	2,063	9,150	7,425	3,250	781	1,343	2,875	3,844	4,414
0-8-32	343	856	656	63	31	31	63	63	103
0-16-4	2,250	313	937	594	....	....	....	31	43
0-14-14	463	813	969	375	500	94	313	31	142
0-16-8	1,313	844	94	375	125	63	63	188	218
0-12-8	....	1,844	406	188	....	63	63	....	242
33 analyses	175,260	214,702	174,089	134,332	67,809	86,904	128,975	158,115	154,639
Other analyses	45,822	76,491	45,595	36,445	11,591	12,851	23,849	36,829	13,594
Total tonnage	221,082	291,193	219,684	170,777	79,400	99,755	152,824	194,944	176,473†
Total number of analyses from mfgrs. reports	....	157	163	167	153	143	141	152	....

*Tonnage calculated from tag sales.

†This does not include the 13,594 tons calculated from tag sales of companies that did not report their tonnage sale for 1935.

Table 4 gives the total tonnage by grades as reported by the manufacturers for 1935.

TABLE 4. Fertilizer Tonnage Sold in Indiana in 1935 as Reported by Fertilizer Manufacturers

A. Raw Materials—

1. Nitrogen Salts	Spring	Fall	Total
Nitrate of Soda	371	64	435
Ammonium Sulphate	869	510	1,379
Cyanamide	153	129	282
2. Potash Salts			
Muriate of Potash			
0-0-60	5	9	14
0-0-50	1,105	184	1,289
Sulphate of Potash			
0-0-48	14	2	16
Raw Rock Phosphate	244	179	423

4. Superphosphate	Spring	Fall	Total
0-45-0	61	49	110
0-44-0	203	178	381
0-40-0	59	48	107
0-24-0	15	89	104
0-20-0	3,962	10,250	14,212
0-18-0	....	3	3
0-16-0	1,273	3,030	4,303
0-14-0	16	392	408

B. Phosphate and Potash Mixtures—

	Spring	Fall	Total
0-28-14	14	7	21
0-28-12	25	44	69
0-24-24	74	62	136
0-24-12	2	14	16
0-21-9	122	200	322
0-20-20	948	370	1,318
0-20-6	....	41	41
0-16-8	176	42	218
0-16-6	31	99	130
0-16-4	24	19	43
0-15-7	2	....	2
0-14-14	142	....	142
0-14-7	195	236	431

	Spring	Fall	Total
0-14-6	2,091	2,323	4,414
0-14-4	66	197	263
0-12-20	6	....	6
0-12-18	43	....	43
0-12-12	4,491	1,448	5,939
0-12-8	115	127	242
0-12-6	174	300	474
0-10-10	3,802	1,753	5,555
0-10-4	58	6	64
0-9-27	1	....	1
0-8-32	98	5	103
0-8-24	2,076	127	2,203
0-8-16	11	....	11

C. Nitrogen and Phosphate Mixtures—

	Spring	Fall	Total
11-48-0	2	....	2
9-3-0	....	25	25
5-11-0	8	....	8
4-16-0	....	1	1
4-12-0	7	....	7

D. Complete Fertilizer Mixtures—

	Spring	Fall	Total
12-6-4	20	2	22
10-8-6	12	4	16
10-6-5	1	....	1
10-6-4	68	14	82
10-3-3	3	....	3
6-20-8	1	....	1
6-15-9	27	....	27
6-12-4	8	21	29
6-8-6	44	14	58
5-15-5	9	9	18
5-10-5	53	1	54
5-8-6	2	2	4
5-8-4	11	....	11
4-24-12	1,441	3,295	4,736
4-24-4	247	893	1,140
4-8-5	12	20	32
4-8-4	43	....	43
3-24-6	....	20	20
3-21-6	4	27	31
3-18-9	396	901	1,297
3-18-3	1	6	7
3-15-20	4	....	4
3-15-12	756	32	788
3-12-15	14	....	14
3-12-12	1,164	127	1,291
3-12-10	1	20	21
3-12-4	106	27	133
3-10-6	236	....	236
3-10-4	3	....	3
3-10-3	30	4	34
3-9-18	311	41	352
3-8-10	....	2	2
3-8-6	393	118	511
3-8-5	1	....	1
3-7-7	86	122	208
2-20-10	43	84	127
2-16-8	712	204	916
2-16-6	....	6	6
2-16-4	2	....	2
2-16-2	65	313	378
2-14-4	335	918	1,253
2-12-16	28	....	28
2-12-12	68	47	115
2-12-8	2	4	6
2-12-6	33,483	44,288	77,771
2-12-4	19	78	97
2-12-3	....	4	4
2-12-2	7,327	11,192	18,519
2-10-8	78	81	159
2-10-6	18	1	19
2-10-4	168	206	374

	Spring	Fall	Total
4-16-32	13	....	13
4-16-20	10	1	11
4-16-8	1	....	1
4-16-4	104	169	273
4-16-3	....	2	2
4-14-4	1	5	2
4-12-8	312	12	324
4-12-6	3	2	5
4-12-4	162	67	229
4-10-6	416	51	467
4-10-4	....	45	45
4-8-10	5	....	5
4-8-8	56	3	59
4-8-7	112	6	118
4-8-6	971	76	1,047
2-10-3	30	24	54
2-9-18	8	....	8
2-9-5	50	36	86
2-8-16	2,133	313	2,446
2-8-10	1,958	185	2,143
2-8-6	26	19	45
2-8-5	165	117	282
2-8-4	443	337	780
2-8-2	102	45	147
1-14-6	....	190	190
1-14-5	8	2	10
1-14-4	....	9	9
1-14-3	4	34	38
1-14-2	110	195	305
1-12-4	36	81	117
1-12-3	125	245	370
1-12-2	38	82	120
1-12-1	....	29	29
1-11-5	580	1,014	1,594
1-11-4	262	496	758
1-11-3	28	30	58
1-10-5	64	91	155
1-10-4	1	5	6
1-10-3	77	73	150
1-10-2	228	211	439
1-10-1	13	....	13
1-8-8	30	....	30
1-8-5	4	6	10
1-8-4	286	447	733
1-8-3	363	202	565
1-8-2	51	20	71
3-9A*-9I*-3	5	202	207
2-8A*-4I*-6	123	1,869	1,992
2-8A*-4I*-2	31	195	226
2-6A*-6I*-3	169	436	605
1-8A*-4I*-2	....	14	14

	Spring	Fall	Total
E. Raw Bone	92	241	333
F. Steam Bone	148	796	944
G. Miscellaneous	832	234	1,066

Summary—

	Spring	Fall	Total
1. Total tons reported	81,799	94,674	176,473
2. Tag sales from firms not reporting	4,250	9,344	13,594
3. Total tonnage based on reports (Items 1 and 2)	86,049	104,018	190,067
4. Total tonnage from tag sales	92,421	102,523	194,944

*A=Available P_2O_5: I=Insoluble $P\ O_5$.

Table 5 gives the total tonnage, retail price, cost per ton, pounds of actual plant food per ton and the cost per pound of plant food for the past 14 years. It will be noted that the average cost per pound of plant food was slightly lower in 1935 than in 1934.

TABLE 5. Tonnage, Retail Value and Pounds Per Ton of Plant Food

YEAR	Tons reported by manufacturer	Tonnage per year based on tag sales	Retail Value dollars	Cost per ton dollars	Pounds per ton actual plant food	Cost per pound plant food cents
1920	....	230,184	8,499,256	36.92	318	0.116
1921	....	186,041	5,907,990	31.76	330	0.096
1922	....	207,501	5,644,639	27.20	367	0.074
1923	....	195,702	6,126,759	31.31	402	0.078
1924	....	192,417	6,479,605	33.67	443	0.076
1925	....	226,148	8,253,670	36.50	459	0.080
1926	....	228,280	8,464,607	37.08	452	0.082
1927	....	240,498	8,998,412	37.42	444	0.084
1928	....	221,082	8,254,591	37.34	452	0.083
1929	*237,590	291,193	11,327,868	38.90	473	0.082
1930	*246,009	219,684	8,521,905	38.79	486	0.080
1931	*188,496	170,777	5,503,088	32.22	493	0.065
1932	*100,581	79,400	2,319,147	29.21	458	0.064
1933	*105,289	99,755	2,851,674	28.59	460	0.062
1934	*140,526	152,824	4,705,435	30.79	467	0.066
1935	*190,067	194,944	5,839,194	29.95	485	0.062

*Estimated from manufacturers' reports and tag sales of companies that did not report their tonnage sales.

Table 6 shows the tonnages of low and high grade fertilizers estimated from the tag sales of the past 21 years.

TABLE 6. Tonnage of Low and High Grade Fertilizers (Estimated from Tag Sales)

YEAR	Ammoniated Superphosphate			Superphosphate and Potash			Complete			Superphosphate		
	Low Grade Less than 14 units	High Grade		Low Grade Less than 14 units	High Grade		Low Grade Less than 14 units	High Grade		Low Grade Less than 14 units	High Grade	
		14 to 19 units	20 units and above		14 to 19 units	20 units and above		14 to 19 units	20 units and above		16 to 20 units	Above 20 units
1915	3,767*	....	......	13,255	1,074	....	88,946	22,589	....	8,407	6,960	....
1916	32,578*	....	......	2,034	....	....	58,698	16	....	6,369	20,157	....
1917	67,820*	....	......	3,556	....	....	67,123	....	....	7,088	35,521	....
1918	72,239	10,872	......	2,370	1,469	....	66,297	12,005	....	14,019	49,952	....
1919	44,283	11,294	......	7,613	7,697	....	68,139	24,138	....	7,003	52,010	....
1920	28,391	9,782	......	3,815	19,785	....	52,554	28,314	....	7,474	60,697	....
1921	13,080	6,041	......	2,060	20,425	....	40,747	33,338	....	951	53,167	600
1922	5,879	4,510	......	2,141	28,553	....	35,439	56,464	....	2,407	57,689	644
1923	2,082	2,227	......	656	34,738	....	22,995	68,225	....	469	48,875	3,157
1924	458	872	......	402	30,145	....	18,899	67,815	....	813	45,508	7,232
1925	494	750	......	125	32,663	....	17,370	94,515	....	1,032	44,095	12,000
1926	63	219	......	....	32,038	....	16,609	114,920	....	1,906	36,475	10,000
1927	219	301	......	94	13,750	27,941	13,409	111,395	26,308	906	29,166	1,969
1928	....	....	......	125	9,351	30,975	6,437	66,256	73,016	875	21,135	4,987
1929	62	....	......	....	3,919	41,081	10,444	70,291	133,275	750	19,067	1,838
1930	....	....	......	....	1,844	32,813	5,001	42,132	116,003	876	10,125	1,187
1931	....	....	......	....	1,556	23,706	2,956	33,535	83,350	719	11,233	838
1932	....	....	......	....	594	8,594	3,625	17,469	36,532	93	7,238	274
1933	....	188	......	....	656	9,094	3,281	23,501	47,113	219	10,907	188
1934	....	....	406	....	625	17,281	4,494	31,919	70,088	719	16,732	750
1935	125	....	......	....	1,126	22,232	2,895	32,913	101,480	582	19,807	1,157

*Not divided into classes.

Table 7 gives the amount of plant food in tons sold for each of the past 16 years.

TABLE 7. Plant Food in Tons*

YEAR	Nitrogen	Available phosphoric acid	Insoluble phosphoric acid	Total phosphoric acid (bone)	Total phosphoric acid (Rock)	Potash
1920	1,685.52	24,529.78	3,345.19	3,109.27	776.68	3,462.33
1921	1,553.82	20,160.84	2,418.63	2,615.84	289.99	3,990.03
1922	1,832.40	24,970.10	2,791.37	2,778.99	9.28	6,032.44
1923	2,178.43	24,225.45	2,795.56	2,545.94	....	8,176.80
1924	2,159.38	25,375.26	2,291.36	2,740.71	....	10,064.16
1925	3,163.28	31,207.63	2,989.05	1,565.87	....	12,927.98
1926	3,167.68	31,816.71	3,201.93	1,529.18	37.13	11,831.11
1927	3,823.60	31,210.51	2,916.94	1,141.05	208.10	14,098.24
1928	3,142.32	30,575.33	2,641.39	708.58	302.02	12,577.45
1929	5,979.58	39,852.75	3,632.04	730.12	274.30	18,359.58
1930	4,337.27	29,775.30	2,690.06	556.76	524.40	15,546.71
1931	4,077.10	22,232.81	2,138.18	1,023.85	463.08	12,201.80
1932	1,849.31	10,186.35	689.05	312.46	38.06	5,127.09
1933	2,163.77	13,211.67	765.19	229.67	20.79	6,568.22
1934	3,181.80	19,955.19	1,266.06	985.73	147.27	10,128.27
1935	4,057 45	25,339.26	1,644.93	823.00	221.07	15,080.36

*Calculated from tag sales and inspection reports.

Table 8 gives a summary of inspection of samples for the last 34 years

TABLE 8. Summary of Inspection for the Past Thirty-four Years

YEAR	Number of samples reported	Number equal to guraantee in every particular	Number equal in value of guarantee	Number within 10 per cent of value of guarantee	Number not within 10 per cent of value of guarantee
1902	679	335	564	93	22
1903	674	286	492	139	43
1904	643	248	451	148	44
1905	734	312	528	158	48
1906	879	374	642	176	61
1907	793	265	481	210	102
1908	901	391	683	171	47
1909	969	417	720	215	34
1910	1,118	441	834	242	42
1911	1,095	527	896	180	19
1912	1,220	636	1,034	175	11
1913	1,204	714	1,021	178	5
1914	1,396	727	1,152	239	5
1915	1,368	684	1,145	214	9
1916	1,367	870	1,183	168	16
1917	919	622	830	76	13
1918	1,285	888	1,142	121	22
1919	1,401	936	1,227	141	32
1920	1,491	944	1,267	188	27
1921	1,314	754	1,070	227	17
1922	1,216	812	1,071	132	13
1923	1,325	970	1,214	108	3
1924	1,439	1,072	1,340	94	5
1925	1,442	1,019	1,329	111	2
1926	1,225	798	1,033	183	9
1927	1,450	909	1,277	153	10
1928	1,437	865	1,283	144	9
1929	1,378	854	1,217	155	6
1930	1,421	1,090	1,320	89	10
1931	1,396	1,100	1,315	74	7
1932	1,138	835	1,053	80	5
1933	1,153	829	1,064	84	5
1934	1,425	1,097	1,311	109	5
1935	1,481	1,275	1,399	77	5

PRICES USED IN SECURING COMPARATIVE VALUE OF FERTILIZERS

These values are not for the purpose of fixing the commercial value of mixed fertilizers, but are for comparative purposes only. They are for use in comparing the value of inspection samples with manufacturers' guarantees, and can be used advantageously by fertilizer purchasers in calculating the relative values of various brands offered for sale by different manufacturers.

For use in determining the comparative values of fertilizer inspected in 1936 the following prices have been adopted:

TABLE 9. Prices Used in Determining Comparative Values of Fertilizers

	Per pound cents	Per unit or per cent dollars
All fertilizers—		
Nitrogen (N)	10.0	2.00
Soluble and reverted phosphoric acid (P_2O_5)	5.0	1.00
Potash (K_2O) soluble in water	5.0	1.00
Mixed fertilizers containing nitrogen—		
Insoluble phosphoric acid (P_2O_5)	1.5	0.30
Precipitated bone—		
Available phosphoric acid (P_2O_5)	5.0	1.00
Insoluble phosphoric acid (P_2O_5)	1.5	0.30
Animal by-products, bone, tankage, etc—		
Total phosphoric acid (P_2O_5)	3.5	0.70
Basic Slag—		
Total phosphoric acid (P_2O_5)	4.5	0.90
Rock Phosphate (floats) and low grade slag—		
Total phosphoric acid (P_2O_5)	1.5	0.30
Mixed fertilizer, acid phosphate, etc., containing no nitrogen—		
Insoluble phosphoric acid	0.0	0.00

Table 10 gives the fertilizer tonnage for the spring and fall seasons as well as the total tonnage and estimated retail value for the year 1935.

TABLE 10. Fertilizer Tonnage and Estimated Retail Value, 1935

CLASS OF FERTILIZER	Spring 1935 Tons	Fall 1935 Tons	Total 1935 Tons	Estimated 1935 Retail Value
1. Superphosphate, 14% and less	94	488	582	$ 13,968.00*
2. Superphosphate, 16%	500	4,275	4,775	96,120.75
3. Superphosphate, 18-20%	3,594	11,438	15,032	247,923.28
4. Superphosphate, above 20%	344	813	1,157	57,387.20
5. Ammoniated Superphosphate (low)	31		31	372.00†
6. Ammoniated Superphosphate (medium)		94	94	1,222.00†
10. Superphosphate and Potash 14-19 units	313	813	1,126	28,037.40
10a. Superphosphate and Potash, above 20 units	14,888	7,344	22,232	699,641.04
11. Complete fertilizer (low)	188	469	657	15,590.61
12. Complete fertilizer (medium)	938	1,300	2,238	50,892.12
13. Complete fertilizer (high)	14,100	18,831	32,931	853,900.83
13a. Complete fertilizer, above 20 units	48,518	52,962	101,480	3,325,499.60
14. Steamed bone	219	1,281	1,500	46,305.00
15. Raw bone	250	1,028	1,278	46,647.00
16. Tankage		184	184	3,128.00*
21. Rock phosphate	500	156	656	13,120.00*
22. Nitrogen salts**	2,625	775	3,400	128,418.00
‡Cyanamid	25	325	350	
‡Nitrate of Soda	850	400	1,250	
‡Ammonium Sulphate	1,750	50	1,800	
23. Potash salts**	4,450	100	4,550	170,943.50
‡Muriate of Potash 0-0-50	4,100	50	4,150	
‡Muriate of Potash 0-0-60	250	50	300	
‡Sulphate of Potash	100		100	
31. Miscellaneous (peat, dried manure, dried blood, garbage, tankage, etc.)	869	172	1,041	40,078.50
Total	92,421	102,523	194,944	$5,839,194.83

**Tonnage in these classes estimated on the basis of 200-pound bags or 10 bags per ton. All other classes estimated on basis of 125-pound bags or 16 bags per ton. Cyanamid estimated on the basis of 100-pound bags or 20 bags per ton.

*Calculated from 1934 retail price.

†Calculated from the comparative values used in 1935.

‡Not included in totals.

TABLE 11. Summary of Inspection on the Basis of Composition, Guaranteed, Found, and Retail Values

Class of Fertilizer	Number of Samples	Nitrogen (N), average per cent		Available phosphoric acid (P_2O_5 average per cent		Insoluble phosphoric acid (P_2O_5), average per cent		Total phosphoric acid (P_2O_5), average per cent		Potash (K_2O), soluble in water average per cent		Comparative value per ton dollars		Retail price per ton, average, dollars	Comparison, retail price and found comparative value per ton, dollars	Range in retail price per ton, dollars
		Guaranteed	Found	Guaranteed	Found	Guaranteed	Found	Guaranteed	Found	Guaranteed	Found	Guaranteed	Found			
1. Superphosphate, less than 16 per cent available phosphoric acid	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
2. Superphosphate, 16 to 18 per cent available phosphoric acid	56	......	......	16.0	16.9	0.8	0.9	......	......	......	......	16.00	16.90	20.13	+ 3.23	18.50–20.60
3. Superphosphate, 18 to 20 per cent available phosphoric acid	119	......	......	20.0	20.9	1.1	0.8	......	......	......	......	20.00	20.90	23.54	+ 2.64	21.80–23.90
4. Superphosphate, more than 20 per cent available phosphoric acid	13	......	......	42.5	40.9	2.0	0.8	......	......	......	......	42.50	40.90	49.60	+ 8.70	49.60–
10. Superphosphate and potash (High grade), 14 or more per cent available plant food	8	......	......	12.5	13.1	0.5	0.8	......	......	5.2	5.5	17.70	18.60	24.90	+ 6.30	24.90–
10a. Superphosphate and potash (High grade), 20 or more per cent available plant food	257	......	......	12.5	13.0	0.7	0.6	......	......	12.4	12.6	24.90	25.60	31.47	+ 5.87	25.20–55.90
11. Complete fertilizer (Low grade), less than 12 per cent available plant food	7	1.6	1.6	6.9	8.0	6.0	4.0	......	......	2.6	2.5	14.50	14.90	23.73	+ 8.83	23.73–
12. Complete fertilizer (Medium grade), 12 to 14 per cent available plant food	41	1.2	1.4	8.3	9.0	1.4	0.9	......	......	2.8	3.2	13.92	15.27	22.74	+ 7.47	21.50–25.20
13. Complete fertilizer (High grade), 14 or more per cent available plant food	289	2.1	2.2	10.7	11.3	1.5	1.1	......	......	3.3	3.6	18.65	19.63	25.93	+ 6.30	23.00–32.10
13a. Complete fertilizer (High grade), 20 or more per cent available plant food	599	2.5	2.5	13.0	13.5	0.8	0.9	......	......	7.5	7.8	25.74	26.57	32.77	+ 6.20	20.00–54.90
14. Steamed bone	13	1.8	1.9	......	......	......	......	27.0	28.5	......	......	22.00	23.25	30.87	+ 7.62	30.60–31.00
15. Raw bone	11	3.5	3.8	......	......	......	......	22.3	23.5	......	......	22.61	24.05	36.50	+12.45	36.50–
16. Tankage	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
21. Rock Phosphate	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
22. Nitrogen Salts	24	18.5	18.8	......	......	......	......	......	......	......	......	37.00	37.60	37.77	+ .17	31.30–40.90
23. Potash Salts	30	......	......	......	......	......	......	......	......	50.3	52.2	50.30	52.20	37.57	−14.63	30.50–43.70
31. Miscellaneous (peat, peat and limestone, dried manure, dried blood, garbage tankage, etc.)	14	2.1	2.6	8.0	12.8	3.7	0.8	6.5	6.7	5.7	5.1	23.51	27.98	38.50	+10.52	25.50–60.00

Table 11 gives a summary of inspection on the basis of guaranteed and found composition and retail values, while Table 12 gives the standing of the manufacturers as determined by the inspection of 1935.

TABLE 12. Standing of Manufacturers Determined by Inspection of 1935

MANUFACTURERS	Number of samples reported	Number equal to guarantee in every particular	Number equal in value to guarantee	Number within 10 per cent of value of guarantee	Number not within 10 per cent of value of guarantee	Number with inferior nitrogen	Total number with nitrogen
American Agricultural Chemical Co., The, New York, N. Y.	40	36	40	....	....	....	37
Armour Fertilizer Works, Chicago Heights, Ill.	85	75	83	2	....	....	56
Barrett Co., The, New York, N. Y.	1	1	1	....	....	....	1
Buhner Fertilizer Co., The, Seymour, Ind.	91	70	79	11	1	....	78
Central Sugar Co., Decatur, Ind.	12	11	12	....	....	....	9
Clendenin & Co., Richmond, Ind.	8	8	8	....	....	....	4
Consolidated Chemical Co., Louisville, Ky.	13	11	13	....	....	....	7
Darling & Co., Chicago, Ill.	59	56	58	1	....	....	39
Diamond Fertilizer Co., The, Sandusky, Ohio	22	19	20	2	....	....	8
Dubois County Farm Bureau Coop. Ass'n, Inc., Huntingburg, Ind.	1	1	1	....	....	....	1
Falls City Fertilizer Co., New Albany, Ind.	2	2	2	....	....	....	1
Farmers Fertilizer Co., The, Columbus, Ohio	10	7	7	3	....	....	5
Federal Chemical Co., Inc., Louisville, Ky.	59	48	56	3	....	....	46
Ford Motor Co., Dearborn, Mich.	1	1	1	....	....	....	1
Fox Chemical Co., Louisville, Ky.	1	1	1	....	....	....	....
Globe Fertilizer Co., Louisville, Ky.	1	1	1	....	....	....	....
Groves Chemical Co., Columbus, Ohio	1	1	1	....	....	....	....
Hopkins Fertilizer Co., New Albany, Ind.	75	69	73	2	....	....	65
Indiana Farm Bureau Coop. Ass'n., Inc., Indianapolis, Ind.	254	241	245	9	....	....	143
Indiana Farm Bureau Purchasing Dept., Inc., Indianapolis, Ind.	22	16	21	1	....	....	16
International Agricultural Corp., Cincinnati, Ohio	34	28	33	1	....	....	26
Jarecki Chemical Co., Cincinnati, Ohio	2	2	2	....	....	....	2
Joslin-Schmidt Corp., Cincinnati, Ohio	25	18	23	1	1	....	22
Kentucky Fertilizer Co., Louisville, Ky.	1	1	1	....	....	....	....
Kingsbury & Co., Inc., Indianapolis, Ind.	122	78	104	18	....	....	79
Kova Fertilizer Co., The, Greensburg, Ind.	21	16	20	....	1	....	13
Long Co., The J. K., Versailles, Ohio	1	....	1	....	....	1*	1
McCarty Seed Co., J. A., Evansville, Ind.	17	14	14	3	....	....	11
Morgan Packing Co., Austin, Ind.	11	10	11	....	....	....	3
Natural Products, Inc., Indianapolis, Ind.	3	1	2	1	....	3‡	3
Norris Fertilizer Co., The, Rushville, Ind.	22	16	19	2	1	....	14
North American Fertilizer Co., Louisville, Ky.	3	3	3	....	....	....	3
Phflum & Co., Clem, Butlerville, Ind.	3	2	3	....	....	1	3
Plant N-R-G Co., Logansport, Ind.	6	4	5	1	....	....	6
Price Chemical Co., Louisville, Ky.	107	95	104	2	1	....	81
Pulverized Manure Co., Chicago, Ill.	1	1	1	....	....	1‡	1
Rauh & Sons Fertilizer Co., E., Indianapolis, Ind.	64	46	58	6	....	....	37
Read Phosphate Co., Nashville, Tenn.	1	1	1	....	....	....	1
Read Phosphate Co., New Albany, Ind.	7	6	6	1	....	....	3
Royster Guano Co., The F. S., Toledo, Ohio	27	26	26	1	....	....	11
Sewerage Commission of the City of Milwaukee, Milwaukee, Wis.	1	....	....	1	....	....	1
Smith Agricultural Chemical Co., The, Indianapolis, Ind.	97	94	96	1	....	....	64
Standard Wholesale Phosphate & Acid Works, Inc., Baltimore, Md.	2	2	2	....	....	....	2
Steinkamp, Hugo, Holland, Ind.	13	13	13	....	....	....	11
Swift & Co., Fertilizer Works, Chicago, Ill.	51	49	50	1	....	....	29
United States Guano Co., Baltimore, Md.	7	7	7	....	....	....	....

Table 12. Continued

Manufacturers	Number of samples reported	Number equal to guarantee in every particular	Number equal in value to guarantee	Number within 10 per cent of value of guarantee	Number not within 10 per cent of value of guarantee	Number with inferior nitrogen	Total number with nitrogen
Virginia-Carolina Chemical Corp., Cincinnati, Ohio	71	68	69	2	....	....	2
Walker-Gordon Farms, Inc., Juliustown, N. J.	1	......	1	....	....	1†	1
Weekly & Allen, Richmond, Ind.	1	....	1	....	....	....	1
Wenning, A. E., New Salisbury, Ind.	1	....	....	1	....	....	1
Totals	1,481	1,275	1,399	77	5	7	950

*Tobacco stems.
†Dried manure.
‡Dried muck.

These are inferior sources of nitrogen and the manufacturer is not responsible when they are sold unmixed with other materials.

DEFINITION OF TERMS AND INTERPRETATION OF RESULTS ON FERTILIZERS AND LIMING MATERIALS ADOPTED BY THE ASSOCIATION OF OFFICIAL AGRICULTURAL CHEMISTS

NITROGEN

Acidulated fish tankage, acidulated fish scrap, is the rendered product derived from fish and treated with sulfuric acid.

Activated sewage products are made from sewage freed from grit and coarse solids and aerated after being inoculated with microorganisms. The resulting flocculated organic matter is withdrawn from the tanks, filtered with or without the aid of coagulants, dried, ground, and screened.

Charred peat is peat artificially dried at a temperature that causes partial decomposition.

Cyanamid is a commercial product composed chiefly of calcium cyanamid ($CaCN_2$), and it shall contain not less than twenty-one per cent (21%) of nitrogen.

Cyanamid and urea nitrogen is synthetic non-proteid organic nitrogen.

Crude, inert, or slow-acting nitrogenous materials are unprocessed organic substances relatively high in nitrogen but having a very low value as plant food and showing a low activity by both the alkaline and neutral permanganate methods (below fifty per cent [50%] and eighty per cent [80%] respectively).

Dried blood is the collected blood of slaughtered animals, dried and ground and containing not less than twelve per cent (12%) of nitrogen in organic forms.

Fish tankage, fish scrap, dry ground fish, fish meal fertilizer grade is the dried ground product derived from rendered or unrendered fish.

Garbage tankage is the rendered, dried and ground product derived from waste household food materials.

Hoof and horn meal is a product resulting from the processing, drying, and grinding of hoofs and horns.

Nitrate of soda is a commercial sodium nitrate containing not less than fifteen per cent (15%) of nitrogen, chiefly as sodium nitrate.

Peat is partly decayed vegetable matter of natural occurrence. It is composed chiefly of organic matter which contains some nitrogen of low activity.

Process tankages are products made under steam pressure from crude inert nitrogenous materials, with or without the use of acids, for the purpose of increasing the activity of the nitrogen. These products shall be called "Process Tankages" with or without further qualification. The water-insoluble nitrogen in these products shall test at least fifty per cent (50%) active by the alkaline, or eighty per cent (80%) by the neutral permanganate method.

Sheep manure-wool waste is the by-product from wool-carding establishments consisting chiefly of sheep manure, seeds, and wool fiber.

Sulfate of ammonia is a commercial product composed chiefly of ammonium sulphate. It shall contain not less than twenty and five-tenths per cent (20.5%) of nitrogen.

The term *tankage* (without qualification) shall be restricted to meat and bone tankage derived from the rendered, dried, and ground by-products from the slaughter of animals, or from carcasses of animals that have died otherwise than by slaughter.

PHOSPHORIC ACID

The term *phosphoric acid* designates (P_2O_5).

Ammoniated superphosphate is a product containing superphosphate and/or dissolved bone and nitrogenous compounds, but without the addition of potash.

Available phosphoric acid is the sum of the water-soluble and the citrate-soluble phosphoric acid.

"Basic" lime phosphate (lime based superphosphate) is a superphosphate to which liming materials have been added in a quantity at least six per cent (6%) calcium carbonate equivalents in excess of the quantity required to convert all water-soluble phosphate to the citrate-soluble form.

Basic phosphate slag is a by-product in the manufacture of steel from phosphatic iron ores. The product shall be finely ground and shall contain no admixture of materials other than what results in the original process of manufacture. It shall contain not less than twelve per cent (12%) of total phosphoric acid (P_2O_5), not less than eighty per cent (20%) of which shall be soluble in two per cent (2%) citric acid solution according to the Wagner method of analysis. Any other phosphate slag not conforming to this definition shall be designated low grade.

Citrate-soluble ("reverted") phosphoric acid is that part of the total phosphoric acid in a fertilizer that is insoluble in water but soluble in a solution of citrate of ammonia according to the method adopted by the A. O. A. C.

Definition of Products Secured by Heating Calcium Phosphate with Alkali Salts Containing Potash. These products are not potassium phosphate. They may be called non-acid phosphates with potash.

Dicalcium phosphate is a manufactured product consisting chiefly of a dicalcic salt of phosphoric acid.

Dissolved bone is defined as a ground bone or bone meal that has been treated with sulfuric acid.

Ground raw bone is a product resulting from drying and grinding animal bones that have not been previously steamed under pressure.

Ground steamed bone is a product resulting from grinding animal bones that have been previously steamed under pressure.

Mono-ammonium phosphate (fertilizer grade) is a commercial salt made by combining phosphoric acid with ammonia. It shall contain not less than ten per cent (10%) of nitrogen and not less than forty-six per cent (46%) of available phosphoric acid.

Phosphate rock is a natural rock containing one or more calcium phosphate minerals of sufficient purity and quantity as to permits its use, either directly or after concentration, in the manufacture of commercial products.

Precipitated bone phosphate is a by-product from the manufacture of glue from bones and is obtained by neutralizing the hydrochloric acid solution of processed bone with calcium hydroxide. The phosphoric acid is chiefly present as dicalcium phosphate.

Precipitated phosphate is a product consisting mainly of dicalcium phosphate obtained by neutralizing with calcium hydroxide the acid solution of either phosphate rock or processed bone.

Soft phosphate with colloidal clay is a very finely divided low-analysis by-product from mining Florida rock phosphate by a hydraulic process in which the colloidal materials settle at points in artificial ponds and basins farthest from the washer, and is later removed after the natural evaporation of the water.

Superphosphate is the product resulting from mixing rock phosphate and sulfuric acid and/or phosphoric acid. The grade should always be used as a prefix to the name. Example: 16% Superphosphate.

It is recommended that the use of the term "Acid Phosphate" be discontinued.

Uniformity in Use of Terms "Phosphoric Acid" and "Potash." As the terms phosphoric acid and potash are used universally in guaranteeing and in reporting the analyses of fertilizers, it is recommended that the same terms also be used in reporting and discussing the results of analyses of related materials.

POTASH

The term *potash* designates potassium oxide (K_2O).

Kainit is a potash salt containing potassium and sodium chlorides and sometimes sulfate of magnesia with not less than twelve per cent (12%) of potash (K_2O).

Leached wood ashes are defined as ashes resulting from burning unleached wood, but as having had part of their plant food removed by artificial means or by exposure to rains, snows, or other solvent.

Manure salts shall be be understood to mean potash salts containing high percentages of chloride and from twenty per cent (20%) to thirty per cent (30%) of potash (K_2O). The term double manure salts should be discontinued.

Muriate of potash is a potash salt containing not less than forty-eight per cent (48%) of potash (K_2O) chiefly as chlorides.

Nitrate of potash is a salt containing not less than twelve per cent (12%) of nitrogen and forty-four per cent (44%) of potash (K_2O).

Sulfate of potash-magnesia is a potash salt containing not less than twenty-five per cent (25%) of potash (K_2O), nor less than twenty-five per cent (25%) of sulfate of magnesia, and not more than two and five-tenths per cent (2.5%) of chlorine.

Sulfate of potash is a potash salt containing not less than forty-eight per cent (48%) of potash (K_2O) chiefly as sulfate, and not more than two and one-half per cent (2.5%) of chlorine.

Unleached wood ashes are ashes that result from burning unleached wood, that have had no part of their plant food removed and that contain four per cent (4%) or more of water-soluble potash (K_2O).

Ashes from leached wood are defined as unleached ashes resulting from burning wood that has been exposed to or digested in water or other liquid solvent, as in the extraction of dyes, so that a part of the plant food has been dissolved and removed.

LIMING MATERIALS

Agricultural liming material is any substance that contains calcium and magnesium in condition and quantity suitable for use in neutralizing soil acidity.

Air-slaked lime is the product obtained by exposing quicklime or hydrated lime to the atmosphere until partially carbonated.

Ground limestone is the product obtained by grinding either calcareous or dolomitic limestone. Not less than seventy-five per cent (75%) shall pass a 100-mesh sieve. It shall contain calcium and magnesium carbonate equivalent to not less than ninety per cent (90%) of calcium carbonate.

Ground shell marl is the product obtained by grinding natural deposits of shell marl. Not less than seventy-five per cent (75%) shall pass a 100-mesh sieve. It shall contain calcium and magnesium carbonates equivalent to not less than eighty per cent (80%) of calcium carbonate.

High-calcic products are materials in which 90 per cent or more of the total calcium and magnesium oxide content consists of calcium oxide.

Hydrated or slaked lime is the product obtained by treating quicklime with sufficient water or steam to combine with its oxides.

Interpretation of the Word "Lime" as applied to Fertilizers. The term "lime" shall not be used in the registration, labeling, or guaranteeing of fertilizers or fertilizer materials unless the lime is in a form to neutralize soil acidity such as the oxide, hydroxide or carbonate, or equivalent magnesia compounds.

The word *lime* when applied to liming materials means either calcium oxide or calcium and magnesium oxides.

Quicklime, burned lime, caustic lime, lump lime, unslaked lime, are liming materials that have a high content of calcium oxide (with magnesium oxide) produced by heating suitable carbonates until substantially all of the carbon dioxide has been eliminated.

Waste lime, by-product lime, is any industrial waste or by-product containing calcium or calcium and magnesium in forms that will neutralize acids. It may be designated by the prefixation of the name of the industry or process by which it is produced, i. e., gas-house lime, tanners' lime, acetylene lime-waste, lime-kiln ashes, calcium silicate, etc.

FORMULA, GRADE, ANALYSIS, ETC.

The word *analysis,* as applied to fertilizers, shall designate the percentage composition of the product expressed in terms of nitrogen or ammonia, phosphoric acid, and potash in their various forms.

The term *fertilizer formula* shall be interpreted as expressing the quantity and grade of the crude stock materials used in making a fertilizer mixture. For example: 800 pounds of 16 per cent superphosphate, 800 pounds of 9-20 tankage, and 400 pounds of sulfate of potash-magnesia.

The grade of a fertilizer shall represent the minimum guarantee of its plant food expressed in terms of nitrogen, available phosphoric acid, and water-soluble potash.

The statement of guarantees of mixed fertilizers shall be given in whole numbers.

The *order of terms* in mixed fertilizers shall be nitrogen first, phosphoric acid second, and potash third.

BRAND AND BRAND NAME

A brand is a term, design, or trade mark used in connection with one or several grades of fertilizers.

A brand name is a specific designation applied to an individual fertilizer.

Interpretation of Brand Name to include the analysis or grade of fertilizer. The committee recommends and urges the practice of including the analysis or grade of fertilizer with the brand name, both by the manufacturer on sacks and in printed literature and by the control official in his reports and publications.

Significance of the Name of a Material used as the brand name or part of the brand name of a mixed fertilizer. When the name of a material is used as a part of the brand name of a mixed fertilizer, as for example blood, bone or fish, the nitrogen or phosphoric acid shall be derived from or supplied entirely by the material named. When the name of a material is used as a brand or as part of a brand and the nitrogen and phosphoric acid is not supplied by the material named, the word "brand" shall follow the name of the material. Example: "Fish Brand Fertilizer."

MISCELLANEOUS

A unit of plant food is twenty (20) pounds, or one per cent (1%) of a ton.

Net Weights. The weights appearing on packages of fertilizer, agricultural lime, and liming material shall always mean net weights.

Maximum Amount of Chlorine Permissible in Fertilizers in Which the Potash Is Claimed as Sulfate. The chlorine in mixed fertilizers in which the potash is claimed as sulfate shall not exceed five-tenths of one per cent (0.5%) more than what is called for in the minimum potash content based on the definition for sulfate of potash as formulated by the committee. Calculate as follows: 0.05 times the percentage of potash found plus 0.5.

Dried pulverized or shredded manures shall be only what the name indicates, and not mixtures of manures and other materials.

The term *finely ground* in the definition of basic phosphate slag shall refer to actual size of particles as determined by the use of standard sieves, as follows: Seventy per cent (70%) or more should pass a 100-mesh sieve, and ninety per cent (90%) or more should pass a 50-mesh sieve.

Gypsum, land plaster, or crude calcium sulfate, are products consisting chiefly of calcium sulfate. They may contain twenty per cent (20%) of combined water. (They do not neutralize acid soils.)

As the terms *phosphoric acid* and *potash* are used universally in guaranteeing and in reporting the analyses of fertilizers, it is recommended that the same terms also be used in reporting and discussing the results of analyses of related materials.

The water-soluble or available *manganese* in fertilizers shall be expressed as manganese (Mn).

The term *manganese sulfate,* when connoting an ingredient of a mixed fertilizer, shall designate anhydrous manganous surfate ($MnSO_4$).

High-magnesic products are materials in which more than 10 per cent of the total calcium and magnesium oxide content consists of magnesium oxide.

Table 13 gives a detailed analysis of the individual official inspections for the year 1935.

TABLE 13. Report of Inspection of Fertilizer Collected in 1935

Labels and Names of Persons from Whom Samples were Secured	Official No.	Inspection No. L	Samples Taken at		Nitrogen (N)				Phosphoric acid (P_2O_5)			Potash (K_2O), soluble in water, per cent
					Water soluble as nitrates, ammonia salts and organic, per cent	Active water insoluble organic, per cent	Inactive water insoluble organic, per cent	Total per cent	Soluble and reverted (available), per cent	Insoluble, per cent	Total per cent	
American-Agricultural Chemical Company, The, New York, N. Y.												
A. A. 20% Superphosphate	9406			guaranteed					20.0	0.5		
Salem Co-op. Association	9406	1206	Salem	found					20.3	0.4		
A. A. 16% Superphosphate	9407			guaranteed					16.0	0.5		
Salem Co-op. Association	9407	1203	Salem	found					17.2	0.6		
Agrico for Potatoes 4-8-6	257a			guaranteed				4.0	8.0	0.5		6.0
E. A. Behlmer	257a	1927	Napoleon	found	3.93			4.1	8.7	0.4		6.0
Agrico for Corn 3-10-6	259a			guaranteed				3.0	10.0	0.5		6.0
E. A. Behlmer	259a	1925	Napoleon	found	2.86			3.0	10.1	0.3		6.0
Agrico for Tobacco 4-10-6	260a			guaranteed				4.0	10.0	0.5		6.0
Salem Co-op. Association	260a	1294	Salem	found	3.60			3.8	10.9	0.4		6.3
A. A. Sure Crop Fertilizer	261a			guaranteed				1.0	8.0	0.5		4.0
John Schmocker	261a	1323	Batesville	found	0.87			1.1	10.0	0.7		4.0
W. E. Jenner & Sons	261a	1699	Marengo	found	1.63			1.8	8.9	1.1		4.2
Fohl & Fohl	261a	2540	Cedar Grove	found	0.89			1.1	9.0	0.7		4.4
A. A. Special Tobacco Fertilizer 3-8-6	263a			guaranteed				3.0	8.0	0.5		6.0
Salem Co-op. Association	263a	1221	Salem	found	3.02			3.2	8.7			6.0
A. A. Antler Fertilizer	271a			guaranteed				2.0	12.0	0.5		6.0
John Schmocker[1]	271a	1326	Batesville	found	1.83			2.0	12.7	0.5		**5.7**
King Elevator Co.	271a	1359	Wabash	found	1.99			2.1	12.6	1.1		**5.4**
Paul Kennedy	271a	1583	Bloomington	found	2.03			2.2	12.3	0.9		6.0
Frazier Packing Co.[2]	271a	1923	Elwood	found	2.09			2.2	12.2	1.1		6.0
Indiana Grain Producers, Inc.	271a	1934	Fountaintown	found	1.98			2.2	12.3	0.9		6.1
Crescent Mills	271a	1982	Crothersville	found	1.83			2.0	12.3	0.9		6.6
Farmers Feed & Coal Co.	271a	2062	Bloomington	found	1.89			2.1	12.1	0.7		6.4
Clyde L. Culbertson	271a	2077	Vevay	found	2.03			2.2	12.6	0.8		6.0
John Schmocker	271a	2559	Batesville	found	1.79			2.0	13.1	0.9		6.7
Bornwasser-Gwin Implement Co.	271a	2617	New Albany	found	1.82			2.0	12.2	1.2		6.3
E. A. Behlmer[3]	271a	2650	Napoleon	found	1.93			2.1	12.8	0.9		6.1
A. A. Tomato Special Fertilizer 2-12-6	272a			guaranteed				2.0	12.0	0.5		6.0
Salem Co-op. Association	272a	1219	Salem	found	2.06			2.2	13.0			6.1
W. E. Jenner & Sons	272a	1709	Marengo	found	1.85			2.1	12.0	0.9		6.0
Crescent Mills	272a	1985	Crothersville	found	1.85			2.1	12.2	0.9		6.1
A. A. Double 10 Mixture	278a			guaranteed					10.0	0.5		10.0
John Schmocker	278a	1310	Batesville	found					10.0	0.4		10.2

Agrico for Tomatoes (2-12-6)	751a			guaranteed				2.0	12.0	0.5		6.0
E. A. Behlmer	751a	1928	Napoleon	found	1.78			2.0	12.5	0.6		6.0
Agrico for Wheat 2-12-6	1037a			guaranteed				2.0	12.0	0.5		6.0
Fohl & Fohl	1037a	2538	Cedar Grove	found	1.96			2.1	12.7	1.1		6.1
E. A. Behlmer[1]	1037a	2651	Napoleon	found	2.03			2.2	13.0	0.8		6.1
A. A. Homestead Garden and Vegetable Fertilizer	1190a			guaranteed				2.0	8.0	0.5		5.0
John Schmocker[5]	1190a	1309	Batesville	found	2.07			2.2	8.0	0.5		5.2
C. L. Graf	1190a	1691	New Albany	found	1.96			2.1	7.9	1.2		5.0
J. O. Best	1190a	1750	Floyds Knobs	found	1.99			2.1	**7.4**	1.0		5.3
E. A. Behlmer	1190a	1926	Napoleon	found	2.02			2.1	8.0	0.9		5.1
Crescent Mills	1190a	1983	Crothersville	found	1.96			2.1	8.1	1.2		5.0
Chas. Ragsdale & Co.	1190a	2037	Bedford	found	2.19			2.3	8.0	0.9		5.2
John Schmocker	1190a	2493	Batesville	found	1.96			2.1	8.1	1.2		5.0
E. A. Behlmer[6]	1190a	2652	Napoleon	found	1.84			2.0	8.8	0.9		5.2
A. A. Homestead Bone Black Brand Fertilizer	1282a			guaranteed				2.0	12.0	0.5		2.0
Salem Co-op. Association	1282a	1210	Salem	found	1.98			2.2	12.7	0.3		2.0
Fohl & Fohl	1282a	1322	Cedar Grove	found	1.93			2.2	12.5	0.3		2.0
King Elevator Co.	1282a	1362	Wabash	found	1.86			2.0	12.0	1.2		2.0
Crescent Mills	1282a	1984	Crothersville	found	1.79			2.1	12.0	1.3		2.1
Chas. Ragsdale & Co.	1282a	2039	Bedford	found	1.88			2.1	13.1	0.9		2.0
Armour Fertilizer Works, Chicago Heights, Ill.												
Nitrate of Soda	3478			guaranteed				15.6				
Quinlan Seed Store[7]	3478	2090	Terre Haute	found				15.6				
Armour's Big Crop 16% Superphosphate	7629			guaranteed					16.0	0.5		
Ohio Valley Seed Co.	7629	1626	Evansville	found					16.1	0.8		
Armour & Co.	7629	2117	Peru	found					17.3	0.8		
Big Crop 0-10-10 Fertilizer	7713			guaranteed					10.0	0.5		10.0
Arnold Orme & Sons	7713	1681	Rushville	found					10.6	0.5		10.8
Armour & Co.	7713	2114	Peru	found					10.8	0.6		10.1
Armour's Big Crop 0-12-6 Fertilizer	8664			guaranteed					12.0	0.5		6.0
Paul Kennedy	8664	1577	Bloomington	found					12.1	0.2		6.2
Armour's Big Crop 0-12-12 Fertilizer	8665			guaranteed					12.0	0.5		12.0
Etna Lumber & Elevator Co.	8665	1555	Etna Green	found					12.3	0.6		**11.7**
Armour & Co.	8665	2113	Peru	found					12.4	0.3		12.3
Roy K. Riddle	8665	2268	Albion	found					13.1	0.3		12.0
Armour's Big Crop 20% Superphosphate	9210			guaranteed					20.0	0.5		
Ohio Valley Seed Co.	9210	1618	Evansville	found					20.0	0.7		
Arnold Orme & Sons	9210	1675	Rushville	found					20.6	0.7		
Armour & Co.	9210	2161	Peru	found					21.8	0.5		
Bashore Feed Store	9210	2224	Warsaw	found					20.8	0.8		
Lora Pittsford[8]	9210	2461	Anderson, R. R. 4	found					20.2	0.4		
Poseyville Grain & Feed Co.	9210	2507	Poseyville	found					22.0	0.3		

Where 60.0 per cent or more of the total nitrogen guaranteed was found to be water soluble, the active and inactive insoluble organic nitrogen was not determined.

Percentages appearing in bold type in the "Inactive water insoluble organic" column denote inferior nitrogen.

[1] Sample received in the spring.

[2] Sample drawn at Alexandria, Ind.

[3] Sample drawn at Osgood, Ind.

[4] Sample drawn at Osgood, Ind.

[5] Sample received in the spring.

[6] Sample drawn at Osgood, Ind.

[7] Not tagged. Labels furnished.

[8] Purchased from W. H. Hardy, Anderson, Ind. Labeled as 16% Superphosphate. Relabeled as 20% Superphosphate.

TABLE 13. Report of Inspection of Fertilizer Collected in 1935—Continued

Labels and Names of Persons from Whom Samples were Secured	Official No.	Inspection No. L	Samples Taken at		Nitrogen (N): Water soluble as nitrates, ammonia salts and organic, per cent	Nitrogen (N): Active water insoluble organic, per cent	Nitrogen (N): Inactive water insoluble organic, per cent	Nitrogen (N): Total per cent	Phosphoric acid (P₂O₅): Soluble and reverted (available), per cent	Phosphoric acid (P₂O₅): Insoluble, per cent	Phosphoric acid (P₂O₅): Total per cent	Potash (K₂O), soluble in water, per cent
Armour's Big Crop 0-16-8 Fertilizer	9367			guaranteed					16.0	0.5		8.0
Geo. P. Wagner Co.	9367	1648	Jasper	found					16.3	0.1		8.0
Armour's Big Crop 0-14-14 Fertilizer	9368			guaranteed					14.0	0.5		14.0
Arthur Rapp (Lawler Estate)[9]	9368	2027	Fair Oaks	found					14.3	0.8		14.4
Orph Martin (Lawler Estate)[10]	9368	2032	Fair Oaks	found					14.1	0.4		15.0
Truman Ware (Lawler Estate)	9368	2033	Rensselaer	found					14.5	0.8		15.8
Oliver Francis (Lawler Estate)[11]	9368	2034	Hammond	found					14.5	0.7		15.2
Al Studer (Lawler Estate)[12]	9368	2035	Rose Lawn	found					14.3	0.7		16.6
Noah Cockerel (Lawler Estate)	9368	2036	Fair Oaks	found					14.3	0.9		15.6
Wm. Raff	9368	2084	Lake Village	found					14.3	0.7		16.7
Armour's 1-8-4 Fertilizer	317a			guaranteed				1.0	8.0			4.0
Geo. P. Wagner Co.	317a	1588	Jasper	found	0.68			1.0	8.4	0.6		4.2
Armour's Big Crop 2-12-2 Fertilizer	319a			guaranteed				2.0	12.0			2.0
Kampe Hardware	319a	1477	Elberfeld	found	1.50			2.0	12.6	0.8		2.0
Paul Kennedy	319a	1579	Bloomington	found	1.44			2.0	12.0	1.1		2.4
Geo. P. Wagner Co.	319a	1584	Jasper	found	1.41			2.0	12.2	0.9		2.0
Arnold Orme & Sons	319a	1667	Rushville	found	1.46			2.1	**11.4**	1.8		2.3
Western Coal & Feed Exchange	219a	1781	Newcastle	found	1.51			2.1	12.0	1.2		2.0
Brown Supply Co.	319a	1805	Valparaiso	found	1.61			2.0	12.0	1.0		2.0
Marshall Feed & Grain Co.	319a	1889	Marshall	found	1.50			2.1	12.2	1.1		2.0
Brazil Flour & Feed Co.	319a	1890	Brazil	found	1.41			2.0	12.1	1.0		2.3
Etna Lumber & Elevator Co.	319a	2217	Etna Green	found	1.61			2.0	12.0	0.9		2.3
T. J. Shepherd & Son	319a	2636	Orleans	found	1.61			2.1	12.6	0.8		2.1
Andry Bros.	319a	2637	Birdseye	found	1.50			2.0	12.5	0.9		2.4
Armour's Big Crop 2-12-6 Fertilizer	320a			guaranteed				2.0	12.0			6.0
Kampe Hardware	320a	1479	Elberfeld	found	1.55			2.0	12.0	0.8		6.0
Frank Morgan	320a	1580	Plainville	found	1.58			2.0	12.0	1.0		6.1
Arnold Orme & Sons	320a	1676	Rushville	found	1.33			2.0	**11.5**	1.4		6.0
Western Coal & Feed Exchange	320a	1780	Newcastle	found	1.61			2.0	12.0	1.0		6.0
Crabbs Reynolds Taylor Co.	320a	1832	Lafayette	found	1.71			2.1	12.1	0.6		6.3
Chas. E. Knotts[13]	320a	1861	Carlisle, R. R. 3	found	1.50			2.0	12.0	1.0		6.0
Brazil Flour & Feed Co.	320a	1893	Brazil	found	1.57			2.1	12.2	0.8		6.0
Stokely Bros.	320a	1913	Tipton	found	1.52			2.0	11.8	1.1		6.2
Sunshine Feed Store[14]	320a	1989	Scottsburg	found	1.41			2.0	12.0	1.0		6.3
D. R. Dunlevy & Son[15]	320a	2002	Henryville	found	1.52			2.0	12.0	1.0		6.3
Farmers Feed & Coal Co.	320a	2061	Bloomington	found	1.50			2.0	12.4	1.0		6.0

Armour & Co.	320a	2115	Peru	found	1.58	......	......	2.0	12.6	0.8	......	6.0
Culver City Grain & Coal Co.	320a	2128	Culver	found	1.75	......	......	2.1	12.8	0.6	......	6.1
Bashore Feed Store	320a	2221	Warsaw	found	1.58	......	......	2.0	12.0	0.7	......	6.0
Etna Lumber & Elevator Co.	320a	2222	Etna Green	found	1.61	......	......	2.0	12.0	0.9	......	6.5
Roy K. Riddle	320a	2269	Albion	found	1.72	......	......	2.0	12.6	0.4	......	6.5
Arnold Orme & Sons	320a	2473	Rushville	found	1.47	......	......	2.0	12.4	0.9	......	6.2
Strate-Pielemeier Hardware	320a	2497	Freelandville	found	1.61	......	......	2.0	13.0	0.6	......	6.5
Adams & Morrow, Inc.	320a	2515	Princeton	found	1.66	......	......	2.1	13.2	0.6	......	6.1
Wyatt Seed & Feed Store	320a	2516	Petersburg	found	1.58	......	......	2.0	12.5	1.3	......	6.3
Johnson & Chenoweth	320a	2522	Shoals	found	1.93	......	......	2.0	13.4	0.5	......	6.1
Rentepohler Hardware Co.	320a	2576	Huntingburg	found	1.54	......	......	2.0	13.2	0.4	......	6.1
Sunshine Feed Store	320a	2610	Scottsburg	found	1.54	......	......	2.0	12.4	0.6	......	6.0
D. R. Dunlevy & Son	320a	2613	Henryville	found	1.48	......	......	1.9	13.2	0.6	......	6.3
Bolles Hardware Co.	320a	2670	Brownstown	found	1.65	......	......	2.1	12.1	0.9	......	6.3
Armour's Big Crop Hoosier Tomato Growers 2-12-6	321a	......	......	guaranteed	......		......	2.0	12.0	......	......	6.0
Arnold Orme & Sons	321a	1672	Rushville	found	1.38	......	......	2.0	**11.4**	1.4	......	6.1
Western Coal & Feed Exchange	321a	1786	Newcastle	found	1.51	......	......	2.1	12.0	0.7	......	6.2
Farmers Canning Co.	321a	2071	Dunreith	found	1.57	......	......	2.1	12.3	1.0	......	6.4
Fair Ground Elevator	321a	2684	Frankfort	found	1.44	......	......	2.0	12.2	1.2	......	7.2
Armour's Big Crop 2-16-8 Fertilizer	324a	......	......	guaranteed	......	......	......	2.0	16.0	......	......	8.0
J. R. Erwin & Son	324a	1478	Daylight, R. R. 2, Inglefield	found	1.58	......	......	2.0	16.1	0.4	......	8.1
Armour's Big Crop 4-12-8 Fertilizer	328a	......	......	guaranteed	......	......	......	4.0	12.0	......	......	8.0
Vincennes Packing Corp.	328a	1574	Washington	found	3.58	......	......	4.0	12.0	0.8	......	8.4
Arnold Orme & Sons	328a	1687	Rushville	found	3.44	......	......	4.0	12.0	1.0	......	8.9
Armour's Big Crop 3-18-9 Fertilizer	361a	......	......	guaranteed	......	......	......	3.0	18.0	......	......	9.0
Bourbon Feed Mill	361a	2204	Bourbon	found	2.82	......	......	3.1	18.0	1.0	......	9.4
Etna Lumber & Elevator Co.	361a	2210	Etna Green	found	2.78	......	......	3.0	18.0	0.6	......	10.2
Armour's Big Crop Bone Meal 2.5-24	366a	......	......	guaranteed	......	......	......	2.5	......	......	24.0	......
Geo. P. Wagner Co.	366a	2579	Jasper	found	0.62	2.01	0.17	2.8	......	......	25.7	......
Bolles Hardware Co.	366a	2667	Brownstown	found	0.67	1.53	0.40	2.6	......	......	25.0	......
Armour's Big Crop Raw Bone Meal 3.7-22	368a	......	......	guaranteed	......	......	......	3.7	......	......	22.0	......
Geo. P. Wagner Co.	368a	2578	Jasper	found	0.29	3.13	0.58	4.0	......	......	23.3	......
Armour's Big Crop 4-8-6 Fertilizer	545a	......	......	guaranteed	......	......	......	4.0	8.0	......	......	6.0
Etna Lumber & Elevator Co.	545a	1552	Etna Green	found	3.88	......	......	4.1	8.4	0.6	......	6.0
Armour's Big Crop 4-24-12 Fertilizer	547a	......	......	guaranteed	......			4.0	24.0	......	......	12.0
Bargersville Grain Co.	547a	1738	Bargersville	found	3.55			4.0	24.0	0.4	......	12.9
Strate-Pielemeier Hardware	547a	2496	Freelandville	found	3.48			3.9	25.1	0.4	......	13.9
Armour's Big Crop 2-8-16 Fertilizer	621a	......	......	guaranteed	......			2.0	8.0	......	......	16.0
Frank Morgan	621a	1573	Plainville	found	1.66	......	......	2.0	8.0	0.5	......	17.2
Etna Lumber & Elevator Co.	621a	1630	Etna Green	found	1.72	......	......	2.0	8.2	0.3	......	18.7
Al Konovsky	621a	1808	DeMotte	found	1.72	......	......	2.0	8.2	0.4	......	16.9
Armour's Big Crop 3-12-12 Fertilizer	660a	......	......	guaranteed	......	......	......	3.0	12.0	......	......	12.0
James Morris[16]	660a	1914	Tipton, R. R. 2	found	2.62	......	......	3.1	12.1	0.9	......	12.6

Where 60.0 per cent or more of the total nitrogen guaranteed was found to be water soluble, the active and inactive insoluble organic nitrogen was not determined.

Percentages appearing in bold type in the "Inactive water insoluble organic" column denote inferior nitrogen.

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[9] Not tagged. Labels furnished.

[10] Sample drawn at Newton Co. Ranch.

[11] Sample drawn at McCoysburg, Ind.

[12] Sample drawn at Fair Oaks, Ind.

[13] Purchased from Fred Sheffler, Carlisle, Ind.

[14] Sample received in the spring.

[15] Sample received in the spring.

[16] Purchased from Stokely Bros., Tipton, Ind.

TABLE 13. Report of Inspection of Fertilizer Collected in 1935—Continued

Labels and Names of Persons from Whom Samples were Secured	Official No.	Inspection No. L	Samples Taken at		Nitrogen (N)				Phosphoric acid (P_2O_5)			Potash (K_2O), soluble in water, per cent
					Water soluble as nitrates, ammonia salts and organic, per cent	Active water insoluble organic, per cent	Inactive water insoluble organic, per cent	Total per cent	Soluble and reverted (available), per cent	Insoluble, per cent	Total per cent	
Armour's Big Crop Bone Meal 2-24	681a			guaranteed				2.0			24.0	
Farmers Feed & Coal Co.	681a	2349	Bloomington	found	0.46	1.22	0.62	2.3			26.7	
Tuscarora 16% Superphosphate	814a			guaranteed					16.0			
Bourbon Feed Mill	814a	2213	Bourbon	found					16.7	0.6		
Armour's Big Crop 0-14-6 Fertilizer	959a			guaranteed					14.0			6.0
Armour & Co.	959a	2116	Peru	found					14.2	0.9		6.2
Bourbon Feed Mill	959a	2207	Bourbon	found					14.6	0.3		6.0
Roy K. Riddle	959a	2281	Albion	found					15.0	0.3		6.0
Armour's Big Crop Potato Grower 3-8-6	1209a			guaranteed				3.0	8.0			6.0
Lutz Boyd Hardware	1209a	1825	Charlestown	found	2.55			2.9	8.1	0.5		6.1
Barrett Company, The, New York, N. Y.												
Arcadian Nitrate of Soda	73a			guaranteed				16.2				
Syler & Syler[17]	73a	1253	Nappanee	found				16.3				
Buhner Fertilizer Company, The, Seymour, Ind												
16% Superphosphate	6696			guaranteed					16.0			
J. H. Becker & Son	6696	1201	Corydon	found					16.1	0.1		
Freelandville Implement Co.	6696	2501	Freelandville	found					18.4	0.7		
Beck Grain & Feed Co.	6696	2548	Shelbyville	found					17.3	0.3		
Buhner's Raw Bone	8926			guaranteed				3.8			21.0	
Crabbs Reynolds Taylor Co.	8926	1306	Crawfordsville	found	0.84	2.53	0.63	4.0			**20.6**	
Buhner's 20% Superphosphate	9195			guaranteed					20.0			
The Buhner Fertilizer Co.	9195	1242	Seymour	found					20.5	0.7		
Crabbs Reynolds Taylor Co.	9195	1307	Crawfordsville	found					**19.6**	0.3		
Freelandville Implement Co.	9195	2498	Freelandville	found					22.9	0.7		
Buhner's 0-14-6	9928			guaranteed					14.0			6.0
Crabbs Reynolds Taylor Co.	9928	1308	Crawfordsville	found					14.0	0.3		6.9
The Buhner Fertilizer Co.	9928	1752	Seymour	found					14.0	0.4		6.7
V. W. Norris & Son	9928	2468	Rushville	found					14.2	0.6		6.2
Buhner's 0-20-20	9930			guaranteed					20.0			20.0
Boonville Milling Co.[18]	9930	1606	Boonville	found					23.1	0.3		**15.2**
Buhner's 0-10-10	9931			guaranteed					10.0			10.0
The Buhner Fertilizer Co.	9931	1241	Seymour	found					11.1	0.4		10.0
Rentepohler Hardware Co.	9931	1603	Huntingburg	found					10.4	0.4		10.5
Frazier Packing Co.	9931	1920	Elwood	found					10.2	0.5		10.3

Buhner's 2-12-6	287a			guaranteed				2.0	12.0			6.0
The Buhner Fertilizer Co.[19]	287a	1239	Seymour	found	1.98			2.2	**11.6**	0.7		**5.6**
Swain & Breeding	287a	1284	Edinburg	found	2.06			2.3	12.3	0.5		6.0
Kramer Bros.[20]	287a	1475	Haubstadt	found	1.98			2.2	12.4	0.6		**5.2**
Frazier Canning Co.	287a	1522	Elwood	found	1.85			2.1	12.0	0.6		6.2
Boonville Milling Co.	287a	1563	Boonville	found	1.82			2.1	12.0	0.5		6.0
Johnson & Chenoweth[21]	287a	1567	Shoals	found	1.99			2.2	12.0	0.7		6.0
V. W. Norris & Son[22]	287a	1674	Rushville	found	1.81			2.0	12.0	0.9		**5.6**
Morgan Packing Co.	287a	1717	Edinburg	found	1.82			2.1	12.1	0.9		6.0
Hougland Packing Co.[23]	287a	1730	Franklin	found	1.75			2.0	12.0	0.7		**4.9**
Johnson Feed Store	287a	1856	Carlisle	found	1.83			2.0	12.0	0.5		**5.7**
Morgan Packing Co.	287a	1978	Scottsburg	found	1.70			1.9	12.2	0.7		6.6
Morgan Packing Co.	287a	1979	Austin	found	1.79			2.0	12.1	0.6		6.0
D. R. Dunlevy & Son[24]	287a	2000	Henryville	found	1.78			2.0	12.0	0.8		6.2
V. W. Norris & Son	287a	2471	Rushville	found	1.81			2.0	13.1	0.4		6.7
O. L. Barr Grain Co.	287a	2500	Bicknell	found	1.82			2.1	12.9	0.6		6.7
Kramer Bros.	287a	2508	Haubstadt	found	2.06			2.2	12.0	2.0		6.7
Johnson & Chenoweth	287a	2523	Shoals	found	1.82			2.1	13.0	0.5		6.8
Ben Struewing	287a	2532	Oldenburg	found	1.68			2.0	13.0	0.6		6.0
D. R. Dunlevy & Son	287a	2612	Henryville	found	1.99			2.2	12.4	0.7		7.0
J. H. Becker & Sons	287a	2621	Corydon	found	1.82			2.1	12.0	0.6		7.2
Linkhart & Son	287a	2654	North Vernon	found	1.85			2.1	12.9	0.8		7.2
The Buhner Fertilizer Co.	287a	2662	Seymour	found	1.72			2.0	12.5	0.6		6.5
Buhner's 2-8-4	289a			guaranteed				2.0	8.0			4.0
Boonville Milling Co.	289a	1566	Boonville	found	1.82			2.1	8.3	0.4		4.0
V. W. Norris & Son	289a	1686	Rushville	found	1.83			2.0	8.0	0.8		4.5
A. J. Batman	289a	1707	Marengo	found	1.75			2.2	8.1	0.6		4.0
Boonville Milling Co.	289a	2595	Boonville	found	1.82			2.1	8.7	0.5		4.0
The Buhner Fertilizer Co.	289a	2659	Seymour	found	1.48			**1.7**	8.6	0.3		6.0
Buhner's 3-10-4	290a			guaranteed				3.0	10.0			4.0
Crabbs Reynolds Taylor Co.	290a	1305	Crawfordsville	found	2.61			3.2	10.0	0.9		4.4
Buhner's 4-10-6	291a			guaranteed				4.0	10.0			6.0
J. H. Becker & Son	291a	1212	Corydon	found	3.40			4.1	10.4	0.5		6.0
Reutepohler Hardware Co.	291a	1594	Huntingburg	found	3.40			4.1	10.1	0.9		6.0
The Buhner Fertilizer Co.	291a	1749	Seymour	found	3.30			4.0	10.1	0.8		**5.5**
Buhner's Special Crop Grower	293a			guaranteed				2.0	8.0	4.0		6.0
Crabbs Reynolds Taylor Co.	293a	1301	Crawfordsville	found	1.62			2.1	9.7	2.7		6.2
The Buhner Fertilizer Co.[25]	293a	1713	Seymour	found	1.48			2.2	9.8	2.7		6.1
Anderson Mercantile Exchange	293a	2433	Anderson	found	1.44			2.0	8.7	4.5		6.2
V. W. Norris & Son	293a	2469	Rushville	found	1.21			2.0	10.2	2.7		**5.6**
Beck Grain & Feed Co.	293a	2494	Shelbyville	found	2.03			2.1	10.8	2.8		6.0
Reutepohler Hardware Co.	293a	2566	Huntingburg	found	1.22			2.1	10.0	2.9		6.5
T. J. Watkins	293a	2611	Nabb	found	1.11	0.38	0.31	1.8	10.2	2.9		6.0
J. H. Becker & Sons	293a	2622	Corydon	found	1.33			2.1	10.0	2.9		6.0

Where 60.0 per cent or more of the total nitrogen guaranteed was found to be water soluble, the active and inactive insoluble organic nitrogen was not determined.
Percentages appearing in bold type in the "Inactive water insoluble organic" column denote inferior nitrogen.

[17] Distributted by Virginia-Carolina Chemical Corp. Fort Wayne, Ind.

[18] Refnnd $4.80.

[19] Sample received in the spring.

[20] Sample received in the spring.

[21] Sample received in the spring.

[22] Sample received in the spring.

[23] Refund $22.00.

[24] Sample received in the spring.

[25] Sample received in the spring.

TABLE 13. Report of Inspection of Fertilizer Collected in 1935—Continued

Labels and Names of Persons from Whom Samples were Secured	Official No.	Inspection No. L	Samples Taken at		Nitrogen (N)				Phosphoric acid (P_2O_5)			
					Water soluble as nitrates, ammonia salts and organic, per cent	Active water insoluble organic, per cent	Inactive water insoluble organic, per cent	Total per cent	Soluble and reverted (available), per cent	Insoluble, per cent	Total per cent	Potash (K_2O), soluble in water, per cent
Linkhart & Son	293a	2655	North Vernon	found	1.16	0.72	0.12	2.0	9.2	4.0		6.4
The Buhner Fertilizer Co.	293a	2664	Seymour	found	1.30			2.0	9.2	3.5		6.0
Swaim & Breeding	293a	2674	Edinburg	found	1.21			2.0	9.5	3.3		6.0
Buhner's 3-8-6	389a			guaranteed				3.0	8.0			6.0
The Buhner Fertilizer Co.	389a	1721	Seymour	found	2.48			3.1	8.0	0.6		6.4
Buhner's 2-8-2	390a			guaranteed				2.0	8.0			2.0
J. H. Becker & Son	390a	1202	Corydon	found	1.91			2.3	9.0	0.3		2.8
Reutepohler Hardware Co.	390a	1602	Huntingburg	found	2.00			2.0	8.3	0.5		3.1
Buhner's Crop Grower	391a			guaranteed				2.0	8.0	4.0		2.0
Crabbs Reynolds Taylor Co.	391a	1302	Crawfordsville	found	1.54			2.0	9.6	2.3		2.5
The Buhner Fertilizer Co.[26]	391a	1719	Seymour	found	1.57			2.3	10.1	2.2		2.2
The Buhner Fertilizer Co.	391a	2660	Seymour	found	1.44			2.0	10.1	3.3		2.8
Buhner's 2-12-2	392a			guaranteed				2.0	12.0			2.0
The Buhner Fertilizer Co.[27]	392a	1240	Seymour	found	1.69			2.5	13.0	0.6		2.2
Swaim & Breeding	392a	1285	Edinburg	found	1.75			2.0	12.8	0.4		2.1
V. W. Norris & Son	392a	1677	Rushville	found	1.78			2.0	11.8	0.6		2.2
A. J. Batman	392a	1706	Marengo	found	1.91			2.1	12.2	0.5		2.2
The Buhner Fertilizer Co.[28]	392a	1751	Seymour	found	1.80			2.0	12.0	0.6		2.0
Ben Struewing	392a	2531	Oldenburg	found	1.68			2.0	12.7	0.5		2.7
Victoria Mill & Elevator Co.	392a	2584	Jasper	found	1.69			2.0	12.5	0.3		2.3
C. Eckerty & Son	392a	2638	Eckerty	found	1.75			2.1	12.4	0.7		3.1
The Buhner Fertilizer Co.	392a	2661	Seymour	found	1.75			2.1	12.8	0.3		2.5
Buhner's 2-8-16	654a			guaranteed				2.0	8.0			16.0
S. Whetstone[29]	654a	1921	Elwood	found	1.48			**1.7**	8.9	0.5		**14.5**
Buhner's 1-10-3	733a			guaranteed				1.0	10.0			3.0
Victoria Mill & Elevator	733a	1599	Jasper	found	0.99			1.3	10.6	0.2		3.4
V. W. Norris & Son[30]	733a	1678	Rushville	found	0.83			1.1	10.1	0.7		3.0
A. J. Batman	733a	1708	Marengo	found	0.92			1.2	9.9	0.7		**2.7**
The Buhner Fertilizer Co.	733a	1722	Seymour	found	0.95			1.2	10.1	0.7		3.3
V. W. Norris & Son	733a	2476	Rushville	found	1.16			1.2	10.6	0.5		3.1
Beck Grain & Feed Co.	733a	2542	Shelbyville	found	0.89			1.1	10.7	0.7		3.2
Buhner's 2-16-8	858a			guaranteed				2.0	16.0			8.0
V. W. Norris & Son[31]	858a	1671	Rushville	found	1.91			2.1	16.0	0.6		**6.4**
V. W. Norris & Son	858a	2470	Rushville	found	1.93			2.1	16.6	0.5		9.0
Buhner's 3-12-12	1314a			guaranteed				3.0	12.0			12.0
The Buhner Fertilizer Co.[32]	1314a	1714	Seymour	found	2.63			3.3	12.6	0.6		**8.9**
Orol Hannoh[33]	1314a	1924	Elwood	found	2.48			3.0	11.2	0.4		12.0

4-12-4	1406a			guaranteed				4 0	12 0			4 0
Morgan Packing Co.	1406a	1712	Columbus	found	3.37			4.1	**11 5**	0 5		5 2
Morgan Packing Co.	1406a	1718	Edinburg	found	3.30			**4.0**	12.0	0.4		5 6
The Buhner Fertilizer Co.	1406a	1720	Seymour	found	3.62			4.4	12.6	0 5		**3 7**
Morgan Packing Co.	1406a	1981	Austin	found	3.30			4.0	12.0	0.5		5.4
Buhner's 2-12-6 with Dolomitic Limestone	1421a			guaranteed				2 0	12 0			6.0
V. W. Norris & Son[34]	1421a	1673	Rushville	found	1.78			2.0	**11 6**	0 7		**5 2**
Farm Bureau Service[35]	1421a	2102	Columbus	found	1.99			2.3	**11 6**	0 4		**4.7**
The Buhner Fertilizer Co.	1421a	2663	Seymour	found	1.78			2.1	12.6	0.8		6.8
Buhner's 2-8-4 Limestone Base	1491a			guaranteed				2 0	8 0			4 0
V. W. Norris & Son	1491a	2467	Rushville	found	1.75			2 0	8 7	0.5		4.8
The Buhner Fertilizer Co.	1491a	2658	Seymour	found	1.76			2.0	9 2	0.2		4 1
Central Sugar Company, Decatur, Ind.												
Central Fertilizer 2-8-10	1395a			guarateed				2 0	8 0			10 0
Central Sugar Co.	1395a	1441	Decatur	found	2.40			2 4	9 2	0 5		10 0
Central Sugar Co.[36]	1395a	1483	Decatur	found	2 15			2 2	8 4	0 5		11.8
Central Sugar Co.[37]	1395a	1484	Decatur	found	2.22			2 3	8 6	0 5		10 0
Central Sugar Co.[38]	1395a	1486	Decatur	found	2.34			2 4	8 4	0.4		10.2
Central Fertilizer 2-12-6	1396a			guaranteed				2.0	12.0			6 0
Central Sugar Co.[39]	1396a	1442	Decatur	found	2.42			2.5	12.0	0.7		6.3
Central Sugar Co.[40]	1396a	1443	Decatur	found	2.50			2.5	12.5	0.6		6.0
Central Sugar Co.	1396a	2398	Decatur	found	2.05			2.3	13.5	0.9		6.7
Central Fertilizer 4-8-6	1397a			guaranteed				4.0	8.0			6 0
Central Sugar Co.[41]	1397a	1440	Decatur	found	2.92			**3.0**	10 2	0.5		6.5
Central Sugar Co.	1397a	1491	Decatur	found	4.43			4.5	8.8	0 4		7.0
Central Fertilizer 0-12-12	1398a			guaranteed					12.0			12.0
Central Sugar Co.	1398a	1444	Decatur	found					13.0	0.6		12.8
Central Sugar Co.[42]	1398a	1481	Decatur	found					12 4	0.7		13.3
Central Sugar Co.[43]	1398a	1482	Decatur	found					12 6	0 6		13.6
Clendenin & Company, Richmond, Ind.												
Fourteen-Four	9259			guaranteed					14.0			4 0
Clendenin & Co.	9259	1767	Richmond	found					14.1	1.0		4 0
Two-Twelve-Two	662a			guaranteed				2 0	12.0			2.0
Clendenin & Co.[44]	662a	1776	Richmond	found	2.06			2.4	12.2	0.8		2.2
Clendenin & Co.	662a	2492	Richmond	found	1.54			2.1	13.4	0 7		2.2
Two-Twelve-Six	663a			guaranteed				2.0	12 0			6 0
Clendenin & Co.[45]	663a	1772	Richmond	found	1.93			2.2	12 4	0.7		6.0
Clendenin & Co.	663a	2481	Richmond	found	2 38			2 5	12.5	1 0		7 2

Where 60.0 per cent or more of the total nitrogen guaranteed was found to be water soluble the active and inactive insoluble organic nitrogen was not determined.

Percentages appearing in bold type in the "Inactive water insoluble organic" column denote inferior nitrogen.

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[26] Sample received in the spring.

[27] Sample received in the spring.

[28] Sample received in the spring.

[29] Purchased from Frazier Packing Co., Elwood, Ind. Refund $2.10.

[30] Sample received in the spring.

[31] Refund $4.00. Sample received in the spring.

[32] Refund $9.30.

[33] Purchased from Frazier Packing Co., Elwood, Ind.

[34] Refund $3.00.

[35] Refund $8.50.

[36] Sample drawn at Markle, Ind.

[37] Sample drawn at Poneto, Ind.

[38] Sample drawn at Monroeville, Ind.

[39] Sample received in the spring.

[40] Sample received in the spring.

[41] Remixed.

[42] Sample drawn at Poneto, Ind.

[43] Sample drawn at Markle, Ind.

[44] Sample received in the spring.

[45] Sample received in the spring.

TABLE 13. Report of Inspection of Fertilizer Collected in 1935—Continued

Labels and Names of Persons from Whom Samples were Secured	Official No.	Inspection No. L	Samples Taken at		Nitrogen (N)				Phosphoric acid (P_2O_5)			Potash (K_2O), soluble in water, per cent
					Water soluble as nitrates, ammonia salts and organic, per cent	Active water insoluble organic, per cent	Inactive water insoluble organic, per cent	Total per cent	Soluble and reverted (available), per cent	Insoluble, per cent	Total per cent	
Complete Grain Grower	664a			guaranteed				1.0	9.0			3.0
Clendenin & Co.	664a	1769	Richmond	found	0.78			1.1	9.5	1.1		3.1
Ten-Ten	1449a			guaranteed					10.0			10.0
Clendenin & Co.[46]	1449a	1775	Richmond	found					10.5	0.7		10.1
Clendenin & Co.	1449a	2484	Richmond	found					10.6	0.9		10.0
Consolidated Chemical Company, Louisville, Ky.												
Camel Brand 16% Superphosphate	7851			guaranteed					16.0			
Wolf & Son	7851	1344	North Judson	found					16.6	1.0		
Camel Brand Ten and Ten Percent Potash	8822			guaranteed					10.0			10.0
R. W. Gudeman[47]	8822	1953	Francesville, R. R. 1	found					11.2	0.2		10.1
Camel Brand Eight-Twenty-four Fertilizer	9901			guaranteed					8.0			24.0
Chas. Tapp[48]	9901	1956	Francesville, R. R. 1	found					9.2	0.1		24.0
Camel Brand One-Eight-Three Fertilizer	169a			guaranteed				1.0	8.3			3.0
Wm. H. P. Wiseman & Son	169a	1698	Corydon	found	1.15			1.4	9.4	0.5		3.1
Camel Brand A-1 Grain Grower	173a			guaranteed				2.0	12.0			6.0
Wm. H. P. Wiseman & Son	173a	1688	Corydon	found	1.82			2.2	12.7	0.5		6.3
Northern Indiana Co-op. Association	173a	2047	Mentone	found	1.96			2.3	12.9	0.6		6.7
Camel Brand Old Time Grain Fertilizer	596a			guaranteed				2.0	8.0			2.0
Wm. H. P. Wiseman & Son	596a	1697	Corydon	found	1.79			2.1	8.6	0.8		2.6
Camel Brand Onion and Truck Special (2-8-16)	722a			guaranteed				2.0	8.0			16.0
Wolf & Son[49]	722a	1338	North Judson	found	1.81			2.2	8.2	1.2		17.8
J. R. Yaggie[50]	722a	1968	Francesville, R. R. 1	found	1.94			2.3	8.6	1.0		17.8
Wolf & Son[51]	722a	2306	North Judson	found	1.85			2.2	10.4	0.4		14.8
Camel Brand Twelve-Twelve Fertilizer	931a			guaranteed					12.0			12.0
Wolf & Son[52]	931a	1351	North Judson	found					12.0	1.4		12.0
Farmers Co-op. Elevator	931a	1957	Francesville	found					12.7	0.2		13.2
Wolf & Son	931a	2310	North Judson	found					13.1	0.1		11.8
Darling & Company, Chicago, Ill.												
Darling's 16% Superphosphate	6372			guaranteed					16.0			
Nappanee Milling Co.	6372	2194	Nappanee	found					16.2	0.4		
Boonville Milling Co.	6372	2597	Boonville	found					17.8	0.3		
Darling's Muriate of Potash	8024			guaranteed								50.0
Farmers Mill & Elevator Co.	8024	1453	Columbia City	found								51.3

Darling's Nitrate of Soda	8891			guaranteed				15.5				
Farmers Mill & Elevator Co.	8891	1456	Columbia City	found				15.7				
Darling's 20% Superphosphate	9017			guaranteed					20.0			
Farmers Mill & Elevator Co.[53]	9017	1458	Columbia City	found					20.0	0.3		
Boonville Milling Co.	9017	1605	Boonville	found					20.2	0.5		
Clem Phflum & Co.	9017	2082	Butlerville	found					21.2	0.7		
Nappanee Milling Co.	9017	2195	Nappanee	found					20.3	0.5		
Farmers Mill & Elevator Co.	9017	2283	Columbia City	found					21.5	0.7		
C. M. Kerlin Elevator Co.	9017	2448	Delphi	found					21.5	0.8		
Darling's Fourteen Four	9022			guaranteed					14.0	0.5		4.0
Farmers Mill & Elevator Co.	9022	2282	Columbia City	found					14.6	0.6		4.2
Darling's Twelve-Twelve	9157			guaranteed					12.0	0.5		12.0
Boonville Milling Co.[54]	9157	1565	Boonville	found					12.3	0.3		12.0
Elmer Deno[55]	9157	1839	Goodland	found					12.2	0.1		12.3
Burnettsville Elevator Co.	9157	1874	Burnettsville	found					12.0	0.3		12.3
C. M. Kerlin Elevator Co.	9157	2057	Delphi	found					12.6	0.2		12.7
J. C. Phillips	9157	2302	Star City	found					12.5	0.4		12.0
Boonville Milling Co.[56]	9157	2596	Boonville	found					14.5	0.7		**10.4**
Darling's Eight Twenty-Four	9212			guaranteed					8.0	0.5		24.0
Farmers Mill & Elevator Co.	9212	1463	Columbia City	found					8.9	0.1		24.0
J. C. Phillips[57]	9212	2320	Star City	found					9.5	0.1		**21.0**
Darling's Ten-Ten	9462			guaranteed					10.0	0.5		10.0
Ferd Muller[58]	9462	1840	Goodland	found					10.0	0.2		10.6
Darling's Farmers Favorite	375a			guaranteed				3.0	8.0	0.5		6.0
McElhinney Feed Store	375a	2064	Bloomington	found	3.03			3.2	8.9	0.2		6.5
Darling's Big Harvest	376a			guaranteed				2.0	12.0	0.5		2.0
Nappanee Milling Co.[59]	376a	2049	Nappanee	found	2.14			2.3	13.6	0.4		2.6
McElhinney Feed Store	376a	2066	Bloomington	found	2.00			2.3	13.0	0.5		3.1
Mexico Elevator Co.	376a	2119	Mexico	found	1.83			2.0	12.1	0.5		2.8
Nappanee Milling Co.	376a	2196	Nappanee	found	2.03			2.4	12.0	0.9		2.7
Farmers Mill & Elevator Co.	376a	2284	Columbia City	found	1.96			2.2	12.4	1.0		2.5
Morrow Grain Co.	376a	2297	Wabash	found	1.69			2.0	12.0	0.7		2.8
C. M. Kerlin Elevator Co.	376a	2446	Delphi	found	1.92			2.2	13.1	0.9		2.5
Darling's Special Crop	377a			guaranteed				2.0	8.0	0.5		16.0
Burnettsville Elevator Co.	377a	1872	Burnettsville	found	2.31			2.4	8.3	0.4		17.8
J. R. Yaggie[60]	377a	1950	Francesville, R. R. 1	found	2.16			2.3	8.1	0.4		16.5
J. C. Phillips	377a	2303	Star City	found	2.08			2.2	8.3	0.2		16.1
Darling's Sure Winner	378a			guaranteed				1.0	10.0	0.5		4.0
Morrow Grain Co.	378a	2288	Wabash	found	1.33			1.5	11.0	0.5		4.4

Where 60.0 per cent or more of the total nitrogen guaranteed was found to be water soluble, the active and inactive insoluble organic nitrogen was not determined.
Percentages appearing in bold type in the "Inactive water insoluble organic" column denote inferior nitrogen.

[46] Not Tagged. Labels furnished. Sample received in the spring.
[47] Purchased from Farmers Co-op. Elevator, Francesville, Ind.
[48] Purchased from Farmers Co-op. Elevator, Francesville, Ind.
[49] Sample received in the spring.
[50] Purchased from Farmers Co-op. Elevator, Francesville, Ind.
[51] Refund $4.80.
[52] Sample received in the spring.
[53] Sample received in the spring.
[54] Sample received in the spring.
[55] Purchased from Goodland Grain Co., Goodland, Ind.
[56] Refund $1.60.
[57] Refund $3.00. Sample to manufacturer.
[58] Purchased from Goodland Grain Co., Goodland, Ind.
[59] Sample received in the spring.
[60] Purchased from Garfield Burgett, Francesville, Ind.

TABLE 13. Report of Inspection of Fertilizer Collected in 1935—Continued

Labels and Names of Persons from Whom Samples were Secured	Official No.	Inspection No. L	Samples Taken at		Nitrogen (N)				Phosphoric acid (P₂O₅)			Potash (K₂O), soluble in water, per cent
					Water soluble as nitrates, ammonia salts and organic, per cent	Active water insoluble organic, per cent	Inactive water insoluble organic, per cent	Total per cent	Soluble and reverted (available), per cent	Insoluble, per cent	Total per cent	
Darling's Crop King	379a	....	....	guaranteed	....	....	....	2.0	12.0	0.5	....	6.0
Morrow Grain Co.[61]	379a	1370	Wabash	found	2.10	....	....	2.2	12.5	0.3	....	6.0
Farmers Mill & Elevator Co.	379a	1450	Columbia City	found	1.86	....	....	2.0	13.5	0.3	....	6.3
Nelson Feed Co.	379a	1480	Princeton	found	1.92	....	....	2.1	12.0	0.5	....	6.8
Boonville Milling Co.[62]	379a	1609	Boonville	found	2.03	....	....	2.2	12.3	0.7	....	6.3
Burnettsville Elevator Co.	379a	1873	Burnettsville	found	1.92	....	....	2.1	12.3	0.3	....	6.2
Penman Bros.	379a	1891	Brazil	found	2.00	....	....	2.2	12.6	0.4	....	6.0
Nappanee Milling Co.[63]	379a	2050	Nappanee	found	2.06	....	....	2.2	12.9	0.4	....	6.2
Boonville Milling Co.	379a	2095	Boonville	found	1.98	....	....	2.2	13.3	0.2	....	6.4
Mexico Elevator Co.	379a	2102	Mexico	found	2.12	....	....	2.4	12.8	0.7	....	6.8
Nappanee Milling Co.	379a	2185	Nappanee	found	2.03	....	....	2.3	12.0	1.1	....	6.7
Morrow Grain Co.	379a	2296	Wabash	found	1.98	....	....	2.2	12.9	0.8	....	6.6
J. C. Phillips	379a	2324	Star City	found	2.06	....	....	2.3	14.1	0.4	....	6.6
C. M. Kerlin Elevator Co.	379a	2445	Delphi	found	1.88	....	....	2.1	13.0	0.6	....	6.1
Boonville Milling Co.	379a	2603	Boonville	found	2.02	....	....	2.2	13.3	0.5	....	6.7
Darling's Tomato Grower 2-12-6	382a	....	....	guaranteed	....	....	....	2.0	12.0	0.5	....	6.0
Boonville Milling Co.	382a	1617	Boonville	found	2.00	....	....	2.2	12.6	0.5	....	6.6
McElhinney Feed Store	382a	2063	Bloomington	found	2.04	....	....	2.2	12.4	0.6	....	6.5
Knightstown Packing Co.	382a	2070	Knightstown	found	1.92	....	....	2.0	12.8	0.7	....	6.0
Carroon & Co.	382a	2072	Fowler	found	1.99	....	....	2.2	12.3	0.8	....	6.4
Darling's Special Lawn Grower	383a	....	....	guaranteed	....	....	....	4.0	8.0	0.5	....	7.0
Ohio Valley Seed Co.[61]	383a	1621	Evansville	found	3.46	....	....	**3.7**	9.8	0.3	....	7.0
Darling's Potato Special 4-8-7	384a	....	....	guaranteed	....	....	....	4.0	8.0	0.5	....	7.0
Boonville Milling Co.	384a	1607	Boonville	found	4.02	....	....	4.1	8.9	0.5	....	8.8
Ohio Valley Seed Co.	384a	1611	Evansville	found	3.83	....	....	4.0	8.4	0.5	....	7.6
McElhinney Feed Store	384a	2060	Bloomington	found	3.96	....	....	4.1	9.0	0.3	....	7.8
Darling's Twenty-Twenty	772a	....	....	guaranteed	....	....	....	....	20.0	0.5	....	20.0
Carroon & Co.	7728	2069	Fowler	found	....	....	....	....	20.2	0.3	....	20.4
Darling's General Crop 2-14-4	1261a	....	....	guaranteed	....	....	....	2.0	14.0	0.5	....	4.0
C. M. Kerlin Elevator Co.[65]	1261a	2056	Delphi	found	2.14	....	....	2.3	14.5	0.3	....	4.4
C. M. Kerlin Elevator Co.	1261a	2447	Delphi	found	1.91	....	....	2.1	14.8	0.8	....	4.3
Darling's Harvest Queen 2-16-8	1423a	....	....	guaranteed	....	....	....	2.0	16.0	0.5	....	8.0
J. C. Phillips	1423a	2322	Star City	found	2.07	....	....	2.2	17.1	0.3	....	9.1
Darling's Two-Eight-Ten 2-8-10	1447a	....	....	guaranteed	....	....	....	2.0	8.0	0.5	....	10.0
C. M. Kerlin Elevator Co.	1447a	2059	Delphi	found	1.99	....	....	2.1	9.0	0.4	....	10.6

Diamond Fertilizer Company, The, Sandusky, Ohio												
Diamond 16% Superphosphate	8053			guaranteed					16.0	1.0		
Kelley Ranch[66]	8053	1355	Monon	found					16.1	0.4		
Diamond Potash Mixture	8465			guaranteed					10.0	1.0		10.0
John R. Parkinson[67]	8465	1847	Rensselaer	found					10.0	0.2		**9.6**
Kermit Whaley[68]	8465	1849	Brook	found					10.1	0.3		10.0
Rensselaer Lumber Co.	8465	1969	Rensselaer	found					10.1	0.4		10.2
Diamond 20% Superphosphate	8515			guaranteed					20.0	1.0		
Boggs Feed Store	8515	2126	Argos	found					20.8	0.7		
E. C. Majot	8515	2311	Michigan City	found					20.6	0.7		
Curtis Ranch	8515	2679	Monon	found					20.9	0.8		
Diamond Two-Twelve-Six	495a			guaranteed				2.0	12.0			6.0
Boggs Feed Store[69]	495a	2123	Argos	found	1.76			2.1	12.6	0.6		6.0
Boggs Feed Store	495a	2127	Argos	found	1.72			2.0	12.3	0.6		6.0
Sommerfield & Swanson[70]	495a	2308	LaPorte	found	1.64			2.0	12.7	0.4		6.1
Diamond Two-Twelve-Two	496a			guaranteed				2.0	12.0			2.0
Sommerfield & Swanson[71]	496a	2314	LaPorte	found	1.76			2.1	12.5	0.5		2.1
Diamond Two-Eight-Sixteen	497a			guaranteed				2.0	8.0			16.0
John R. Parkinson	497a	1846	Rensselaer	found	1.75			2.0	8.0	0.4		16.7
Rensselaer Lumber Co.	497a	1959	Rensselaer	found	1.72			2.0	8.0	0.3		16.7
Diamond 2-8-10	498a			guaranteed				2.0	8.0			10.0
John R. Parkinson[72]	498a	1850	Rensselaer	found	1.66			2.0	**7.4**	0.5		10.3
Diamond Twenty-Twenty	500a			guaranteed					20.0			20.0
Manford Lawson[73]	500a	1971	Wolcott, R. R. 2	found					20.0	0.3		20.8
Diamond Twelve-Twelve	502a			guaranteed					12.0			12.0
Clifford Boulden	502a	1973	Wolcott	found					12.0	0.5		12.3
Rensselaer Lumber Co.	502a	1976	Rensselaer	found					12.0	0.5		13.5
Diamond Four Twenty-four Twelve	528a			guaranteed				4.0	24.0			12.0
Sommerfield & Swanson[74]	528a	2307	LaPorte	found	3.62			3.8	24.6	0.4		12.1
Muriate of Potash	622a			guaranteed								50.0
Kelley Ranch[75]	622a	1352	Monon	found								51.7
Sam Charter[76]	622a	2048	Rochester	found								50.0
Curtis Ranch[77]	622a	2680	Monon	found								52.4
Diamond Eight Twenty-four (0-8-24)	818a			guaranteed					8.0			24.0
Rochester Co-op. Elevator Co.	818a	2014	Rochester	found					8.2	0.3		25.6
Dubois County Farm Bureau Co-operative Association, Inc., Huntingburg, Ind.												
Farm Bureau 2-12-6	1512a			guaranteed				2.0	12.0			6.0
Dubois County Farm Bureau Co-op. Association, Inc.[78]	1512a	2591	Huntingburg	found	1.68			2.1	12.0	2.4		6.6

Where 60.0 per cent or more of the total nitrogen guaranteed was found to be water soluble, the active and inactive insoluble organic nitrogen was not determined.

Percentages appearing in bold type in the "Inactive water insoluble organic" column denote inferior nitrogen.

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[61] Sample received in the spring.

[62] Sample received in the spring.

[63] Sample received in the spring.

[64] Sample to manufacturer.

[65] Sample received in the spring.

[66] Purchased from Claude Watson, Monon, Ind.

[67] Sample drawn at Moody, P. O., McCoysburg, Ind.

[68] Purchased from Wm. Wyatt, Brook, Ind.

[69] Not tagged. Labels furnished.

[70] Distributed by E. C. Majot, Michigan City, Ind.

[71] Distributed by E. C. Majot, Michigan City, Ind.

[72] Sample drawn at Moody, P. O., McCoysburg, Ind.

[73] Purchased from Clifford Boulden, Wolcott, Ind.

[74] Distributed by E. C. Majot, Michigan City, Ind.

[75] Purchased from Claude Watson, Monon, Ind.

[76] Purchased from Rochester Co-op. Elevator Co., Rochester, Ind.

[77] Not tagged. Labels furnished.

[78] Distributed by Joslin-Schmidt Corp., Cincinnati, Ohio.

TABLE 13. Report of Inspection of Fertilizer Collected in 1935—Continued

Labels and Names of Persons from Whom Samples were Secured	Official No.	Inspection No. L	Samples Taken at		Nitrogen (N)				Phosphoric acid (P_2O_5)			Potash (K_2O), soluble in water, per cent
					Water soluble as nitrates, ammonia salts and organic, per cent	Active water insoluble organic, per cent	Inactive water insoluble organic, per cent	Total per cent	Soluble and reverted (available), per cent	Insoluble, per cent	Total per cent	
Falls City Fertilizer Company, New Albany, Ind.												
Falls City Brand 20% Superphosphate	8921			guaranteed					20.0	1.0		
Vigo County Farm Bureau	8921	1395	Terre Haute	found					21.9			
Falls City Brand 2-12-2	1008a			guaranteed				2.0	12.0	1.0		2.0
Clay County Farm Bureau	1008a	1892	Brazil	found	1.88			2.1	12.0	1.0		2.0
Farmers Fertilizer Company, The, Columbus, Ohio												
Farmers Special Potash Mixture	8867			guaranteed					10.0			10.0
Frank K. Fritz	8867	1844	Della, P. O. McCoysburg	found					10.4	0.3		10.6
Bernard Walters[79]	8867	1977	Rensselaer	found					10.2	0.3		10.3
Farmers 2-12-6 Fertilizer	507a			guaranteed				2.0	12.0			6.0
John Sarber[80]	507a	1918	Elwood	found	1.85			2.1	12.1	0.6		6.5
Ray Bros. & Noble Canning Co.	507a	1922	Hobbs	found	1.88			2.1	12.3	0.5		6.4
James Walters[81]	507a	1958	Rensselaer	found	1.72			2.0	12.1	0.9		6.4
Farmers 2-8-16 Fertilizer	508a			guaranteed				2.0	8.0			16.0
Hugh Jordan[82]	508a	1919	Tipton, R. R. 4	found	1.75			2.0	8.3	0.4		**15.1**
John Wuethrich[83]	508a	1962	McCoysburg, R. R. 1	found	2.42			2.5	8.7	0.5		17.8
Farmers 14-6 Fertilizer	1206a			guaranteed					14.0			6.0
Frank K. Fritz	1206a	1851	Della, P. O., McCoysburg	found					**13.6**	0.6		6.1
Farmers 0-8-24 Fertilizer	1375a			guaranteed					8.0			24.0
Frank K. Fritz[84]	1375a	1848	Della, P. O., McCoysburg	found					8.9	0.3		**21.3**
Frank K. Fritz	1375a	1972	Della, P. O., McCoysburg	found					8.0	0.3		24.6
Federal Chemical Company, Inc., Louisville, Ky.												
Globe 16% Superphosphate	3608			guaranteed					16.0			
Geo. P. Wagner Co.	3608	1587	Jasper	found					17.3	1.2		
V. H. Bulleit & Sons	3608	2626	Corydon	found					16.8	1.8		
Daybreak 16% Superphosphate	5016			guaranteed					16.0			
Hugo Steinkamp[85]	5016	1595	Huntingburg	found					16.1	1.6		
Home Lumber & Coal Co.	5016	2499	Waldron	found					17.2	1.7		
Ten-Ten Potash Fertilizer	7904			guaranteed					10.0			10.0
Hartford City Milling Co.	7904	1496	Hartford City	found					10.0	1.0		**9.2**

Farmers Co-op. Co.	7904	1835	Wolcott	found					10.6	1.1		**9.6**
Farmers Co-op. Co.	7904	1964	Wolcott	found					10.6	1.4		10.0
W. C. Miller Hardware	7904	2219	Akron	found					10.1	1.0		10.1
20% Superphosphate	8608			guaranteed					20.0			
Columbus Foods Corp.	8608	1669	Shelbyville	found					**19.3**	1.7		
Stump Grain & Coal Co.	8608	2270	Garrett	found					20.6	1.1		
Twelve-Twelve Potash Formula	9773			guaranteed					12.0			12.0
W. W. Craig	9773	2372	Rockville	found					12.0	1.2		14.2
W. W. Spain	9773	2600	Rockport	found					12.8	1.3		12.4
Twenty-Twenty Potash Formula	9780			guaranteed					20.0			20.0
Hartford City Milling Co.[86]	9780	1497	Hartford City	found					21.5	0.3		**16.2**
Official Formula 2-8-16	396a			guaranteed				2.0	8.0			16.0
R. C. Fretz Feed Co.	396a	1413	Waterloo	found	1.86			2.3	8.4	1.2		17.7
Standard Crop Grower	411a			guaranteed				1.0	8.0			4.0
Wm. Nading Grain Co.[87]	411a	1243	Greensburg	found	1.46			1.8	**7.5**	1.2		4.0
Geo. P. Wagner Co.	411a	1586	Jasper	found	1.29			1.5	8.0	1.0		4.3
Reiman-McCammon Co.	411a	1930	Sandusky	found	0.98			1.2	8.6	0.8		**3.5**
Loam Land Fertilizer	412a			guaranteed				2.0	12.0			2.0
R. C. Fretz Feed Co.	412a	1422	Waterloo	found	1.71			2.1	12.5	1.0		2.1
Geo. P. Wagner Co.	412a	1585	Jasper	found	1.95			2.4	12.1	1.2		2.4
Edmonson Hardware[88]	412a	1742	Clayton	found	1.72			2.2	12.0	1.3		2.1
Reiman-McCammon Co.	412a	1949	Sandusky	found	1.55			2.0	12.2	1.1		2.0
Noragon & Son	412a	2183	Butler	found	1.71			2.1	12.2	2.2		2.5
Farmers Co-op. Co.	412a	2330	Cicero	found	1.84			2.3	12.0	1.9		2.3
Edmonson Hardware	412a	2344	Clayton	found	2.18			2.6	14.4	1.4		4.2
V. H. Bulleit & Sons	412a	2630	Corydon	found	1.82			2.2	12.0	2.5		2.2
Official Formula 2-12-6	414a			guaranteed				2.0	12.0			6.0
Wm. Nading Grain Co.	414a	1247	Greensburg	found	1.66			2.0	12.0	1.0		6.0
R. C. Fretz Feed Co.	414a	1421	Waterloo	found	2.21			2.5	**11.4**	1.7		6.7
Butler Feed Store[89]	414a	1474	Oakland City	found	1.85			2.1	12.1	0.9		6.9
Hartford City Milling Co.	414a	1498	Hartford City	found	1.82			2.1	12.1	0.8		6.9
Columbus Foods Corp.	414a	1684	Shelbyville	found	1.82			2.1	12.0	1.3		6.7
Columbus Foods Corp.	414a	1685	Shelbyville	found	1.75			2.0	**11.2**	2.0		6.3
Edmonson Hardware[90]	414a	1745	Clayton	found	1.93			2.2	**11.5**	1.8		6.0
Sunshine Feed Store	414a	1784	Greenfield	found	1.66			2.0	12.1	0.5		5.8
Reiman-McCammon Co.	414a	1940	Sandusky	found	1.82			2.1	12.0	1.0		6.9
Hugo Steinkamp	414a	2094	Huntingburg	found	2.12			2.4	12.0	1.4		6.2
Noragon & Son	414a	2174	Butler	found	1.88			2.1	12.0	2.2		**5.6**
Farmers Co-op. Co.	414a	2253	Wolcott	found	2.16			2.4	12.1	2.2		6.6
Stump Grain & Coal Co.	414a	2278	Garrett	found	1.86			2.0	12.4	0.9		6.3
Farmers Co-op. Co.	414a	2327	Cicero	found	1.75			2.0	12.8	1.0		6.1
Edmonson Hardware	414a	2347	Clayton	found	1.95			2.2	13.2	1.4		6.1
Blackburn Bros.	414a	2364	Sullivan	found	1.93			2.2	12.1	2.1		6.5

Where 60.0 per cent or more of the total nitrogen guaranteed was found to water soluble, the active and inactive insoluble organic nitrogen was not determined.

Percentages appearing in bold type in the "Inactive water insoluble organic" column denote inferior nitrogen.

[79] Purchased from Frank K. Fritz, Della, P. O., McCoysburg, Ind.

[80] Purchased from Ray Bros. and Noble Canning Co., Hobbs, Ind.

[81] Purchased from Frank K. Fritz, Della, P. O., McCoysburg, Ind.

[82] Purchased from Ray Bros. and Noble Canning Co., Hobbs, Ind.

[83] Purchased from Frank K. Fritz, Della, P. O., McCoysburg, Ind.

[81] Refund $6.75.

[85] Distributed by Hugo Steinkamp, Holland, Ind.

[86] Refund $7.60.

[87] Relabeled as 2-8-4 under 773a.

[88] Sample received in the spring.

[89] Sample received in the spring.

[90] Sample received in the spring.

TABLE 13. Report of Inspection of Fertilizer Collected in 1935—Continued

Labels and Names of Persons from Whom Samples were Secured	Official No.	Inspection No. L	Samples Taken at		Nitrogen (N)				Phosphoric acid (P_2O_5)			Potash (K_2O), soluble in water, per cent
					Water soluble as nitrates, ammonia salts and organic, per cent	Active water insoluble organic, per cent	Inactive water insoluble organic, per cent	Total per cent	Soluble and reverted (available), per cent	Insoluble, per cent	Total per cent	
Butler Feed Store	414a	2514	Oakland City	found	1.92			2.2	14.7	0.4		6.0
Joe Dauby & Sons	414a	2593	Tell City	found	2.35			2.6	12.0	2.3		7.0
Boonville Implement Co.	414a	2594	Boonville	found	2.02			2.3	12.0	2.4		6.1
W. W. Spain	414a	2599	Rockport	found	1.96			2.2	12.5	2.0		6.0
V. H. Bulleit & Sons	414a	2631	Corydon	found	1.86			2.0	12.0	2.5		6.0
Indiana Special	572a			guaranteed				1.0	11.0			5.0
Wm. Nading Grain Co.	572a	1244	Greensburg	found	0.92			1.1	12.0	0.8		5.0
Reiman-McCammon	572a	1945	Sandusky	found	0.87			1.1	11.5	1.0		5.0
Farmers Co-op. Co.	572a	2329	Cicero	found	0.98			1.2	11.9	0.9		5.4
John Allen	572a	2374	Rockville	found	1.12			1.3	11.0	2.1		5.5
Wm. Nading Grain Co.	572a	2558	Greensburg	found	0.99			1.2	12.0	1.6		5.4
High Grade Truck and Tomato 2-8-10	631a			guaranteed				2.0	8.0			10.0
Hartford City Milling Co.	631a	1493	Hartford City	found	1.64			2.0	8.2	1.0		11.4
Official Formula 4-24-12	717a			guaranteed				4.0	24.0			12.0
Edmonson Hardware[91]	717a	2345	Clayton	found	3.01			**3.4**	25.1	0.7		**10.2**
Fox Formula 1-12-3	728a			guaranteed				1.0	12.0			3.0
Wm. Nading Grain Co.[92]	728a	1246	Greensburg	found	0.93			1.1	**10.7**	1.1		4.4
Daybreak Formula 1-12-3	729a			guaranteed				1.0	12.0			3.0
W. C. Miller Hardware	729a	2212	Akron	found	1.12			1.3	12.0	1.6		3.4
John Allen	729a	2371	Rockville	found	0.95			1.2	12.1	1.9		3.5
O. K. Formula 1-12-3	730a			guaranteed				1.0	12.0			3.0
Home Lumber & Coal Co.	730a	2477	Waldron	found	1.16			1.3	12.8	1.7		3.5
Official Formula 4-8-6	1391a			guaranteed				4.0	8.0			6.0
Dyer Supply Co.	1391a	1336	Dyer	found	3.57			4.1	8.6	0.9		6.1
Special Formula 2-12-12	1454a			guaranteed				2.0	12.0			12.0
Columbus Foods Corp.	1454a	1683	Shelbyville	found	1.97			2.3	12.0	2.0		12.0
Ford Motor Company, Dearborn, Michigan												
Ford Commercial Sulphate of Ammonia	1386a			guaranteed				20.5				
Knox County Farm Bureau Co-op. Association, Inc.[93]	1386a	1966	Vincennes	found				20.9				
Fox Chemical Company, Louisville, Ky.												
Fox 16% Superphosphate	3607			guaranteed					16.0			
Reiman-McCammon Co.	3607	1947	Sandusky	found					16.1	1.5		

Globe Fertilizer Company, Louisville, Ky.												
Globe 16% Superphosphate	3608	.....	.....	guaranteed	.....	.....	.....	.....	16.0	.....	.....	.....
Butler Feed Store	3608	2513	Oakland City	found	.....	.....	.....	.....	17.3	1.4	.....	.....
Groves Chemical Company, Columbus, Ohio												
Potash Special	656a	.....	.....	guaranteed	.....	.....	.....	.....	12.0	1.0	.....	12.0
Frank K. Fritz	656a	1845	Della, P. O., McCoysburg	found	.....	.....	.....	.....	14.3	0.2	.....	14.5
Hopkins Fertilizer Company, New Albany, Ind.												
Muriate of Potash	3330	.....	.....	guaranteed	.....	.....	.....	.....	.....	.....	.....	50.0
Wanatah Mercantile Co.	3330	1799	Wanatah	found	.....	.....	.....	.....	.....	.....	.....	52.1
Hopkins Steamed Bone	5514	.....	.....	guaranteed	.....	.....	.....	2.0	.....	.....	27.0	.....
C. W. Wedeking & Co.	5514	2570	Dale	found	0.73	0.95	0.32	2.0	.....	.....	28.4	.....
Hopkins Pure Steamed Bone	5677	.....	.....	guaranteed	.....	.....	.....	0.8	.....	.....	29.0	.....
S. W. Perigo	5677	2587	Chandler	found	0.35	0.63	0.32	1.2	.....	.....	31.8	.....
Twenty-Twenty All Available	8450	.....	.....	guaranteed	.....	.....	.....	.....	20.0	1.0	.....	20.0
Adams & Morrow, Inc.	8450	2520	Princeton	found	.....	.....	.....	.....	21.1	0.4	.....	23.5
Bone Meal	9158	.....	.....	guaranteed	.....	.....	.....	2.0	.....	.....	27.0	.....
A. M. Bohnert & Son	9158	2582	Jasper	found	0.51	1.16	0.33	2.0	.....	.....	29.9	.....
Hopkins Old Time Ten-Ten	9492	.....	.....	guaranteed	.....	.....	.....	.....	10.0	1.0	.....	10.0
Farmers Co-op. Elevator	9492	1970	Wolcott	found	.....	.....	.....	.....	10.0	0.8	.....	10.4
Callahan & Kanne	9492	2248	Rensselaer	found	.....	.....	.....	.....	12.7	0.4	.....	10.2
S. W. Perigo	9492	2607	Chandler	found	.....	.....	.....	.....	10.8	0.5	.....	10.5
Old Time Mix with Bone Tankage	447a	.....	.....	guaranteed	.....	.....	.....	2.0	6.0	6.0	.....	3.0
R. E. Hayes	447a	1208	Campbellsburg	found	1.62	.....	.....	2.1	8.0	5.8	.....	3.1
G. A. Hillemeyer	447a	2573	Huntingburg	found	1.47	.....	.....	2.1	8.4	6.4	.....	3.0
Math Gayer	447a	2604	Troy	found	1.65	.....	.....	2.0	8.1	5.4	.....	**2.4**
Hoosier Hardware Co.	447a	2632	Paoli	found	1.50	.....	.....	2.0	7.1	7.1	.....	**2.5**
Potato Grower (3-7-7)	449a	.....	.....	guaranteed	.....	.....	.....	3.0	7.0	1.0	.....	7.0
Math Gayer	449a	1604	Troy	found	3.15	.....	.....	3.4	7.2	0.8	.....	7.4
Elza Kramer	449a	2018	Boonville	found	3.25	.....	.....	3.5	8.0	0.5	.....	7.2
Burley Grower	450a	.....	.....	guaranteed	.....	.....	.....	3.0	8.0	1.0	.....	6.0
Heldt & Voelker Co.	450a	1622	Evansville	found	2.37	.....	.....	3.1	8.0	2.5	.....	6.0
Charlestown Milling Co.	450a	1824	Charlestown	found	2.67	.....	.....	3.0	8.3	0.6	.....	6.2
Scott Bolton	450a	1996	Hanover	found	2.71	.....	.....	3.0	8.6	0.6	.....	6.0
North Madison Coal & Feed Co.	450a	2006	North Madison	found	2.78	.....	.....	3.2	8.9	0.7	.....	6.2
Tomato Grower 2-12-6	451a	.....	.....	guaranteed	.....	.....	.....	2.0	12.0	1.0	.....	6.0
Adams & Morrow, Inc.	451a	1476	Princeton	found	1.75	.....	.....	2.2	12.0	0.8	.....	6.4
George Bollinger	451a	2001	Henryville	found	1.68	.....	.....	2.1	12.1	0.8	.....	6.4
Two-Twelve-Six	452a	.....	.....	guaranteed	.....	.....	.....	2.0	12.0	1.0	.....	6.0
R. E. Hayes	452a	1205	Campbellsburg	found	1.72	.....	.....	2.2	12.0	0.5	.....	6.1
Heldt & Voelker Co., Inc.	452a	1619	Evansville	found	1.64	.....	.....	2.0	12.2	0.9	.....	6.6
C. W. Wedeking & Co.[94]	452a	1620	Dale	found	1.55	.....	.....	2.0	12.2	0.7	.....	6.0
Charlestown Milling Co.	452a	1823	Charlestown	found	1.78	.....	.....	2.2	12.0	0.8	.....	6.0
Ladoga Canning Co.	452a	1992	Brookston	found	1.65	.....	.....	2.1	12.0	1.2	.....	6.3

Where 60.0 per cent or more of the total nitrogen guaranteed was found to be water soluble, the active and inactive insoluble organic nitrogen was not determined.
Percentages appearing in bold type in the "Inactive water insoluble organic" column denote inferior nitrogen.

[91] Refund $3.75.

[92] Refund $2.60.

[93] Distributed by Indiana Farm Bureau Co-op. Ass'n, Inc., Indianapolis, Ind.

[94] Sample received in the spring.

TABLE 13. Report of Inspection of Fertilizer Collected in 1935—Continued

Labels and Names of Persons from Whom Samples were Secured	Official No.	Inspection No. L	Samples Taken at		Nitrogen (N)				Phosphoric acid (P_2O_5)			
					Water soluble as nitrates, ammonia salts and organic, per cent	Active water insoluble organic, per cent	Inactive water insoluble organic, per cent	Total per cent	Soluble and reverted (available), per cent	Insoluble, per cent	Total per cent	Potash (K_2O), soluble in water, per cent
Scott Bolton[95]	452a	1999	Hanover	found	1.71	......	......	2.1	12.6	0.7	......	6.7
North Madison Coal & Feed Co.[96]	452a	2008	North Madison	found	1.74	......	......	2.1	12.0	0.8	......	6.3
Elza Kramer	452a	2017	Boonville	found	1.75	......	......	2.2	12.2	0.9	......	6.7
Heldt & Voelker Co., Inc.[97]	452a	2026	Evansville	found	1.74	......	......	2.1	12.4	1.0	......	6.0
A. M. Bohnert & Son	452a	2046	Jasper	found	1.70	......	......	2.2	12.3	1.4	......	6.4
Geo. McKinley	452a	2099	Borden	found	1.75	......	......	2.1	12.0	2.0	......	6.3
Gilbert Combs	452a	2353	Bloomfield	found	1.71	......	......	2.1	11.3	2.5	......	6.0
The Heldt Co.	452a	2503	Evansville	found	1.47	......	......	1.8	13.9	0.8	......	6.1
Adams & Morrow, Inc.	452a	2521	Princeton	found	2.03	......	......	2.1	12.9	1.3	......	6.4
C. W. Wedeking & Co.	452a	2562	Dale	found	1.56	......	......	2.0	13.5	0.7	......	6.4
Math Gayer	452a	2589	Troy	found	1.75	......	......	2.2	12.0	1.9	......	6.5
S. W. Perigo	452a	2590	Chandler	found	1.71	......	......	2.1	12.0	1.9	......	6.2
North Madison Coal & Feed Co.	452a	2646	North Madison	found	1.75	......	......	2.2	11.3	2.7	......	6.1
Scott Bolton	452a	2647	Hanover	found	1.64	......	......	2.2	12.0	2.0	......	6.2
General Crop Grower	454a	......	......	guaranteed	......	......	......	2.0	12.0	1.0	......	2.0
G. A. Hillemeyer	454a	1590	Huntingburg	found	1.67	......	......	2.3	12.5	1.0	......	2.3
A. M. Bohnert & Son	454a	1601	Jasper	found	1.77	......	......	2.3	12.2	1.2	......	2.4
Elza Kramer	454a	2016	Boonville	found	1.87	......	......	2.4	12.6	0.9	......	2.5
Gilbert Combs	454a	2350	Bloomfield	found	1.57	......	......	2.1	12.3	1.9	......	2.3
The Heldt Co.	454a	2506	Evansville	found	1.80	......	......	2.2	13.6	0.6	......	2.5
S. W. Perigo	454a	2588	Chandler	found	1.78	......	......	2.2	12.2	1.6	......	2.3
Charlestown Milling Co.	454a	2615	Charlestown	found	1.64	......	......	2.0	12.1	1.7	......	2.7
Tower & Merryman	454a	2628	Marengo	found	1.61	......	......	2.1	12.2	2.2	......	2.1
Red Banner Special	456a	......	......	guaranteed	......	......	......	1.0	8.0	1.0	......	3.0
R. E. Hayes	456a	1207	Campbellsburg	found	0.55	0.14	0.31	1.0	8.8	0.4	......	3.6
Gilbert Combs	456a	1576	Bloomfield	found	0.61	......	......	1.0	8.5	0.8	......	3.2
A. M. Bohnert & Son	456a	1591	Jasper	found	0.67	......	......	1.1	8.5	0.8	......	3.7
Math Gayer	456a	1608	Troy	found	1.02	......	......	1.4	8.1	0.9	......	3.6
C. W. Wedeking & Co.	456a	1613	Dale	found	1.02	......	......	1.3	8.2	0.8	......	3.5
Scott Bolton	456a	1997	Hanover	found	0.60	......	......	1.0	8.9	0.8	......	3.0
North Madison Coal & Feed Co.	456a	2007	North Madison	found	0.74	......	......	1.1	8.4	0.4	......	4.2
A. M. Bohnert & Son	456a	2045	Jasper	found	0.82	......	......	1.1	8.3	0.7	......	3.8
G. A. Hillemeyer	456a	2575	Huntingburg	found	0.70	......	......	1.1	9.0	0.3	......	3.1
A. M. Bohnert & Son	456a	2583	Jasper	found	0.72	......	......	1.1	8.8	0.3	......	3.1
Math Gayer	456a	2605	Troy	found	0.92	......	......	1.1	8.5	0.6	......	3.3

Wheat and Corn Grower 1-10-2	458a			guaranteed				1.0	10.0	1 0		2.0
R. E. Hayes	458a	1209	Campbellsburg	found	0.85			1.1	10.4	0.5		2.1
Gilbert Combs	458a	1570	Bloomfield	found	0 71			1.1	10.6	0.5		2.3
Geo. Bollinger	458a	2003	Henryville	found	0 95			1.2	10.8	0.5		2.1
Cecil Price	458a	2518	Montgomery	found	0 91			1.1	11.2	0.5		2.0
Geo. Bollinger	458a	2614	Henryville	found	0 82			1.1	10.7	0.7		2.4
Lacy C. Mahan	458a	2634	West Baden	found	0.78			1.2	10.0	1.2		2.6
Royal Grain Grower	478a			guaranteed				2.0	10.0	1.0		3.0
C. W. Wedeking & Co.	478a	2574	Dale	found	1.78			2.2	11.1	1.3		3.0
Twenty Per Cent Superphosphate	485a			guaranteed					20.0	1.0		
Alvin Kendall[98]	485a	1641	Bristol, R. R. 1	found					20.7	1.0		
Climax Superphosphate	486a			guaranteed					16 0	1.0		
Charlestown Milling Co.	486a	1822	Charlestown	found					17 1	0.3		
Heldt & Voelker Co., Inc.[99]	486a	2030	Evansville	found					16 5	0 5		
Hoosier Hardware Co.	486a	2633	Paoli	found					16 7	0.3		
Half Raw Bone and Half Two-Twelve-Six	1042a			guaranteed				3 0	9.0	9.0		3.0
A. M. Bohnert & Son	1042a	2592	Jasper	found	1.68	0 97	0.35	3 0	12 0	6.6		3.4
Hopkins Old Time Steam Bone	1208a			guaranteed				3.2			22.0	
The Heldt Co.	1208a	2505	Evansville	found	1.26	2 14	0 50	3.9			23.5	
Hopkins Four Twenty-four Twelve	1225a			guaranteed				4 0	24 0	1 0		12.0
Adams & Morrow, Inc.[100]	1225a	2519	Princeton	found	3.15			**3 5**	**22 9**	0.4		12.5
C. W. Wedeking & Co.	1225a	2569	Dale	found	4.09			4 4	24.7	0 7		12.2
Hopkins Old Time Three-Twelve-Twelve	1269a			guaranteed				3.0	12 0	1.0		12.0
Ford Motor Co.	1269a	1732	Franklin	found	2.92			3.2	12 0	0 5		12 2
Hopkins Old Time 44% Superphosphate	1297a			guaranteed					44.0	1 0		
The Heldt Co.[101]	1297a	2504	Evansville	found					**42 7**	0 9		
Indiana Farm Bureau Co-operative Association, Inc., Indianapolis, Ind.												
Muriate of Potash	805a			guaranteed								50.0
Steuben County Farm Bureau Co-op. Ass'n., Inc.[102]	805a	1411	Pleasant Lake	found								53.7
Knox County Farm Bureau Co-op. Ass'n., Inc.[103]	805a	1468	Vincennes	found								52.0
Alvin Kendall[104]	805a	1631	Bristol, R. R. 1	found								52 0
Elkhart County Farm Bureau Co-op. Ass'n., Inc.	805a	1656	Goshen	found								51.8
Wayne County Farm Bureau Co-op. Ass'n., Inc.	805a	1763	Richmond	found								52.2
White County Farm Bureau Co-op. Ass'n., Inc.	805a	1898	Monticello	found								53 1
Whitley County Farm Bureau Co-op. Ass'n., Inc.	805a	2052	Columbia City	found								52.3
Farm Bureau 20. 6-0-0 Sulphate of Ammonia	806a			guaranteed				20.6				
Orange County Farm Bureau Co-op. Ass'n, Inc.[105]	806a	1220	Paoli	found				21.0				
Putnam County Farm Bureau Co-op. Ass'n, Inc.	806a	1234	Greencastle	found				20.9				
Jefferson County Farm Bureau Co-op. Ass'n, Inc.[106]	806a	1237	Madison	found				**18 9**				
Johnson County Farm Bureau Co-op. Ass'n, Inc.	806a	1286	Franklin	found				21 0				

Where 60.0 per cent or more of the total nitrogen guaranteed was found to be water soluble, the active and inactive insoluble organic nitrogen was not determined.

Percentages appearing in bold type in the "Inactive water insoluble organic" column denote inferior nitrogen.

[95] Sample received in the spring.

[96] Sample received in the spring.

[97] Distributed by The Heldt Co., Evansville, Ind.

[98] Purchased from Middlebury Grain Co., Middlebury, Ind.

[99] Distributed by The Heldt Co., Evansville, Ind.

[100] Refund $2.89.

[101] Refund $1.44.

[102] Not tagged. Labels furnished.

[103] Distributed by N. V. Potash Export My, Inc., Baltimore, Md.

[104] Not tagged. Labels furnished. Purchased from Elkhart County Farm Bureau Co-op. Ass'n, Inc., Goshen, Ind.

[105] Distributed by Ford Motor Co., Detroit, Mich.

[106] Refund $0.51.

TABLE 13. Report of Inspection of Fertilizer Collected in 1935—Continued

Labels and Names of Persons from Whom Samples were Secured	Official No.	Inspection No. L	Samples Taken at		Nitrogen (N) Water soluble as nitrates, ammonia salts and organic, per cent	Nitrogen (N) Active water insoluble organic, per cent	Nitrogen (N) Inactive water insoluble organic, per cent	Nitrogen (N) Total per cent	Phosphoric acid (P_2O_5) Soluble and reverted (available), per cent	Phosphoric acid (P_2O_5) Insoluble, per cent	Phosphoric acid (P_2O_5) Total per cent	Potash (K_2O), soluble in water, per cent
Farm Bureau 0-44-0 (44% Superphosphate)	807a			guaranteed					44.0			
Wayne County Farm Bureau Co-op. Ass'n, Inc.[107]	807a	1759	Richmond	found					41.4	0.2		
Fountain County Farm Bureau Co-op. Ass'n, Inc.[108]	807a	1888	Veedersburg	found					42.5	0.2		
Dekalb County Farm Bureau Co-op. Ass'n, Inc.	807a	2264	Auburn	found					44.9	0.1		
Wabash County Farm Bureau Co-op. Ass'n, Inc.	807a	2294	Wabash	found					44.1	1.2		
Allen County Farm Bureau Co-op. Ass'n, Inc.	807a	2393	Fort Wayne	found					45.6	0.5		
Farm Bureau 0-20-0	808a			guaranteed					20.0			
Lawrence County Farm Bureau Co-op. Ass'n, Inc.	808a	1229	Bedford	found					21.5			
Jefferson County Farm Bureau Co-op. Ass'n, Inc.[109]	808a	1245	Madison	found					20.8			
Farm Bureau Co-op. Ass'n	808a	1263	Aurora	found					20.3	0.2		
Howard County Farm Bureau Co-op. Ass'n, Inc.[110]	808a	1282	Kokomo	found					21.5			
Grant County Farm Bureau Co-op. Ass'n, Inc.	808a	1292	Marion	found					20.7	0.2		
Boone County Farm Bureau Co-op. Ass'n, Inc.	808a	1314	Lebanon	found					20.0	1.5		
Hancock County Farm Bureau Co-op. Ass'n, Inc.	808a	1332	Greenfield	found					20.0	0.6		
Wabash County Farm Bureau Co-op. Ass'n, Inc.	808a	1360	Wabash	found					20.5	0.2		
Wells County Farm Bureau Co-op. Ass'n, Inc.	808a	1390	Bluffton	found					20.8	0.6		
Parke County Farm Bureau Co-op. Ass'n, Inc.	808a	1403	Rockville	found					21.2			
Dekalb County Farm Bureau Co-op. Ass'n, Inc.	808a	1431	Auburn	found					21.2	0.1		
Allen County Farm Bureau Co-op. Ass'n, Inc.[111]	808a	1459	Fort Wayne	found					20.6	0.4		
Monroe County Farm Bureau Co-op. Ass'n, Inc.[112]	808a	1557	Bloomington	found					20.1	0.1		
Kosciusko County Farm Bureau Co-op. Ass'n, Inc.[113]	808a	1634	Warsaw	found					20.9	0.2		
Lagrange County Farm Bureau Co-op. Ass'n, Inc.[114]	808a	1654	Lagrange	found					20.4	0.5		
Lawrence County Farm Bureau Co-op. Ass'n, Inc.	808a	2097	Mitchell	found					20.9			
Miami County Farm Bureau Co-op. Ass'n, Inc.	808a	2122	Peru	found					21.1	0.4		
Lagrange County Farm Bureau Co-op. Ass'n, Inc.	808a	2193	Lagrange	found					20.6	0.7		
Kosciusko County Farm Bureau Co-op. Ass'n, Inc.	808a	2225	Warsaw	found					20.6	0.9		
Porter County Farm Bureau Co-op. Ass'n, Inc.	808a	2227	Valparaiso	found					20.0	0.7		
Porter County Farm Bureau Co-op. Ass'n, Inc.	808a	2232	Valparaiso	found					21.1	0.5		
Lake County Farm Bureau Co-op. Ass'n, Inc.	808a	2244	Crown Point	found					29.0	0.3		
LaPorte County Farm Bureau Co-op. Ass'n, Inc.	808a	2257	LaPorte	found					20.7	0.2		
Noble County Farm Bureau Co-op. Ass'n, Inc.	808a	2277	Albion	found					21.4	0.4		
Henry County Farm Bureau Co-op. Ass'n, Inc.	808a	2339	Newcastle	found					21.5	0.2		
Monroe County Farm Bureau Co-op. Ass'n, Inc.	808a	2348	Bloomington	found					21.5	0.2		
Putnam County Farm Bureau Co-op. Ass'n, Inc.	808a	2358	Greencastle	found					21.0	0.1		
Cass County Farm Bureau Co-op. Ass'n, Inc.	808a	2376	Logansport	found					21.5	0.4		
Allen County Farm Bureau Co-op. Ass'n, Inc.	808a	2392	Fort Wayne	found					21.7	0.3		

Huntington County Farm Bureau Co-op. Ass'n, Inc.	808a	2396	Huntington	found					21.5	0.6		
Tipton County Farm Bureau Co-op. Ass'n, Inc.	808a	2452	Tipton	found					21.7	0.4		
Carroll County Farm Bureau Co-op. Ass'n, Inc.	808a	2454	Delphi	found					20.8	0.4		
Howard County Farm Bureau Co-op. Ass'n, Inc.	808a	2455	Kokomo	found					21.6	0.6		
Jefferson County Farm Bureau Co-op. Ass'n, Inc.	808a	2645	Madison	found					21.6	0.2		
Farm Bureau 4-24-12	809a			guaranteed				4.0	24.0			12.0
Jefferson County Farm Bureau Co-op. Ass'n, Inc.	807a	1235	Madison	found	3.63			3.8	**23.5**	0.4		12.0
Farm Bureau Co-op. Ass'n	809a	1259	Aurora	found	3.92			4.1	24.0			12.3
Wabash County Farm Bureau Co-op. Ass'n, Inc.	809a	1367	Wabash	found	4.02			4.1	24.6	0.1		12.0
Miami County Farm Bureau Co-op. Ass'n, Inc.	809a	1375	Peru	found	4.13			4.3	**23.6**	0.3		12.7
Vigo County Farm Bureau Co-op. Ass'n, Inc.[115]	809a	1400	Terre Haute	found	3.89			4.1	25.0	0.2		12.4
Parke County Farm Bureau Co-op. Ass'n, Inc.	809a	1404	Rockville	found	3.78			4.0	25.3	0.4		**11.6**
Knox County Farm Bureau Co-op. Ass'n, Inc.	809a	1473	Vincennes	found	3.89			4.1	24.0	0.5		12.3
Farmers Co-op. Elevator	809a	1508	Selma	found	4.00			4.2	24.0	0.4		14.1
Spencer County Farm Bureau Co-op. Ass'n, Inc.	809a	1610	Chrisney	found	3.88			4.1	24.0	0.8		13.3
Kosciusko County Farm Bureau Co-op. Ass'n, Inc.[116]	809a	1635	Warsaw	found	4.23			4.4	24.2	0.1		12.2
Lagrange County Farm Bureau Co-op. Ass'n, Inc.	809a	1647	Lagrange	found	3.89			4.1	25.0	0.2		12.3
Fountain County Farm Bureau Co-op. Ass'n, Inc.	809a	1859	Veedersburg	found	3.81			4.0	24.6	0.5		12.0
Marshall County Farm Bureau Co-op. Ass'n, Inc.	809a	2145	Plymouth	found	3.78			4.0	24.6	0.1		12.1
Fulton County Farm Bureau Co-op. Ass'n, Inc.	809a	2146	Rochester	found	3.95			4.2	24.2	0.1		12.3
Steuben County Farm Bureau Co-op. Ass'n, Inc.	809a	2168	Angola	found	3.80			4.0	24.7	0.2		12.2
Marshall County Farm Bureau Co-op. Ass'n, Inc.	809a	2211	Plymouth	found	3.75			4.0	24.2	0.3		12.2
Kosciusko County Farm Bureau Co-op. Ass'n, Inc.	809a	2215	Warsaw	found	3.82			4.0	24.0	0.2		12.2
Lake County Farm Bureau Co-op. Ass'n, Inc.	809a	2246	Crown Point	found	3.85			4.1	24.1	0.4		12.5
LaPorte County Farm Bureau Co-op. Ass'n, Inc.	809a	2319	LaPorte	found	3.84			4.1	25.3	0.1		12.6
Henry County Farm Bureau Co-op. Ass'n, Inc.	809a	2336	Newcastle	found	3.72			3.9	24.3	0.3		12.5
Clay County Farm Bureau Co-op. Ass'n, Inc.	809a	2360	Clay City	found	3.95			4.2	24.6	0.1		12.4
Greene County Farm Bureau Co-op. Ass'n, Inc.	809a	2361	Linton	found	4.06			4.2	25.0	0.5		12.2
Vigo County Farm Bureau Co-op. Ass'n, Inc.	809a	2362	Terre Haute	found	3.88			4.1	25.1	0.4		12.0
Cass County Farm Bureau Co-op. Ass'n, Inc.[117]	809a	2379	Logansport	found	3.85			4.1	25.0	0.2		12.6
Allen County Farm Bureau Co-op. Ass'n, Inc.	809a	2391	Fort Wayne	found	3.90			4.1	25.1	0.3		12.5
Randolph County Farm Bureau Co-op. Ass'n, Inc.	809a	2432	Winchester	found	3.80			4.0	25.1	0.1		12.3
Howard County Farm Bureau Co-op. Ass'n, Inc	809a	2453	Kokomo	found	3.93			4.1	24.7	0.3		12.3
Johnson County Farm Bureau Co-op. Assn, Inc.	809a	2676	Franklin	found	3.81			4.0	24.9	0.3		12.2
Clinton County Farm Bureau Co-op. Ass'n, Inc.	809a	2683	Frankfort	found	3.92			4.2	25.0	0.4		12.0
Farm Bureau 0-14-6	810a			guaranteed					14.0			6.0
Farm Bureau Co-op. Ass'n	810a	1265	Aurora	found					14.5	0.4		6.2
Howard County Farm Bureau Co-op. Ass'n, Inc.	810a	1287	Kokomo	found					14.7	0.9		6.1
Hancock County Farm Bureau Co-op. Ass'n, Inc.	810a	1324	Greenfield	found					14.1	0.9		6.0
Clinton County Farm Bureau Co-op. Ass'n, Inc.	810a	1379	Frankfort	found					14.2	1.0		6.4
Parke County Farm Bureau Co-op. Ass'n, Inc.	810a	1405	Rockville	found					15.1	0.7		6.2
Steuben County Farm Bureau Co-op. Ass'n, Inc.	810a	1408	Angola	found					15.2	0.3		6.0
Dekalb County Farm Bureau Co-op. Ass'n, Inc.[118]	810a	1424	Auburn	found					14.9	0.6		6.0

Where 60.0 per cent or more of the total nitrogen guaranteed was found to be water soluble, the active and inactive insoluble organic nitrogen was not determined.
Percentages appearing in bold type in the "Inactive water insoluble organic" column denote inferior nitrogen.

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[107] Refund $5.20.
[108] Refund $1.50.
[109] Sample received in the spring.
[110] Sample received in the spring.
[111] Sample received in the spring.
[112] Sample received in the spring.
[113] Sample received in the spring.
[114] Sample received in the spring.
[115] Sample received in the spring.
[116] Sample received in the spring.
[117] Labeled as 4-24-4. Relabeled as 4-24-12.
[118] Sample received in the spring.

TABLE 13. Report of Inspection of Fertilizer Collected in 1935—Continued

Labels and Names of Persons from Whom Samples were Secured	Official No.	Inspection No. L	Samples Taken at		Nitrogen (N): Water soluble as nitrates, ammonia salts and organic, per cent	Nitrogen (N): Active water insoluble organic, per cent	Nitrogen (N): Inactive water insoluble organic, per cent	Nitrogen (N): Total per cent	Phosphoric acid (P_2O_5): Soluble and reverted (available), per cent	Phosphoric acid (P_2O_5): Insoluble, per cent	Phosphoric acid (P_2O_5): Total per cent	Potash (K_2O), soluble in water, per cent
Allen County Farm Bureau Co-op. Ass'n, Inc.	810a	1455	Fort Wayne	found					14.6	0.5		6.3
Marshall County Farm Bureau Co-op. Ass'n, Inc.[119]	810a	1546	Plymouth	found					14.5	0.4		6.7
Spencer County Farm Bureau Co-op. Ass'n, Inc.	810a	1614	Chrisney	found					14.5	1.0		6.2
Kosciusko County Farm Bureau Co-op. Ass'n, Inc.[120]	810a	1645	Warsaw	found					14.5	0.5		6.2
Marshall County Farm Bureau Co-op. Ass'n, Inc.	810a	2132	Plymouth	found					15.1	0.3		6.4
St. Joseph County Farm Bureau Co-op. Ass'n, Inc.	810a	2136	South Bend	found					14.9	0.4		7.1
Kosciusko County Farm Bureau Co-op. Ass'n, Inc.	810a	2218	Warsaw	found					14.6	0.5		6.0
Porter County Farm Bureau Co-op. Ass'n, Inc	810a	2239	Valparaiso	found					14.7	0.5		6.1
Porter County Farm Bureau Co-op. Ass'n, Inc.	810a	2243	Valparaiso	found					14.9	0.6		6.2
LaPorte County Farm Bureau Co-op. Ass'n, Inc.	810a	2255	LaPorte	found					15.1	0.2		6.5
Dekalb County Farm Bureau Co-op. Ass'n, Inc.	810a	2279	Auburn	found					14.8	0.5		6.0
Whitley County Farm Bureau Co-op. Ass'n, Inc.	810a	2285	Columbia City	found					14.0	0.2		6.0
Daviess County Farm Bureau Co-op. Ass'n, Inc.	810a	2526	Washington	found					16.0	0.3		6.2
Farm Bureau 2-12-6	811a			guaranteed				2.0	12.0			6.0
Washington County Farm Bureau Co-op. Ass'n, Inc.	811a	1215	Salem	found	1.99			2.1	12.8	1.1		6.2
Lawrence County Farm Bureau Co-op. Ass'n, Inc.	811a	1222	Bedford	found	1.88			2.1	13.4			6.3
Owen County Farm Bureau Co-op. Ass'n, Inc.	811a	1233	Spencer	found	1.99			2.1	12.3	0.7		6.1
Jefferson County Farm Bureau Co-op. Ass'n, Inc.	811a	1238	Madison	found	1.96			2.1	12.2	1.3		6.4
Farm Bureau Co-op. Ass'n	811a	1260	Aurora	found	2.04			2.2	12.3	0.7		6.6
Ripley County Farm Bureau Co-op. Ass'n, Inc.	811a	1261	Osgood	found	1.96			2.1	12.9	0.5		6.3
Howard County Farm Bureau Co-op. Ass'n, Inc.[121]	811a	1288	Kokomo	found	1.93			2.1	12.8	1.0		6.0
Grant County Farm Bureau Co-op. Ass'n, Inc.	811a	1291	Marion	found	1.96			2.1	12.4	0.5		6.2
Decatur County Co-op. Co.	811a	1329	Greensburg	found	1.93			2.1	13.1	0.1		6.4
Hancock County Farm Bureau Co-op. Ass'n, Inc.	811a	1331	Greenfield	found	1.93			2.1	13.3	0.1		6.4
Lake County Farm Bureau Co-op. Ass'n, Inc.[122]	811a	1340	Crown Point	found	2.06			2.2	12.2	0.8		6.6
Huntington County Farm Bureau Co-op. Ass'n, Inc.	811a	1364	Huntington	found	1.96			2.1	12.0	0.9		6.2
Miami County Farm Bureau Co-op. Ass'n, Inc.	811a	1374	Peru	found	2.06			2.2	12.0	1.0		7.1
Clinton County Farm Bureau Co-op. Ass'n, Inc.	811a	1381	Frankfort	found	1.90			2.1	12.7	1.6		6.3
Wells County Farm Bureau Co-op. Ass'n, Inc.	811a	1391	Bluffton	found	1.96			2.1	12.3	0.7		6.0
Parke County Farm Bureau Co-op. Ass'n, Inc.	811a	1406	Rockville	found	1.96			2.1	13.2	1.0		6.5
Steuben County Farm Bureau Co-op. Ass'n, Inc.	811a	1415	Pleasant Lake	found	1.99			2.1	12.8	0.6		6.1
Dekalb County Farm Bureau Co-op. Ass'n, Inc.[123]	811a	1425	Auburn	found	1.96			2.1	12.8	0.7		6.1
Allen County Farm Bureau Co-op. Ass'n, Inc.[124]	811a	1445	Fort Wayne	found	1.96			2.1	12.7	1.0		6.4
Knox County Farm Bureau Co-op. Ass'n, Inc.	811a	1472	Vincennes	found	1.86			2.0	12.5	1.2		6.1
Delaware County Farm Bureau Co-op. Ass'n, Inc.	811a	1510	Muncie	found	1.93			2.1	12.0	0.9		6.3
Daviess County Farm Bureau Co-op. Ass'n, Inc.[125]	811a	1564	Washington	found	1.93			2.1	12.4	1.6		6.2

Kosciusko County Farm Bureau Co-op. Ass'n, Inc.	811a	1638	Warsaw	found	1.90			2.1	12.0	1.6		6.8
Lagrange County Farm Bureau Co-op. Ass'n, Inc.	811a	1655	Lagrange	found	1.93			2.1	12.0	1.2		6.2
Sullivan County Farm Bureau Co-op. Ass'n, Inc.	811a	1858	Sullivan	found	1.90			2.1	12.3	1.4		6.0
St. Joseph County Farm Bureau Co-op. Ass'n, Inc.	811a	2149	South Bend	found	1.88			2.1	12.4	0.3		6.2
Elkhart County Farm Bureau Co-op. Ass'n, Inc.	811a	2191	Goshen	found	1.98			2.2	12.2	1.1		6.2
Porter County Farm Bureau Co-op. Ass'n, Inc.	811a	2229	Valparaiso	found	1.98			2.2	12.1	1.2		6.8
Lake County Farm Bureau Co-op. Ass'n, Inc.	811a	2247	Crown Point	found	1.78			2.0	13.0	0.9		6.6
Dekalb County Farm Bureau Co-op. Ass'n, Inc.	811a	2276	Auburn	found	1.93			2.1	12.9	0.6		6.1
Wabash County Farm Bureau Co-op. Ass'n, Inc.	811a	2299	Wabash	found	1.85			2.1	12.4	0.9		6.3
LaPorte County Farm Bureau Co-op. Ass'n, Inc.	811a	2301	LaPorte	found	1.92			2.1	12.7	0.7		6.2
Pulaski County Farm Bureau Co-op. Ass'n, Inc.	811a	2321	Winamac	found	1.78			2.0	13.2	0.5		6.4
Morgan County Farm Bureau Co-op. Ass'n, Inc.	811a	2354	Martinsville	found	1.83			2.0	12.9	0.6		6.5
Cass County Farm Bureau Co-op. Ass'n, Inc.	811a	2378	Logansport	found	1.75			2.0	13.7	0.5		6.2
Allen County Farm Bureau Co-op. Ass'n, Inc.	811a	2390	Fort Wayne	found	1.91			2.1	13.1	0.6		6.4
Carroll County Farm Bureau Co-op. Ass'n, Inc.	811a	2449	Delphi	found	1.80			2.0	12.5	1.0		6.4
Tipton County Farm Bureau Co-op. Ass'n, Inc.	811a	2450	Tipton	found	1.80			2.0	13.5	0.6		6.0
Howard County Farm Bureau Co-op. Ass'n, Inc.	811a	2451	Kokomo	found	1.88			2.1	13.2	0.8		6.2
Daviess County Farm Bureau Co-op. Ass'n, Inc.	811a	2527	Washington	found	1.89			2.0	13.7	0.3		6.3
Spencer County Farm Bureau Co-op. Ass'n, Inc.	811a	2601	Chrisney	found	1.96			2.1	13.2	0.6		6.6
Farm Bureau Service	811a	2671	Columbus	found	1.92			2.1	12.6	1.0		6.7
Farm Bureau Service	811a	2672	Columbus	found	1.86			2.0	12.0	1.0		6.5
Johnson County Farm Bureau Co-op. Ass'n, Inc.	811a	2677	Franklin	found	1.92			2.1	12.6	1.0		6.1
Fulton County Farm Bureau Co-op. Ass'n, Inc.[126]	811a	2682	Rochester	found	1.89			2.1	12.3	1.5		6.0
Farm Bureau 0-12-12	812a			guaranteed					12.0			12.0
Farm Bureau Co-op. Ass'n	812a	1262	Aurora	found					12.0	0.2		12.1
Wabash County Farm Bureau Co-op. Ass'n, Inc.[127]	812a	1358	Wabash	found					**11.2**	0.4		**10.3**
Miami County Farm Bureau Co-op. Ass'n, Inc.	812a	1377	Peru	found					13.1	0.6		12.0
Allen County Farm Bureau Co-op. Ass'n, Inc.	812a	1461	Fort Wayne	found					12.3	0.4		12.0
Marshall County Farm Bureau Co-op. Ass'n, Inc.	812a	1544	Plymouth	found					12.3	0.4		12.5
Roy Sells[128]	812a	1843	Brook, R. R. 2	found					12.5	0.4		12.3
Clay County Farm Bureau Co-op. Ass'n, Inc.	812a	1894	Brazil	found					12.0	0.5		12.0
Marshall County Farm Bureau Co-op. Ass'n, Inc.	812a	2133	Plymouth	found					12.8	0.2		12.6
Kosciusko County Farm Bureau Co-op. Ass'n, Inc.[129]	812a	2220	Warsaw	found					12.8	0.5		**10.8**
Pulaski County Farm Bureau Co-op. Ass'n, Inc.	812a	2312	Winamac	found					12.9	0.4		12.6
Farm Bureau 4-10-6	817a			guaranteed				4.0	10.0			6.0
Jefferson County Farm Bureau Co-op. Ass'n, Inc.	817a	1236	Madison	found	3.88			4.1	**11.2**	1.1		6.5
Hancock County Farm Bureau Co-op. Ass'n, Inc.	817a	1318	Greenfield	found	3.81			4.0	10.0	2.8		6.0
Knox County Farm Bureau Co-op. Ass'n, Inc.	817a	1470	Vincennes	found	3.93			4.1	10.3	1.5		6.5
Fountain County Farm Bureau Co-op. Ass'n, Inc.	817a	1887	Veedersburg	found	3.95			4.2	10.7	1.2		6.1
Jefferson County Farm Bureau Co-op. Ass'n, Inc.	817a	2068	Madison	found	3.68			3.9	11.8	0.4		6.1
Farm Bureau 2-8-16	820a			guaranteed				2.0	8.0			16.0
Parke County Farm Bureau Co-op. Ass'n, Inc.	820a	1407	Rockville	found	1.93			2.1	9.0	0.5		16.5
Knox County Farm Bureau Co-op. Ass'n, Inc.	820a	1469	Vincennes	found	1.89			2.0	9.6	0.5		16.1

Where 60.0 per cent or more of the total nitrogen guaranteed was found to water soluble, the active and inactive insoluble organic nitrogen was not determined.

Percentages appearing in bold type in the "Inactive water insoluble organic" column denote inferior nitrogen.

[119] Sample received in the spring.

[120] Sample received in the spring.

[121] Sample received in the spring.

[122] Sample received in the spring.

[123] Sample received in the spring.

[124] Sample received in the spring.

[125] Sample received in the spring.

[126] Not tagged. Labels furnished.

[127] Refund $4.25.

[128] Distributed by Newton Co. Farm Bureau Co-op. Ass'n, Inc., Brook, Ind.

[129] Refund $2.40.

TABLE 13. Report of Inspection of Fertilizer Collected in 1935—Continued

Labels and Names of Persons from Whom Samples were Secured	Official No.	Inspection No. L	Samples Taken at		Nitrogen (N)				Phosphoric acid (P_2O_5)			Potash (K_2O), soluble in water, per cent
					Water soluble as nitrates, ammonia salts and organic, per cent	Active water insoluble organic, per cent	Inactive water insoluble organic, per cent	Total per cent	Soluble and reverted (available), per cent	Insoluble, per cent	Total per cent	
Marshall County Farm Bureau Co-op. Ass'n, Inc.	820a	1545	Plymouth	found	2.02			2.1	8.1	0.4		18.1
Steuben County Farm Bureau Co-op. Ass'n, Inc.[130]	820a	1657	Angola	found	1.99			2.1	8.0	0.6		16.5
Morgan County Farm Bureau Co-op. Ass'n, Inc.	820a	1741	Martinsville	found	1.87			2.0	10.2	0.5		16.6
Steuben County Farm Bureau Co-op. Ass'n, Inc.	820a	2164	Angola	found	1.93			2.1	8.4	0.3		16.3
Farm Bureau 6-8-6	823a			guaranteed				6.0	8.0			6.0
Farm Bureau Co-op. Ass'n	823a	1266	Aurora	found	6.09			6.2	8.7	0.1		6.1
Farm Bureau 4-24-4	824a			guaranteed				4.0	24.0			4.0
Hancock County Farm Bureau Co-op. Ass'n, Inc.	824a	1320	Greenfield	found	3.58			3.8	24.6	0.3		4.3
Wabash County Farm Bureau Co-op. Ass'n, Inc.	824a	1366	Wabash	found	3.86			4.0	24.1	0.3		4.5
Miami County Farm Bureau Co-op. Ass'n, Inc.	824a	1368	Peru	found	3.99			4.1	24.1	0.4		4.1
Wayne County Farm Bureau Co-op. Ass'n, Inc.	824a	1758	Richmond	found	4.00			4.2	24.0	0.6		5.0
Dekalb County Farm Bureau Co-op. Ass'n, Inc.	824a	2260	Auburn	found	3.80			4.0	24.0	0.1		4.2
Allen County Farm Bureau Co-op. Ass'n, Inc.	824a	2394	Fort Wayne	found	3.80			4.0	24.0	0.3		4.4
Farm Bureau 0-12-8	835a			guaranteed					12.0			8.0
Huntington County Farm Bureau Co-op. Ass'n, Inc.[131]	835a	1378	Huntington	found					12.3	0.5		8.1
Steuben County Farm Bureau Co-op. Ass'n, Inc.	835a	1412	Angola	found					13.0	0.4		8.1
Wayne County Farm Bureau Co-op. Ass'n, Inc.	835a	1754	Richmond	found					12.1	0.6		8.0
Randolph County Farm Bureau Co-op. Ass'n, Inc.	835a	2435	Winchester	found					13.3	0.2		8.5
Farm Bureau 0-8-32	836a			guaranteed					8.0			32.0
Boone County Farm Bureau Co-op. Ass'n, Inc.[132]	836a	1319	Lebanon	found					9.2	1.1		29.3
Vigo County Farm Bureau Co-op. Ass'n, Inc.	836a	1398	Terre Haute	found					8.7	0.3		32.2
Kosciusko County Farm Bureau Co-op. Ass'n, Inc.	836a	1637	Warsaw	found					9.4			32.4
Farm Bureau 2-14-4	837a			guaranteed				2.0	14.0			4.0
Randolph County Farm Bureau Co-op. Ass'n, Inc.	837a	1514	Winchester	found	1.90			2.1	15.9	0.8		4.1
Porter County Farm Bureau Co-op. Ass'n, Inc.	837a	2234	Valparaiso	found	1.93			2.2	15.3	0.8		4.7
Parke County Farm Bureau Co-op. Ass'n, Inc.	837a	2373	Rockville	found	2.00			2.2	14.5	0.9		4.3
Boone County Farm Bureau Co-op. Ass'n, Inc.	837a	2406	Lebanon	found	1.85			2.1	14.6	0.3		4.7
Howard County Farm Bureau Co-op. Ass'n Inc.	837a	2456	Kokomo	found	1.85			2.1	15.2	0.6		4.2
Decatur County Co-op. Co.	837a	2555	Greensburg	found	1.99			2.2	15.4	1.5		4.6
Farm Bureau 0-10-10	840a			guaranteed					10.0			10.0
Boone County Farm Bureau Co-op. Ass'n, Inc.	840a	1312	Lebanon	found					10.5	0.2		10.5
Hancock County Farm Bureau Co-op. Ass'n, Inc.[133]	840a	1315	Greenfield	found					10.2	1.4		9.1
Steuben County Farm Bureau Co-op. Ass'n, Inc.[134]	840a	1409	Angola	found					10.4	0.3		10.3
Steuben County Farm Bureau Co-op. Ass'n, Inc.	840a	1410	Pleasant Lake	found					10.9	0.3		10.7
Allen County Farm Bureau Co-op. Ass'n, Inc.	840a	1448	Fort Wayne	found					19.5	0.5		10.3
Kosciusko County Farm Bureau Co-op. Ass'n, Inc.	840a	1639	Warsaw	found					10.1	0.3		10.3

Steuben County Farm Bureau Co-op. Ass'n, Inc.	840a	2167	Angola	found					11.4	0.3		10.1
Porter County Farm Bureau Co-op. Ass'n, Inc.	840a	2241	Valparaiso	found					10.3	0.5		10.2
Porter County Farm Bureau Co-op. Ass'n, Inc.	840a	2242	Valparaiso	found					10.2	0.5		10.0
LaPorte County Farm Bureau Co-op. Ass'n, Inc.	840a	2256	LaPorte	found					11.0	0.5		10.2
Pulaski County Farm Bureau Co-op. Ass'n, Inc.	840a	2304	Winamac	found					10.6	0.5		10.2
Jefferson County Farm Bureau Co-op. Ass'n, Inc.	840a	2644	Madison	found					11.1	0.5		10.1
Farm Bureau 0-8-24	841a			guaranteed					8.0			24.0
Boone County Farm Bureau Co-op. Ass'n, Inc.	841a	1313	Lebanon	found					8.0	0.9		24.4
Marshall County Farm Bureau Co-op. Ass'n, Inc.	841a	1533	Plymouth	found					8.1	0.3		24.0
Kosciusko County Farm Bureau Co-op. Ass'n, Inc.	841a	1632	Warsaw	found					8.6	0.3		24.3
Lagrange County Farm Bureau Co-op. Ass'n, Inc.	841a	1653	Lagrange	found					8.0	0.3		25.7
Farm Bureau 0-16-0	845a			guaranteed					16.0			
Washington County Farm Bureau Co-op. Ass'n, Inc.	845a	1216	Salem	found					16.7			
Decatur County Co-op. Co.	845a	1317	Greensburg	found					16.0	0.8		
Monroe County Farm Bureau Co-op. Ass'n, Inc.	845a	1572	Bloomington	found					17.6	0.1		
Decatur County Co-op. Co.	845a	1946	Greensburg	found					17.4	0.5		
Farm Bureau 0-20-20	846a			guaranteed					20.0			20.0
Miami County Farm Bureau Co-op. Ass'n, Inc.	846a	1369	Peru	found					19.8	0.2		20.3
Lagrange County Farm Bureau Co-op. Ass'n, Inc.	846a	1646	Lagrange	found					20.0			21.3
Fulton County Farm Bureau Co-op. Ass'n, Inc.	846a	2125	Rochester	found					**19.3**	0.1		20.0
Marshall County Farm Bureau Co-op. Ass'n, Inc.	846a	2129	Plymouth	found					20.0	0.1		20.5
LaPorte County Farm Bureau Co-op. Ass'n, Inc.	846a	2258	LaPorte	found					20.8	0.1		20.5
Pulaski County Farm Bureau Co-op. Ass'n, Inc.	846a	2317	Winamac	found					20.0	0.4		20.2
Farm Bureau 2-12-2	856a			guaranteed				2.0	12.0			2.0
Washington County Farm Bureau Co-op. Ass'n, Inc.	856a	1204	Salem	found	1.88			2.1	12.7	0.8		2.2
Ripley County Farm Bureau Co-op. Ass'n, Inc.	856a	1264	Osgood	found	1.90			2.1	12.9	0.6		2.2
Grant County Farm Bureau Co-op. Ass'n, Inc.	856a	1290	Marion	found	2.06			2.2	12.5	0.8		2.6
Decatur County Co-op. Co.	856a	1316	Greensburg	found	1.93			2.1	12.2	0.6		2.1
Hancock County Farm Bureau Co-op. Ass'n, Inc.	856a	1333	Greenfield	found	1.83			2.0	12.4	0.9		2.3
Huntington County Farm Bureau Co-op. Ass'n, Inc.	856a	1372	Huntington	found	1.79			2.1	12.0	0.8		2.3
Miami County Farm Bureau Co-op. Ass'n, Inc.[135]	856a	1376	Peru	found	1.83			2.0	12.0	1.2		2.0
Clinton County Farm Bureau Co-op. Ass'n, Inc.	856a	1383	Frankfort	found	1.96			2.1	12.0	1.0		2.3
Wells County Farm Bureau Co-op. Ass'n, Inc.	856a	1393	Bluffton	found	1.92			2.0	13.1	0.7		2.1
Dekalb County Farm Bureau Co-op. Ass'n, Inc.[136]	856a	1426	Auburn	found	1.81			2.0	12.4	0.8		2.8
Monroe County Farm Bureau Co-op. Ass'n, Inc.	856a	1578	Bloomington	found	1.90			2.1	12.2	1.1		2.1
Lagrange County Farm Bureau Co-op. Ass'n, Inc.	856a	1644	Lagrange	found	1.85			2.1	12.0	1.0		2.1
Elkhart County Farm Bureau Co-op. Ass'n, Inc.	856a	1649	Goshen	found	1.89			2.1	12.0	1.0		2.3
Hendricks County Farm Bureau Co-op. Ass'n, Inc.	856a	1747	Danville	found	1.99			2.2	12.7	0.8		2.0
Miami County Farm Bureau Co-op. Ass'n, Inc.	856a	2121	Peru	found	1.86			2.2	12.9	0.9		2.2
Porter County Farm Bureau Co-op. Ass'n, Inc.	856a	2228	Valparaiso	found	1.82			2.1	12.2	1.4		2.3
Porter County Farm Bureau Co-op. Ass'n, Inc.	856a	2233	Valparaiso	found	1.67			2.0	12.1	1.6		2.5
Dekalb County Farm Bureau Co-op. Ass'n, Inc.	856a	2263	Auburn	found	1.80			2.1	12.4	1.4		2.3
Wabash County Farm Bureau Co-op. Ass'n, Inc.	856a	2293	Wabash	found	1.69			2.0	12.0	2.0		2.2
Putnam County Farm Bureau Co-op. Ass'n, Inc.	856a	2357	Greencastle	found	1.81			2.0	13.2	0.4		2.0
Greene County Farm Bureau Co-op. Ass'n, Inc.	856a	2365	Linton	found	1.82			2.1	12.0	2.1		2.0

Where 60.0 per cent or more of the total nitrogen guaranteed was found to be water soluble, the active and inactive insoluble organic nitrogen was not determined.

Percentages appearing in bold type in the "Inactive water insoluble organic" column denote inferior nitrogen.

[130] Sample received in the spring.

[131] Not tagged. Labels furnished.

[132] Refund $2.70.

[133] Refund $0.90.

[134] Sample received in the spring.

[135] Sample received in the spring.

[136] Sample received in the spring.

TABLE 13. Report of Inspection of Fertilizer Collected in 1935—Continued

Labels and Names of Persons from Whom Samples were Secured	Official No.	Inspection No. L	Samples Taken at		Nitrogen (N)				Phosphoric acid (P_2O_5)			
					Water soluble as nitrates, ammonia salts and organic, per cent	Active water insoluble organic, per cent	Inactive water insoluble organic, per cent	Total per cent	Soluble and reverted (available), per cent	Insoluble, per cent	Total per cent	Potash (K_2O), soluble in water, per cent
Allen County Farm Bureau Co-op. Ass'n, Inc.	856a	2395	Fort Wayne	found	1.85	....	....	2.1	12.9	1.4	....	2.2
Farm Bureau Service	856a	2673	Columbus	found	1.85	....	....	2.1	12.2	1.0	....	2.2
Farm Bureau 1.6-27-0 Steamed Bone Meal	875a	....	....	guaranteed	....	....	....	1.6	....	....	27.0	....
Knox County Farm Bureau Co-op. Ass'n, Inc.	875a	1471	Vincennes	found	0.12	0.72	0.36	1.2	....	....	29.8	....
Decatur County Co-op. Co.	875a	2550	Greensburg	found	0.38	1.16	0.66	2.2	....	....	27.3	....
Farm Bureau Raw Bone	876a	....	....	guaranteed	....	....	....	3.7	....	....	20.0	....
St. Joseph County Farm Bureau Co-op. Ass'n, Inc.	876a	2134	South Bend	found	0.45	3.12	0.73	4.3	....	....	21.6	....
Decatur County Farm Bureau Co-op. Ass'n, Inc.	876a	2557	Greensburg	found	0.15	2.85	0.90	3.9	....	....	22.2	....
Farm Bureau 3-18-9	980a	....	....	guaranteed	....	....	....	3.0	18.0	....	....	9.0
Miami County Farm Bureau Co-op. Ass'n, Inc.	980a	1373	Peru	found	3.05	....	....	3.2	18.0	0.3	....	9.6
Hamilton County Farm Bureau Co-op. Ass'n, Inc.	980a	1828	Noblesville	found	2.80	....	....	3.0	18.0	1.0	....	9.1
Marshall County Farm Bureau Co-op. Ass'n, Inc.	980a	2131	Plymouth	found	2.98	....	....	3.2	18.3	0.6	....	9.3
Henry County Farm Bureau Co-op. Ass'n, Inc.[137]	980a	2338	Newcastle	found	2.93	....	....	3.1	18.9	0.2	....	9.3
Cass County Farm Bureau Co-op. Ass'n, Inc.	980a	2380	Logansport	found	2.62	....	....	2.8	19.7	0.5	....	9.9
Randolph County Farm Bureau Co-op. Ass'n, Inc.	980a	2434	Winchester	found	2.81	....	....	3.0	18.7	0.3	....	9.7
Nitrate of Soda	1114a	....	....	guaranteed	....	....	....	16.0	....	....	....	....
Jefferson County Farm Bureau Co-op. Ass'n, Inc.	1114a	1248	Madison	found	....	....	....	16.2	....	....	....	....
Howard County Farm Bureau Co-op. Ass'n, Inc.	1114a	1281	Kokomo	found	....	....	....	16.0	....	....	....	....
Tri-County Farm Bureau Co-op. Ass'n, Inc.	1114a	1624	Evansville	found	....	....	....	16.1	....	....	....	....
Elkhart County Farm Bureau Co-op. Ass'n, Inc.	1114a	1658	Goshen	found	....	....	....	16.0	....	....	....	....
Farm Bureau 1-11-4	1172a	....	....	guaranteed	....	....	....	1.0	11.0	....	....	4.0
Decatur County Co-op. Co.[138]	1172a	1948	Greensburg	found	0.82	....	....	1.0	11.3	1.0	....	4.1
Decatur County Co-op. Co.	1172a	2556	Greensburg	found	0.98	....	....	1.1	11.7	1.0	....	4.5
Farm Bureau 2-8-10	1223a	....	....	guaranteed	....	....	....	2.0	8.0	....	....	10.0
Allen County Farm Bureau Co-op. Ass'n, Inc.	1223a	1462	Fort Wayne	found	1.80	....	....	2.0	8.7	0.6	....	10.2
Morgan County Farm Bureau Co-op. Ass'n, Inc.	1223a	1746	Martinsville	found	2.02	....	....	2.1	8.2	0.6	....	10.1
Farm Bureau 0-21-9	1300a	....	....	guaranteed	....	....	....	....	21.0	....	....	9.0
Wayne County Farm Bureau Co-op. Ass'n, Inc.	1300a	1760	Richmond	found	....	....	....	....	21.0	0.3	....	10.5
Clay County Farm Bureau Co-op. Ass'n, Inc.	1300a	1896	Brazil	found	....	....	....	....	21.0	0.5	....	9.1
Indiana Farm Bureau Purchasing Department, Inc. Indianapolis, Ind.												
Farm Bureau 0-16-0	9085	....	....	guaranteed	....	....	....	....	16.0	....	....	....
Lake County Farm Bureau Co-op. Ass'n, Inc.	9085	2245	Crown Point	found	....			....	16.9	0.4	....	....
LaPorte County Farm Bureau Co-op. Ass'n, Inc.	9085	2254	LaPorte	found				....	18.1	0.5	....	....

Sulphate of Ammonia	9112			guaranteed				20.0				
Allen County Farm Bureau Co-op. Ass'n, Inc.	9112	1454	Fort Wayne	found				**19.7**				
Wayne County Farm Bureau Co-op. Ass'n, Inc.	9112	1761	Richmond	found				20 0				
Muriate of Potash	9135			guaranteed								50.0
Allen County Farm Bureau Co-op. Ass'n, Inc.[139]	9135	1448	Fort Wayne	found								50.0
Farm Bureau 2-27 Steamed Bone	9182			guaranteed				1.6			27.0	
Allen County Farm Bureau Co-op. Ass'n, Inc.	9182	1464	Fort Wayne	found	0.24	0.98	0 38	1 6			27.8	
Henry County Farm Bureau Co-op. Ass'n, Inc.	9182	1777	Newcastle	found	0.49	1.27	0 04	1.8			29.6	
Farm Bureau 3-9-18	352a			guaranteed				3.0	9.0			18.0
Lake County Farm Bureau Co-op. Ass'n, Inc.	352a	1348	Crown Point	found	2 96			3.1	**8.7**	1.0		18.1
Allen County Farm Bureau Co-op. Ass'n, Inc.[140]	352a	1460	Fort Wayne	found	3 06			3.2	10.5	0.3		**16.8**
Kosciusko County Farm Bureau Co-op. Ass'n, Inc.	352a	1636	Warsaw	found	3.06			3.2	10 0	0.2		19.4
Elkhart County Farm Bureau Co-op. Ass'n, Inc.	352a	1651	Goshen	found	2.76			2.9	9.5	0.3		**17.7**
Morgan County Farm Bureau Co-op. Ass'n, Inc.	352a	1748	Martinsville	found	3 05			3.2	8.8	0.3		18.1
Farm Bureau 4-10-6	353a			guaranteed				4.0	10.0			6.0
Kosciusko County Farm Bureau Co-op. Ass'n, Inc.	353a	1633	Warsaw	found	3.60			3.8	10.0	0.4		6.1
Farm Bureau 4-12-4	354a			guaranteed				4.0	12.0			4.0
Allen County Farm Bureau Co-op. Ass'n, Inc.	354a	1451	Fort Wayne	found	3 89			4.0	13.4	0.3		4.0
Randolph County Farm Bureau Co-op. Ass'n, Inc.	354a	1505	Winchester	found	3.89			4.0	12.1	0.5		4.3
Farm Bureau 6-8-6	356a			guaranteed				6.0	8.0			6.0
Wayne County Farm Bureau Co-op. Ass'n, Inc.	356a	1762	Richmond	found	6.48			6.6	8.0	0.4		6.0
Farm Bureau 10-6-4	357a			guaranteed				10.0	6.0			4.0
Wayne County Farm Bureau Co-op. Ass'n, Inc.	357a	1757	Richmond	found	9.80			10.0	6 7	0 2		4.0
Farm Bureau 0-24-24	359a			guaranteed					24 0			24.0
Lagrange County Farm Bureau Co-op. Ass'n, Inc.	359a	1642	Lagrange	found					24.2	0.2		24.4
Kosciusko County Farm Bureau Co-op. Ass'n, Inc.	359a	1643	Warsaw	found					24.6	0.2		24.8
Cass County Farm Bureau Co-op. Ass'n, Inc.	359a	2381	Logansport	found					**23.7**	0 2		24.8
Farm Bureau 2-10-8	687a			guaranteed				2.0	10.0			8.0
Allen County Farm Bureau Co-op. Ass'n, Inc.	687a	1447	Fort Wayne	found	1.87			2.0	11.0	0.6		8.5
Carroll County Farm Bureau Co-op. Ass'n, Inc.	687a	2419	Delphi	found	1 76			1.9	10.4	0.8		8.5
International Agricultural Corporation, Cincinnati, Ohio												
International 16% Superphosphate	7881			guaranteed					16.0	1.0		
Johnson & Burton, Inc.	7881	1217	Orleans	found					16.7	0.3		
Heise Bros. & Co.	7881	1228	Mitchell	found					16 3	0.7		
Hallawell's Feed Store	7881	2657	North Vernon	found					17.6	0.7		
International 20% Superphosphate	9040			guaranteed					20.0	1.0		
Heise Bros. & Co.	9040	1223	Mitchell	found					21.2			
Johnson & Burton, Inc.	9040	1225	Orleans	found					20.9	0.8		
International Ten-Ten	9922			guaranteed					10.0			10.0
B. I. Holser & Co.	9922	2137	Walkerton	found					10.8	0.8		10.4
International 40% Multiple Superphosphate	9923			guaranteed					40.0			
Ort & Co.[141]	9923	1423	Churubusco	found					**38.5**	1.6		
International Tomato Special 2-12-6	148a			guaranteed				2.0	12.0			6.0
Johnson & Burton, Inc.	148a	1218	Orleans	found	1 58			2.0	13.8			6.3

Where 60.0 per cent or more of the total nitrogen guaranteed was found to be water soluble, the active and inactive insoluble organic nitrogen was not determined.

Percentages appearing in bold type in the "Inactive water insoluble organic" column denote inferior nitrogen.

[137] Not tagged. Labels furnished.

[138] Sample received in the spring.

[139] Not tagged. Labels furnished.

[140] Refund $3.60.

[141] Refund $7.50. Sample to manufacturer. Used on own farm.

TABLE 13. Report of Inspection of Fertilizer Collected in 1935—Continued

Labels and Names of Persons from Whom Samples were Secured	Official No.	Inspection No. L	Samples Taken at		Nitrogen (N)				Phosphoric acid (P_2O_5)			Potash (K_2O), soluble in water, per cent
					Water soluble as nitrates, ammonia salts and organic, per cent	Active water insoluble organic, per cent	Inactive water insoluble organic, per cent	Total per cent	Soluble and reverted (available), per cent	Insoluble, per cent	Total per cent	
Irwin Feed Store & Hatchery	148a	2004	Madison	found	1.88			2.3	12.0	1.3		6.5
Farmers Co-op. Elevator Co.	148a	2668	Seymour	found	1.54			2.1	12.2	2.1		6.2
International Extra High Grade 2-12-6	149a			guaranteed				2.0	12.0			6.0
Heise Bros. & Co.	149a	1226	Mitchell	found	1.58			2.0	12.9	0.9		6.1
Hallawell's Feed Store[142]	149a	1230	North Vernon	found	1.71			2.1	12.2	1.0		6.0
Farmers Co-op. Elevator Co.[143]	149a	1705	Seymour	found	1.38			1.8	12.6	1.3		6.0
Fred H. Tripp Hardware Co.	149a	1980	North Vernon	found	1.58			2.0	12.4	1.4		6.2
G. M. Norman & Roberts	149a	2038	Bedford	found	1.45			1.9	12.3	1.4		6.1
Reynolds-Brooks Hardware Co.[141]	149a	2044	Loogootee	found	1.58			2.0	12.3	1.1		6.0
B. I. Holser & Co.	149a	2141	Walkerton	found	1.41			2.0	12.1	1.5		6.4
Conway Bros.	149a	2340	Mooreland	found	1.56			2.0	11.2	2.3		6.2
Reynolds-Brooks Hardware Co.	149a	2528	Loogootee	found	1.57			2.0	12.8	1.6		6.4
Irwin Feed Store & Hatchery	149a	2561	Madison	found	1.64			2.1	12.7	2.4		6.9
Hallawell's Feed Store	149a	2649	North Vernon	found	1.60			2.1	12.0	2.3		6.1
Brownstown Feed Exchange	149a	2665	Brownstown	found	1.64			2.1	12.8	1.0		6.3
Farmers Co-op. Elevator Co.	149a	2666	Seymour	found	1.61			2.1	12.9	1.5		6.3
Amboy Grain Co.[145]	149a	2681	Amboy	found	1.61			2.0	12.6	1.2		6.7
International Truck and Potato Special 2-8-10	150a			guaranteed				2.0	8.0			10.0
Hallawell's Feed Store[146]	150a	1232	North Vernon	found	1.59			2.0	12.0	1.0		6.5
International Ideal Wheat and Corn 2-10-4	154a			guaranteed				2.0	10.0			4.0
Farmers Co-op. Elevator Co.	154a	1728	Seymour	found	1.55			2.0	10.0	0.9		4.4
International Crop Grower 2-12-2	155a			guaranteed				2.0	12.0			2.0
Heise Bros. & Co.	155a	1227	Mitchell	found	1.55			2.0	12.9	0.1		3.9
Hallawell's Feed Store	155a	1231	North Vernon	found	1.58			2.0	12.0	0.5		2.3
B. I. Holser & Co.	155a	2140	Walkerton	found	1.54			2.1	13.1	1.0		2.9
Reynolds-Brooks Hardware Co.	155a	2529	Loogootee	found	1.54			2.1	13.6	1.3		2.9
Farmers Co-op. Elevator Co.	155a	2669	Seymour	found	1.45			2.0	12.0	1.5		2.5
Hallawell s Feed Store	155a	2675	North Vernon	found	1.54			2.1	11.9	1.8		2.3
International Alkaline 14-6	158a			guaranteed					14.0			6.0
Johnson & Burton, Inc.	158a	1224	Orleans	found					14.6			6.0
International Preferred Quality Tobacco Fertilizer (4-10-6)	906a			guaranteed				4.0	10.0			6.0
Irwin Feed Store & Hatchery	906a	2011	Madison	found	2.67			3.7	10.3	0.5		6.4
Jarecki Chemical Company (Armour Owned), Cincinnati, Ohio												
Jarecki's 4-16-4 Fertilizer	314a			guaranteed				4.0	16.0	0.5		4.0
Etna Lumber & Elevator Co.	314a	1629	Etna Green	found	3.96			4.2	16.0	0.8		4.6
Armour & Co.[147]	314a	2118	Peru	found	3.78			4.0	17.2	0.4		7.2

Joslin-Schmidt Corporation, Cincinnati, Ohio												
Square Brand 0-12-12	9451			guaranteed					12.0	1.0		12.0
Willard Fulks & Sons	9451	1298	Columbus	found					13 0	0.8		12.1
20% Superphosphate	9453			guaranteed					20.0	1.0		
Wanatah Mercantile Co.	9453	1795	Wanatah	found					20.6	1.4		
Sulphate of Ammonia	9458			guaranteed				20.5				
Jefferson County Farm Bureau Co-op. Ass'n, Inc.	9458	1269	Madison	found				20.9				
44% Superphosphate	9530			guaranteed					44.0	3.0		
Wanatah Mercantile Co.	9530	1796	Wanatah	found					**43.4**	1 9		
Square Brand 2-12-6	415a			guaranteed				2.0	12.0	0.5		6.0
Willard Fulks & Sons[148]	415a	1300	Columbus	found	1.61			2.0	12.0	0.7		6.0
Wanatah Mercantile Co.	415a	1809	Wanatah	found	1.45			1.9	12.5	1 2		**3.5**
John L. Sample	415a	2009	Madison	found	2.09			2.4	13 0	0.4		6.0
Schlemmer Feed Co.	415a	2075	Harrison, P. O., Ohio	found	1 58			2.0	12 5	1 6		6.5
Boston Grain Co.	415a	2489	Boston	found	1.64			2.1	13.1	2.1		6.3
Square Brand 2-12-2	416a			guaranteed				2.0	12.0	0.5		2.0
Wanatah Mercantile Co.[149]	416a	1794	Wanatah	found	1.55			2.0	12.1	1.2		2.7
Schlemmer Feed Co.	416a	2074	Harrison, P. O., Ohio	found	1.55			2.0	12 5	1.1		2.3
Wanatah Mercantile Co.	416a	2236	Wanatah	found	1.28			1.8	12 5	1 7		2.7
Tuxedo Feed & Supply Co.	416a	2536	Aurora	found	1.43			2.0	13.6	1.8		2.2
Fohl & Fohl	416a	2537	Cedar Grove	found	1.52			2.0	13 6	1.6		2.1
Square Brand 3-8-6	419a			guaranteed				3.0	8.0	0.5		6.0
Willard Fulks & Sons	419a	1299	Columbus	found	2.17			3.0	8 3	0.2		6.4
Wanatah Mercantile Co.	419a	1798	Wanatah	found	2.41			2.8	8 9	0.4		6.3
John L. Sample	419a	2013	Madison	found	2.38			2 8	8 4	0.6		6.2
Schlemmer Feed Co.	419a	2076	Harrison, P. O., Ohio	found	2.68			3 1	8 8	0 6		6.2
W. F. Kaiser[150]	419a	2078	Harrison, P. O., Ohio	found	2.55			3.0	8 4	0.7		6.4
Special Tobacco Fertilizer 3-8-6	420a			guaranteed				3.0	8.0	0.5		6.0
John L. Sample	420a	2012	Madison	found	2.30			3.0	9.3	0 7		6.0
Square Brand 2-8-16	579a			guaranteed				2.0	8.0	0.5		16.0
John L. Sample	579a	2010	Madison	found	1.89			2.2	8.5	0.4		16.0
Square Brand 2-10-4	1094a			guaranteed				2.0	10.0			4.0
Willard Fulks & Sons	1094a	1296	Columbus	found	0.72	0.60	0 38	**1.7**	11 0	3.8		5.3
Ground Steamed Bone	1207a			guaranteed				2.0			27.0	
Graves-Brown Hardware Co.[151]	1207a	2641	Paoli	found	0.25	1.59	0 56	2.4			27 8	
Steamed Bone Fertilizer	1274a			guaranteed				2 0			27.0	
Ben Struewing	1274a	2533	Oldenburg	found	0.56	1.27	0 37	2.2			28.3	
Special Bone Mixture	1308a			guaranteed				2.0	8.0	4.0		6.0
H. C. Rawlings[152]	1308a	1815	Dupont	found	1.52			2.0	9.8	3.0		6.2
Kentucky Fertilizer Company, Louisville, Ky.												
O. K. 16% Superphosphate	5508			guaranteed					16 0			
Home Lumber & Coal Co.	5508	2552	Waldron	found					16 9	1.8		

Where 60.0 per cent or more of the total nitrogen guaranteed was found to be water soluble, the active and inactive insoluble organic nitrogen was not determined.

Percentages appearing in bold type in the "Inactive water insoluble organic" column denote inferior nitrogen.

[142] Sample received in the spring.

[143] Sample received in the spring.

[144] Sample received in the spring.

[145] Not tagged. Labels furnished.

[146] Refund $1.75.

[147] Distributed by Armour Fertilizer Works, Chicago Heights, Ill.

[148] Refund $2.50.

[149] Sample received in the spring.

[150] Not tagged. Labels furnished.

[151] Sample drawn at Orleans, Ind.

[152] Purchased from M. B. Hudson, Paris Crossing, Ind. Not tagged. Labels furnished.

TABLE 13. Report of Inspection of Fertilizer Collected in 1935—Continued

Labels and Names of Persons from Whom Samples were Secured	Official No.	Inspection No. L	Samples Taken at		Nitrogen (N)				Phosphoric acid (P₂O₅)			Potash (K₂O), soluble in water, per cent
					Water soluble as nitrates, ammonia salts and organic, per cent	Active water insoluble organic, per cent	Inactive water insoluble organic, per cent	Total per cent	Soluble and reverted (available), per cent	Insoluble, per cent	Total per cent	
Kingsbury & Company, Inc., Indianapolis, Ind.												
D. & K. 4-24-12	939a			guaranteed				4.0	24.0			12.0
Yorktown Farmers Co-op. Elevator	939a	1520	Yorktown	found	3.90			4.1	24.3	0.4		12.5
J. A. Bertch & Son[153]	939a	1662	Liberty	found	3.76			4.0	**22.0**	1.7		14.0
Farmers Elevator Co.[154]	939a	1906	Monticello	found	3.78			4.0	**23.3**	1.5		**11.5**
Boone Grove Grain Co.	939a	2240	Boone Grove	found	3.78			4.0	24.1	1.2		11.8
Goodrich Bros. Co.	939a	2408	Westfield	found	3.78			4.0	24.1	1.2		14.0
D. & K. 3-9-18	940a			guaranteed				3.0	9.0			18.0
Rochester Co-op. Elevator Co.[155]	940a	1560	Rochester	found	2.07			**2.6**	**8.6**	1.2		19.9
D. & K. 2-12-6	942a			guaranteed				2.0	12.0			6.0
Uhl-Snider Milling Co.[156]	942a	1321	Connersville	found	1.61			2.0	12.1	0.7		6.0
Lake & Reagan	942a	1382	Colfax	found	1.65			2.1	**11.6**	1.5		6.5
Caar Canning Co.	942a	1502	Redkey	found	1.79			2.2	12.0	1.1		6.4
Butterfield Canning Co.	942a	1512	Muncie	found	1.68			2.1	12.0	1.5		6.1
Rochester Co-op. Elevator Co.	942a	1523	Rochester	found	1.31			**1.7**	12.3	1.4		6.4
Bloomfield Mill & Elevator Co.	942a	1569	Bloomfield	found	1.53			2.0	12.0	1.3		6.1
J. A. Bertch & Son	942a	1756	Liberty	found	1.68			2.1	12.0	1.3		6.4
Farmers Co-op. Co.	942a	1766	Centerville	found	1.76			2.2	12.0	1.4		6.0
Greenfield Packing Co.	942a	1779	Greenfield	found	1.62			2.1	12.1	1.1		6.2
W. S. Wisehart[157]	942a	1783	Millville	found	1.72			2.0	12.0	0.9		6.0
Farmers Co-op. Co.	942a	1811	Wolcott	found	1.45			1.9	12.4	1.4		5.8
Goodrich Bros. Co.	942a	1819	Westfield	found	1.52			2.0	**11.6**	1.7		6.0
Fishers Grain Co., Inc.	942a	1820	Fishers	found	1.68			2.1	**11.5**	1.4		6.0
Lafayette Co-op. Elevator Co.[158]	942a	1829	Lafayette	found	1.65			2.1	12.0	1.4		**5.0**
Rich Grain Co.	942a	1853	Otterbein	found	1.52			2.0	12.0	1.2		6.0
Camden Elevator Co.[159]	942a	1870	Camden	found	1.48			1.9	**10.7**	1.5		6.0
W. C. Smock & Co.	942a	1876	Burrows	found	2.10			2.1	**11.7**	1.5		6.0
Farmers Elevator Co.	942a	1897	Monticello	found	1.45			1.9	14.5	0.1		6.5
Reynolds-Brooks Hardware Co.[160]	942a	2041	Loogootee	found	1.30			**1.7**	13.1	1.6		**4.9**
Knightstown Packing Co.	942a	2067	Knightstown	found	1.70			2.2	**11.5**	1.4		6.4
Knecht Milling Co.	942a	2162	Hartford City	found	1.52			1.8	15.0	1.1		6.1
Lima Elevator Co.	942a	2190	Howe	found	1.38			1.8	12.7	1.6		6.1
Silver Lake Elevator[161]	942a	2226	Silver Lake	found	1.98			2.4	12.0	1.5		6.0
Silver Lake Elevator	942a	2295	Silver Lake	found	1.91			2.4	13.4	0.2		**5.5**
Harry Hall	942a	2334	Noblesville	found	1.53			2.0	13.7	1.4		6.0
W. S. Wisehart	942a	2341	Millville	found	1.70			2.0	12.9	1.3		6.0

L. G. Pope[162]	942a	2346	Greenfield, R. R. 5	found	1.75			2.1	12.4	1.4		6.5
Logansport Elevator Co.	942a	2382	Logansport	found	1.86			2.3	13.2	1.3		6.0
Goodrich Bros. Co.	942a	2400	Gadsden	found	1.76			2.1	12.8	1.6		6.3
Farmers Grain & Coal Co.	942a	2460	Frankton	found	1.82			2.1	12.6	1.4		6.5
Uhl-Snider Milling Co.	942a	2486	Connersville	found	2.06			2.1	12.3	1.6		6.0
D. & K. 2-12-2	943a			guaranteed				2.0	12.0			2.0
Beach & Simmers	943a	1500	Albany	found	1.50			2.0	12.0	1.3		2.0
Goodrich Bros. Co.[163]	943a	1515	Winchester	found	1.61			2.0	12.0	1.3		2.9
Chesterfield Grain Co.	943a	1519	Chesterfield	found	1.73			2.2	12.0	1.0		2.4
Bloomfield Mill & Elevator	943a	1581	Bloomfield	found	1.40			1.8	12.4	1.3		2.4
J. A. Bertch & Son	943a	1755	Liberty	found	1.65			2.1	12.0	1.4		2.4
W. S. Wisehart	943a	1778	Millville	found	1 58			2.2	**11.3**	1.3		2.1
Fishers Grain Co., Inc.	943a	1827	Fishers	found	1.55			2.0	12.0	1.3		2.0
Rich Grain Co.	943a	1854	Otterbein	found	1.61			2.0	12.5	0.5		2.0
Hiram Jones	943a	1857	West Lebanon	found	1.82			2.3	12.0	1.2		2.0
Reynolds-Brooks Hardware Co.	943a	2015	Loogootee	found	1.61			2.1	12.0	1.5		2.3
Appleby Feed Co.[161]	943a	2065	Cloverdale	found	1.67			2.2	**11.4**	1.4		2 1
Appleby Feed Co.	943a	2092	Cloverdale	found	1.51			1.9	18.1	1.5		2.2
Knecht Milling Co.	943a	2163	Hartford City	found	1.52			2.0	13.7	1.8		2.0
Boone Grove Grain Co.	943a	2238	Boone Grove	found	1.61			2.0	12.9	1.8		2.0
King Elevator Co.	943a	2298	Wabash	found	1.91			2.4	12.2	1.5		2.1
Chalmers Grain Co.	943a	2326	Chalmers	found	1.68			2.1	13.6	1.7		2 1
Bluffton Milling Co.	943a	2426	Bluffton	found	1.85			2.3	12.8	1.8		2.4
Goodrich Bros. Co.	943a	2430	Winchester	found	1.58			2.0	13.0	2.0		2.5
Uhl-Snider Milling Co.	943a	2490	Connersville	found	1.54			2.0	13.6	2.1		2.3
D. & K. 2-8-16	944a			guaranteed				2.0	8.0			16.0
J. G. Brown & Sons	944a	1356	Monon	found	1.71			2.1	8.0	0.8		16.4
Butterfield Canning Co.	944a	1516	Muncie	found	1.64			2.0	8.3	0.5		16.4
Kingsbury & Co.[165]	944a	2053	Peru	found	1.29			**1.5**	9.7	1.0		**14 6**
D. & K. 0-20-20	947a			guaranteed					20.0			20 0
Rochester Co-op. Elevator Co.	947a	1536	Rochester	found					20.0	0.6		22 5
Evans & Hedworth	947a	1818	Remington	found					20.0	1.0		20 2
Kingsbury & Co.	947a	2058	Peru	found					20.0	0.9		21.3
Corunna Feed Mill	947a	2273	Corunna	found					20.5	0.8		**19 3**
D. & K. 0-12-12	948a			guaranteed					12.0			12.0
J. G. Brown & Sons	948a	1357	Monon	found					12.3	0.4		12.7
Rochester Co-op. Elevator Co.[166]	948a	1559	Rochester	found					16.0	1.2		**10.1**
Greenfield Packing Co.	948a	1787	Greenfield	found					12.6	0.5		12.0
Evans & Hedworth	948a	1817	Remington	found					12 0	0.7		12.2
Farmers Co-op. Elevator Co.	948a	1833	Lafayette	found					12.7	0.8		12.0
Bunker Hill Elevator Co.	948a	1883	Bunker Hill	found					12.9	1 3		12 0
Farmers Elevator Co.	948a	1908	Monticello	found					12.4	0.7		**11 5**

Where 60.0 per cent or more of the total nitrogen guaranteed was found to water soluble, the active and inactive insoluble organic nitrogen was not determined.

Percentages appearing in bold type in the "Inactive water insoluble organic" column denote inferior nitrogen.

[153] Refund $2.50.

[154] Refund $6.00. Sample to manufacturer.

[155] Refund $1.20.

[156] Sample received in the spring.

[157] Sample received in the spring.

[158] Refund $2.00.

[159] Refund $3.90.

[160] Refund $17.00. Sample to manufacturer.

[161] Distributed by Clay Syler, North Manchester, Ind.

[162] Purchased from Maxwell Grain Co., Maxwell, Ind.

[163] Sample received in the spring.

[164] Sample received in the spring.

[165] Refund $28.80. Sample to manufacturer.

[166] Refund $3.80. Sample to manufacturer.

TABLE 13. Report of Inspection of Fertilizer Collected in 1935—Continued

Labels and Names of Persons from Whom Samples were Secured	Official No.	Inspection No. L	Samples Taken at		Nitrogen (N)				Phosphoric acid (P_2O_5)			Potash (K_2O), soluble in water, per cent
					Water soluble as nitrates, ammonia salts and organic, per cent	Active water insoluble organic, per cent	Inactive water insoluble organic, per cent	Total per cent	Soluble and reverted (available), per cent	Insoluble, per cent	Total per cent	
Chalmers Grain Co.[167]	948a	1911	Chalmers	found	.....	.....	.....	.....	**11.6**	1.1	.....	12.0
Kemp Bros. Packing Co.	948a	1916	Kempton	found	.....	.....	.....	.....	12.1	0.6	.....	12.2
Kingsbury & Co., Inc.	948a	2054	Indianapolis	found	.....	.....	.....	.....	12.0	1.0	.....	12.0
Chalmers Grain Co.	948a	2323	Chalmers	found	.....	.....	.....	.....	12.9	0.9	.....	12.6
D. & K. 0-10-10	949a	.....	.....	guaranteed	.....	.....	.....	.....	10.0	.....	.....	10.0
J. G. Brown & Sons	949a	1354	Monon	found	.....	.....	.....	.....	10.0	0.3	.....	10.0
Rochester Co-op. Elevator Co.	949a	1558	Rochester	found	.....	.....	.....	.....	10.2	0.5	.....	10.0
J. A. Bertch & Son	949a	1661	Liberty	found	.....	.....	.....	.....	10.4	0.5	.....	10.2
Evans & Hedworth	949a	1810	Remington	found	.....	.....	.....	.....	10.5	0.4	.....	10.2
Farmers Elevator Co.	949a	1904	Monticello	found	.....	.....	.....	.....	10.6	0.4	.....	10.2
Knightstown Packing Co.	949a	2079	Knightstown	found	.....	.....	.....	.....	10.4	0.6	.....	**9.7**
Boone Grove Grain Co.[168]	949a	2231	Boone Grove	found	.....	.....	.....	.....	**8.7**	0.6	.....	10.1
D. & K. 0-14-6	950a	.....	.....	guaranteed	.....	.....	.....	.....	14.0	.....	.....	6.0
Goodrich Bros. Co.	950a	1513	Farmland	found	.....	.....	.....	.....	14.0	0.6	.....	8.1
J. A. Bertch & Son[169]	950a	1660	Liberty	found	.....	.....	.....	.....	**12.3**	1.3	.....	7.3
Evans & Hedworth	950a	1813	Remington	found	.....	.....	.....	.....	14.0	1.3	.....	6.4
Goodrich Bros. Co.	950a	2431	Winchester	found	.....	.....	.....	.....	14.4	1.2	.....	6.5
Uhl-Snider Milling Co.	950a	2480	Connersville	found	.....	.....	.....	.....	14.6	1.7	.....	6.9
D. & K. 0-8-24	951a	.....	.....	guaranteed	.....	.....	.....	.....	8.0	.....	.....	24.0
J. G. Brown & Son	951a	1353	Monon	found	.....	.....	.....	.....	8.0	0.2	.....	25.5
Rochester Co-op. Elevator Co.[170]	951a	1528	Rochester	found	.....	.....	.....	.....	8.4	0.4	.....	**23.2**
Farmers Elevator Co.	951a	1901	Monticello	found	.....	.....	.....	.....	8.1	0.6	.....	24.9
Kingsbury & Co.	951a	2055	Peru	found	.....	.....	.....	.....	8.4	0.6	.....	24.0
D. & K. 0-16-0	953a	.....	.....	guaranteed	.....	.....	.....	.....	16.0	.....	.....	.....
Reynolds-Brooks Hardware Co.	953a	2040	Loogootee	found	.....	.....	.....	.....	16.8	1.2	.....	.....
Goodrich Bros. Co.	953a	2402	Westfield	found	.....	.....	.....	.....	17.8	1.6	.....	.....
Goodrich Bros. Co.	953a	2436	Winchester	found	.....	.....	.....	.....	17.8	1.4	.....	.....
Boston Grain Co.	953a	2485	Boston	found	.....	.....	.....	.....	16.0	1.6	.....	.....
D. & K. 4-10-6	1017a	.....	.....	guaranteed	.....	.....	.....	4.0	10.0	.....	.....	6.0
Caar Canning Co.	1017a	1504	Red Key	found	3.69	.....	.....	4.0	10.1	1.2	.....	6.1
Farmers Co-op. Elevator	1017a	1518	Yorktown	found	3.82	.....	.....	4.1	10.1	1.1	.....	6.1
J. A. Bertch & Son	1017a	1659	Liberty	found	3.61	.....	.....	4.0	10.1	0.8	.....	6.5
Greenfield Packing Co.	1017a	1773	Greenfield	found	3.74	.....	.....	4.1	10.1	1.2	.....	6.8
Boone Grove Grain Co.	1017a	2230	Boone Grove	found	3.27	.....	.....	3.9	10.0	1.2	.....	6.0
D. & K. 3-18-9	1021a	.....	.....	guaranteed	.....	.....	.....	3.0	18.0	.....	.....	9.0
Greenfield Packing Co.	1021a	1788	Greenfield	found	2.74	.....	.....	3.1	**17.5**	1.5	.....	9.1

Thorpe Grove[171]	1021a	1912	Scircleville	found	2.71			3.1	**17.4**	1.3		9.7
D. & K. 3-15-12	1022a			guaranteed				3.0	15.0			12.0
Sunlight Dairy Farm[172]	1022a	1734	Greenwood	found	2.65			3.1	**14.3**	1.3		12.9
Greenfield Packing Co.	1022a	1782	Greenfield	found	2.62			3.0	15.1	1.5		12.1
D. & K. 0-20-0	1023a			guaranteed					20.0			
Goodrich Bros. Co.	1023a	1506	Winchester	found					20.6	2.0		
Fishers Grain Co., Inc.	1023a	1821	Fishers	found					**19.5**	2.1		
W. C. Smock & Co.	1023a	1881	Burrows	found					**19.3**	1.5		
Boone Grove Grain Co.	1023a	2235	Boone Grove	found					20.5	2.1		
King Elevator Co.	1023a	2292	Wabash	found					22.4	0.2		
Goodrich Bros. Co.	1023a	2403	Westfield	found					21.5	1.5		
Goodrich Bros. Co.	1023a	2420	Winchester	found					20.5	2.3		
D. & K. 2-16-8	1026a			guaranteed				2.0	16.0			8.0
The Greenfield Packing Co.	1026a	1785	Greenfield	found	1.61			2.0	16.3	1.2		**7.7**
D. & K. 4-24-4	1030a			guaranteed				4.0	24.0			4.0
J. A. Bertch & Son[173]	1030a	1753	Liberty	found	3.28			**3.5**	23.8	1.3		4.6
Farmers Co-op. Co.	1030a	1765	Centerville	found	3.68			3.9	**23.5**	1.6		4.2
J. A. Bertch & Son	1030a	2482	Liberty	found	3.78			4.0	25.3	2.3		4.0
D. & K. 1-10-5	1055a			guaranteed				1.0	10.0			5.0
Uhl-Snider Milling Co.	1055a	1327	Connersville	found	0.76			1.1	12.1	0.7		5.1
D. & K. 2-12-12	1226a			guaranteed				2.0	12.0			12.0
Goodrich Bros. Co.[171]	1226a	2399	Westfield	found	1.49			1.8	12.0	1.4		**10.5**
D. & K. 4-16-4	1229a			guaranteed				4.0	16.0			4.0
Kemp Bros.[175]	1229a	1380	Frankfort	found	3.88			4.3	**14.9**	1.5		4.0
Bunker Hill Elevator Co.	1229a	1867	Bunker Hill	found	3.75			4.1	**15.6**	1.4		4.6
D. & K. 3-12-12	1400a			guaranteed				3.0	12.0			12.0
Bradford Wheatcraft & J. W. McCartney[176]	1400a	1731	Greenwood	found	2.45			3.1	12.0	1.3		12.4
S. L. Gunkle[177]	1400a	1915	Tipton, R. R. 3	found	2.46			3.0	**11.4**	0.9		12.8
D. & K. 1-11-4	1458a			guaranteed				1.0	11.0			4.0
Farmers Co-op. Co.	1458a	1768	Centerville	found	0.81			1.2	12.0	1.1		4.1
D. & K. 0-28-12	1459a			guaranteed					28.0			12.0
Farmers Co-op. Co.	1459a	1764	Centerville	found					**27.0**	0.8		**11.3**
Kova Fertilizer Corporation, The, Greensburg, Ind.												
Kova Fertilizer 4-24-12	1408a			guaranteed				4.0	24.0			12.0
The Kova Fertilizer Corp.[178]	1408a	1939	Greensburg	found	3.95			4.2	24.7	1.6		**6.8**
Kova Fertilizer 2-12-6	1409a			guaranteed				2.0	12.0			6.0
The Kova Fertilizer Corp.[179]	1409a	1680	Greensburg	found	1.49			2.0	13.0	0.8		6.9
The Kova Fertilizer Corp.[180]	1409a	1938	Greensburg	found	1.51			2.2	12.4	0.7		6.3
Ben Struewing	1409a	2534	Oldenburg	found	1.75			2.5	13.3	0.9		**5.7**

Where 60.0 per cent or more of the total nitrogen guaranteed was found to be water soluble, the active and inactive insoluble organic nitrogen was not determined.

Percentages appearing in bold type in the "Inactive water insoluble organic" column denote inferior nitrogen.

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[167] Sample received in the spring.
[168] Refund $2.60.
[169] Refund $1.28. Sample to manufacturer.
[170] Refund $0.40.
[171] Sample secured from Indiana Grain Producers, Inc., Scircleville, Ind.
[172] Purchased from Stokely Bros., Greenwood, Ind.
[173] Refund $2.25. Sample to manufacturer. Sample received in the spring.
[174] Refund $1.50.
[175] Refund $2.20.
[176] Purchased from Stokely & Co., Greenwood, Ind.
[177] Purchased from Stokely Bros., Tipton, Ind.
[178] Refund $10.40.
[179] Sample received in the spring.
[180] Sample received in the spring.

TABLE 13. Report of Inspection of Fertilizer Collected in 1935—Continued

Labels and Names of Persons from Whom Samples were Secured	Official No.	Inspection No. L	Samples Taken at		Nitrogen (N)				Phosphoric acid (P_2O_5)			Potash (K_2O), soluble in water, per cent
					Water soluble as nitrates, ammonia salts and organic, per cent	Active water insoluble organic, per cent	Inactive water insoluble organic, per cent	Total per cent	Soluble and reverted (available), per cent	Insoluble, per cent	Total per cent	
The Kova Fertilizer Corp.	1409a	2553	Greensburg	found	1.58			1.9	14.1	1.0		6.1
The Kova Fertilizer Corp.	1409a	2554	Greensburg	found	1.55			1.9	13.8	1.0		6.0
Kova Fertilizer 2-12-2	1410a			guaranteed				2.0	12.0			2.0
The Kova Fertilizer Corp.[181]	1410a	1936	Greensburg	found	1.53			2.2	**11.7**	0.5		4.2
The Kova Fertilizer Corp.	1410a	2539	Greensburg	found	1.89			2.3	13.2	0.8		2.4
Kova Fertilizer 2-8-10	1411a			guaranteed				2.0	8.0			10.0
The Kova Fertilizer Corp.	1411a	1935	Greensburg	found	1.45			2.1	8.8	0.3		11.1
Kova Fertilizer 1-11-5	1412a			guaranteed				1.0	11.0			5.0
The Kova Fertilizer Corp.[182]	1412a	1937	Greensburg	found	0.80			1.3	11.7	0.5		5.0
The Kova Fertilizer Corp.	1412a	2546	Greensburg	found	0.75			1.1	12.7	0.7		5.2
Kova Fertilizer 0-20-20	1413a			guaranteed					20.0			20.0
The Kova Fertilizer Corp.	1413a	1682	Greensburg	found					**19.7**	1.4		20.9
Kova Fertilizer 0-14-6	1414a			guaranteed					14.0			6.0
The Kova Fertilizer Corp.[183]	1414a	1942	Greensburg	found					14.8	0.6		6.1
The Kova Fertilizer Corp.	1414a	2547	Greensburg	found					16.0	0.5		6.1
Kova Fertilizer 0-10-10	1415a			guaranteed					10.0			10.0
The Kova Fertilizer Corp.[184]	1415a	1941	Greensburg	found					10.0	0.4		12.7
Ben Struewing	1415a	2535	Oldenburg	found					11.1	0.9		10.7
The Kova Fertilizer Corp.	1415a	2551	Greensburg	found					13.1	1.1		10.2
Kova Fertilizer 0-16-0	1416a			guaranteed					16.0			
The Kova Fertilizer Corp.[185]	1416a	1679	Greensburg	found					17.3	0.3		
The Kova Fertilizer Corp.	1416a	2560	Greensburg	found					18.1	0.5		
Kova Fertilizer 2-8-4	1461a			guaranteed				2.0	8.0			4.0
The Kova Fertilizer Corp.	1461a	1955	Greensburg	found	1.42			2.2	9.3	0.5		6.3
Kova Fertilizer 2-8-5	1462a			guaranteed				2.0	8.0			5.0
The Kova Fertilizer Corp.	1462a	1954	Greensburg	found	1.63			2.3	9.1	0.5		5.0
Long Company, The J. K., Versailles, Ohio												
Wonder Growth	713a			guaranteed				2.5	0.5			5.0
Warren Huckleberry[186]	713a	2088	North Vernon	found	1.16	0.51	**1.33**	3.0			0.6	5.9
McCarty Seed Company, J. A., Evansville, Ind.												
Lucky Jim 0-10-10	965a			guaranteed					10.0			10.0
J. A. McCarty Seed Co.	965a	2564	Evansville	found					10.0	1.4		10.1
Lucky Jim 2-8-16	966a			guaranteed				2.0	8.0			16.0
J. A. McCarty Seed Co.[187]	966a	1575	Evansville	found	2.05			2.4	8.1	1.7		17.0

J. A. McCarty Seed Co.[188]	966a	2029	Evansville	found	2.19			2.5	8.2	1.4		16.2
J. A. McCarty Seed Co.	966a	2565	Evansville	found	1.87			2.5	9.6	1.6		16.3
Lucky Jim 2-12-2	968a			guaranteed				2.0	12.0			2.0
J. A. McCarty Seed Co.	968a	2568	Evansville	found	1.84			2.4	12.0	2.0		2.1
Lucky Jim 16% Superphosphate	969a			guaranteed					16.0			
J. A. McCarty Seed Co.[189]	969a	1625	Evansville	found					**14.9**	3.5		
J. A. McCarty Seed Co.	969a	2511	Evansville	found					17.3	0.6		
Lucky Jim 20% Superphosphate	970a			guaranteed					20.0			
J. A. McCarty Seed Co.[190]	970a	1623	Evansville	found					20.0	2.5		
J. A. McCarty Seed Co.[191]	970a	2509	Evansville	found					**19.1**	2.0		
Lucky Jim 2-12-6	973a			guaranteed				2.0	12.0			6.0
J. A. McCarty Seed Co.[192]	973a	1562	Evansville	found	2.10			2.6	**9.5**	1.5		6.5
R. C. Kell	973a	2512	Oakland City	found	2.36			2.5	12.4	1.4		6.2
J. A. McCarty Seed Co.	973a	2517	Evansville	found	1.94			2.5	13.2	0.3		6.2
Lucky Jim Plant Food 6-8-4	974a			guaranteed				6.0	8.0			4.0
J. A. McCarty Seed Co.	974a	1627	Evansville	found	6.30			6.4	8.5	0.8		4.5
Lucky Jim 2-8-10	1083a			guaranteed				2.0	8.0			10.0
J. A. McCarty Seed Co.	1083a	1561	Evansville	found	1.90			2.4	9.0	2.4		10.0
J. A. McCarty Seed Co.	1083a	2031	Evansville	found	1.96			2.3	8.0	1.7		10.4
Lucky Jim 0-12-6	1239a			guaranteed					12.0			6.0
J. A. McCarty Seed Co.	1239a	2510	Evansville	found					12.0	1.9		6.0
Lucky Jim Steamed Bone Meal	1510a			guaranteed				2.0			27.0	
J. A. McCarty Seed Co.	1510a	2563	Evansville	found	0.77	1.09	0.34	2.2			28.8	
Morgan Packing Company, Austin, Ind.												
Morgan's 20%	1321a			guaranteed					20.0			
Morgan Packing Co.[193]	1321a	1726	Edinburg	found					21.9	0.6		
Morgan Packing Co.[194]	1321a	1727	Columbus	found					22.4	0.6		
Morgan Packing Co.	1321a	1988	Scottsburg	found					21.7	0.6		
Morgan Packing Co.	1321a	1990	Austin	found					21.4	0.6		
Morgan's 2-12-6	1322a			guaranteed				2.0	12.0			6.0
Morgan Packing Co.[195]	1322a	1725	Columbus	found	1.85			2.1	12.8	0.8		**5.7**
Morgan's 3-12-12	1323a			guaranteed				3.0	12.0			12.0
Morgan Packing Co.[196]	1323a	1723	Columbus	found	2.44			3.0	12.0	0.4		12.0
Morgan Packing Co.[197]	1323a	1724	Edinburg	found	2.44			3.0	12.2	0.4		12.0
Morgan's 0-10-10	1329a			guaranteed					10.0			10.0
Morgan Packing Co.[198]	1329a	1715	Columbus	found					10.0	0.4		10.4
Morgan Packing Co.[199]	1329a	1716	Edinburg	found					10.3	0.5		10.4

Where 60.0 per cent or more of the total nitrogen guaranteed was found to be water soluble, the active and inactive insoluble organic nitrogen was not determined.
Percentages appearing in bold type in the "Inactive water insoluble organic" column denote inferior nitrogen.

[181] Sample received in the spring.
[182] Sample received in the spring.
[183] Sample received in the spring.
[184] Sample received in the spring.
[185] Sample received in the spring.
[186] Not tagged. Labels furnished.
[187] Sample received in the spring.
[188] Sample received in the spring.
[189] Refund $3.30. Sample received in the spring.
[190] Sample received in the spring.
[191] Refund $1.56.
[192] Refund $7.50. Sample received in the spring.
[193] Distributed by The Buhner Fertilizer Co., Seymour, Ind.
[194] Distributed by The Buhner Fertilizer Co., Seymour, Ind.
[195] Distributed by The Buhner Fertilizer Co., Seymour, Ind.
[196] Distributed by The Buhner Fertilizer Co., Seymour, Ind.
[197] Distributed by The Buhner Fertilizer Co., Seymour, Ind.
[198] Distributed by The Buhner Fertilizer Co., Seymour, Ind.
[199] Distributed by The Buhner Fertilizer Co., Seymour, Ind.

TABLE 13. Report of Inspection of Fertilizer Collected in 1935—Continued

Labels and Names of Persons from Whom Samples were Secured	Official No.	Inspection No. L	Samples Taken at		Nitrogen (N)				Phosphoric acid (P₂O₅)			Potash (K₂O), soluble in water, per cent
					Water soluble as nitrates, ammonia salts and organic, per cent	Active water insoluble organic, per cent	Inactive water insoluble organic, per cent	Total per cent	Soluble and reverted (available), per cent	Insoluble, per cent	Total per cent	
Morgan Packing Co.	1329a	1986	Austin	found					10.0	0.5		10.4
Morgan Packing Co.	1329a	1987	Scottsburg	found					10.1	0.4		10.0
Natural Products, Inc., Indianapolis, Ind.												
Indiana 2-12-2	1244a			guaranteed				2.0	12.0			2.0
Natural Products, Inc.[200]	1244a	2427	Daleville	found	0.21	0.72	**0.97**	1.9	11.1	0.3		2.3
Indiana 2-12-6	1245a			guaranteed				2.0	12.0			6.0
Natural Products, Inc.[201]	1245a	2428	Daleville	found	0.18	0.59	**0.73**	1.5	13.8	0.4		6.9
1-11-5	1508a			guaranteed				1.0	11.0			5.0
Natural Products, Inc.[202]	1508a	2429	Daleville	found	0.01	0.71	**0.78**	1.5	11.3	0.1		5.4
Norris Fertilizer Company, The, Rushville, Ind.												
Norris' 16% Superphosphate	8930			guaranteed					16.0			
The Norris Fertilizer Co.	8930	1663	Rushville	found					16.0	1.8		
L. E. Fisher	8930	2462	Greensburg	found					18.2	2.3		
Norris' High Quality 0-10-10	9063			guaranteed					10.0			10.0
Alloys Meyers	9063	1944	Rushville, R. R. 1	found					10.5	1.0		12.8
Norris' Corn and Wheat Special 1-12-2	514a			guaranteed				1.0	12.0			2.0
The Norris Fertilizer Co.	514a	1666	Rushville	found	0.89			1.2	13.2	1.6		2.0
Norris' Grain Grower	516a			guaranteed				1.0	11.0			5.0
The Norris Fertilizer Co.	516a	1665	Rushville	found	0.84			1.1	12.8	1.6		5.4
Alloys Meyers	516a	1931	Rushville, R. R. 1	found	0.85			1.1	11.9	0.5		5.0
Joe Schneider	516a	2478	Brookville	found	0.77			1.1	12.4	1.3		5.0
Norris' High Quality 2-12-6	522a			guaranteed				2.0	12.0			6.0
Farmers Feed Exchange	522a	1295	Holton	found	1.73			2.0	12.3	0.2		6.4
Clyde Wagner	522a	1670	Lewisville, R. R. 1	found	1.59			1.9	13.1	1.2		6.5
Roach Indiana Corp.[203]	522a	1943	Gwynneville	found	1.72			2.0	12.0	1.4		6.0
Long Bros.[204]	522a	2463	Franklin	found	1.47			1.8	12.6	1.2		7.0
John Painter[205]	522a	2465	Springport	found	1.55			2.0	12.4	0.9		7.1
Norris' High Quality 2-12-2	523a			guaranteed				2.0	12.0			2.0
Farmers Feed Exchange	523a	1297	Holton	found	1.69			2.0	12.0	0.4		2.1
The Norris Fertilizer Co.	523a	1664	Rushville	found	1.66			2.0	13.1	1.5		3.2
Alloys Meyers	523a	1932	Rushville, R. R. 1	found	1.75			2.0	13.5	1.0		2.0
L. R. Bardonner	523a	2479	New Palestine, R. R. 1	found	1.74			2.1	13.0	1.2		2.9
Norris' High Quality 0-14-6	525a			guaranteed					14.0			6.0
The Norris Fertilizer Co.	525a	1668	Rushville	found					14.0	1.4		5.1

Hagerstown Grain Co.	525a	1774	Hagerstown	found					14.0	1.3		**5.6**
Alloys Meyers	525a	1933	Rushville, R. R. 1	found					14.3	1.5		6.7
Norris' Corn and Wheat Grower 1-12-4	526a			guaranteed				1.0	12.0			4.0
L. R. Bardonner[206]	526a	2466	New Palestine, R. R. 1	found	0.69			1.0	12.5	1.3		4.2
Norris' High Quality 2-12-8	748a			guaranteed				2.0	12.0			8.0
Joe Schneider[207]	748a	2464	Brookville	found	1.54			1.9	13.0	1.0		8.0
Norris' High Quality 44% Superphosphate	1469a			guaranteed					44.0			
E. L. McIntire[208]	1469a	2086	Cambridge City	found					**27.2**	1.2		
North American Fertilizer Company, Louisville, Ky.												
North American 2-12-6 Fertilizer	1043a							2.0	12.0			6.0
Lambeck Bros.[209]	1043a	1616	Tell City	guaranteed	1.82			2.1	12.3	0.9		6.9
Charlie Young[210]	1043a	1929	Osgood, R. R. 4	found	1.40			2.1	12.0	1.5		6.6
Lambeck Bros.	1043a	2608	Tell City	found	1.61			2.0	12.1	1.7		7.4
Clem Phflum & Company, Butlerville, Ind.												
Phflum's Fertilizer	1455a			guaranteed				1.0	10.0	4.0		0.0
Clem Phflum & Co.	1455a	2080	Butlerville	found	0.64			1.0	16.2	1.0		2.4
Chesley Clarkson	1455a	2081	North Vernon, R. R. 3	found	0.62			1.1	16.0	0.8		1.4
Geo. H. Yeager	1455a	2089	North Vernon, R. R. 1	found	0.37			0.9	17.3	0.8		0.6
Plant N-R-G Company, Logansport, Ind.												
Plant N-R-G	1426a			guaranteed				1.0			10.0	8.0
Plant N-R-G Co.[211]	1426a	1270	Logansport	found	1.10			1.4			10.5	**6.6**
Plant N-R-G Co.[212]	1426a	1271	Logansport	found	1.93			2.1			**9.7**	9.1
Plant N-R-G Co.[213]	1426a	1272	Logansport	found	1.80			2.0			10.5	9.0
Plant N-R-G Co.[214]	1426a	1273	Logansport	found	1.65			1.9			10.0	8.8
Plant N-R-G Co.[215]	1426a	1274	Logansport	found	1.75			2.0			10.2	8.9
E. P. Finch & Co.	1426a	2083	Hillsboro	found	1.64			2.0			10.2	9.0
Price Chemical Company, Louisville, Ky.												
16% Superphosphate	7514			guaranteed					16.0			
Finch & Weisel	7514	1485	Portland	found					17.1			
Walton Elevator Co.	7514	1864	Walton	found					16.9	0.1		
Ten and Ten Percent Potash	8823			guaranteed					10.0			10.0
Howard County Mercantile Ass'n	8823	1283	Kokomo	found					11.0	0.1		10.0
Finch & Weisel	8823	1492	Portland	found					11.4			10.0
Hobbs Grain Co.	8823	1521	Hobbs	found					10.7	0.2		10.0
Farmers Co-op. Co.	8823	1737	Southport	found					11.0	1.0		10.1
Henry Beckley Feed Store	8823	1838	Goodland	found					11.1			10.0

Where 60.0 per cent or more of the total nitrogen guaranteed was found to water soluble, the active and inactive insoluble organic nitrogen was not determined.
Percentages appearing in bold type in the "Inactive water insoluble organic" column denote inferior nitrogen.

[200] Refund $2.20.

[201] Refund $5.00.

[202] Not tagged. Labels furnished.

[203] Sample drawn at Rushville, Ind.

[204] Sample drawn at Rushville, Ind.

[205] Sample drawn at Rushville, Ind.

[206] Sample drawn at Rushville, Ind.

[207] Sample drawn at Rushville, Ind.

[208] Refund $16.80. Purchased from John Fritz, Milton, Ind.

[209] Sample received in the spring.

[210] Purchased from Henry Young, R. R. 4, Osgood, Ind.

[211] Not tagged. Labels furnished.

[212] Not tagged. Labels furnished.

[213] Not tagged. Labels furnished.

[214] Not tagged. Labels furnished.

[215] Not tagged. Labels furnished.

TABLE 13. Report of Inspection of Fertilizer Collected in 1935—Continued

Labels and Names of Persons from Whom Samples were Secured	Official No.	Inspection No. L	Samples Taken at		Nitrogen (N)				Phosphoric acid (P_2O_5)			
					Water soluble as nitrates, ammonia salts and organic, per cent	Active water insoluble organic, per cent	Inactive water insoluble organic, per cent	Total per cent	Soluble and reverted (available), per cent	Insoluble, per cent	Total per cent	Potash (K_2O), soluble in water, per cent
Walton Elevator Co.	8823	1866	Walton	found					10.9	0.1		10.0
Brookston Grain Corp. Elevator	8823	1909	Brookston	found					11.0	0.1		**9.6**
Twelve-Twelve Fertilizer	9024			guaranteed					12.0			12.0
George Steckley	9024	1428	Kendallville	found					13.3	0.1		12.0
Walton Elevator Co.	9024	1862	Walton	found					12.6	0.1		12.0
Twenty-Twenty Fertilizer	9025			guaranteed					20.0			20.0
Henry Beckley Feed Store	9025	1837	Goodland	found					20.3	0.1		**19.4**
Twenty Percent Superphosphate	9129			guaranteed					20.0			
George Steckley	9129	1433	Kendallville	found					21.4			
Finch & Weisel	9129	1494	Portland	found					21.1	0.1		
Bickel's Feed Store	9129	1696	Corydon	found					21.6	0.1		
Hoosier Grain & Supply Co.	9129	2158	Montpelier	found					20.9	0.1		
George Steckley	9129	2271	Kendallville	found					20.3	0.1		
H. M. Overpeck	9129	2375	Rockville	found					21.0	0.1		
Muriate of Potash	9290			guaranteed								50.0
Henry Matthys[216]	9290	1252	South Bend	found								52.0
Wolf & Son	9290	1343	North Judson	found								61.0
Richard Gurnz	9290	1792	Denham	found								50.8
Eight Twenty-four Fertilizer	9898			guaranteed					8.0			24.0
George Steckley	9898	1429	Kendallville	found					9.0	0.1		25.4
One-Eight-Three Fertilizer	159a			guaranteed				1.0	8.0			3.0
J. A. Fortwendel	159a	1615	Troy	found	1.25			1.5	8.7	0.6		3.5
Frank Heidet & Son	159a	2022	Ferdinand	found	0.98			1.2	8.7	0.3		3.0
T. J. Shepherd & Son	159a	2639	Orleans	found	0.87			1.1	8.6	0.5		3.0
Old Time Grain Fertilizer	160a			guaranteed				2.0	8.0			2.0
Frank Heidet & Son	160a	2021	Ferdinand	found	1.96			2.3	9.3	0.4		2.5
Vegetable Grower	161a			guaranteed				2.0	12.0			4.0
J. A. Fortwendel	161a	1612	Troy	found	1.94			2.3	**10.4**	0.7		4.5
Indiana Special	162a			guaranted				2.0	12.0			2.0
Logansport Elevator Co.	162a	1277	Logansport	found	1.69			2.1	12.7	0.2		2.5
Hoosier Grain & Supply Co.[217]	162a	1387	Bluffton	found	1.86			2.1	12.6	0.7		2.0
Warren Crum Hardware	162a	1503	Ridgeville	found	1.93			2.2	12.4	0.4		2.3
Pennington Feed Store	162a	1582	Bloomington	found	1.82			2.1	12.8	0.6		2.1
Bickel Feed Store[218]	162a	1693	Corydon	found	2.00			2.3	12.7	0.8		2.0
Hagerstown Grain Co.	162a	1770	Hagerstown	found	1.93			2.2	12.7	0.7		2.1
Walton Elevator Co.	162a	1865	Walton	found	1.72			2.0	12.5	1.2		2.0

Frank Heidet & Son	162a	2023	Ferdinand	found	1.90			2.2	13.1	0.5		2.2
Hoosier Grain & Supply Co.	162a	2157	Montpelier	found	1.82			2.1	12.8	0.8		2.1
Reveal & Beydler	162a	2405	Lebanon	found	2.05			2.3	12.8	1.0		2.4
Hoosier Grain & Supply Co.	162a	2409	Bluffton	found	1.88			2.1	13.0	0.9		2.7
W. S. Oneal	162a	2474	Rushville	found	1.40			2.1	12.8	0.4		2.2
Aurora Farmers Supply Co.	162a	2544	Aurora	found	1.92			2.2	13.3	0.9		2.5
Bickel Feed Store	162a	2623	Corydon	found	1.60			2.1	12.8	0.3		2.6
T. J. Shepherd & Son	162a	2643	Orleans	found	1.70			2.2	12.8	0.4		2.3
A-1 Grain Grower	164a			guaranteed				2.0	12.0			6.0
Logansport Elevator Co.[219]	164a	1278	Logansport	found	1.89			2.2	12.4	0.5		6.4
Howard County Farmers Mercantile Ass'n	164a	1289	Kokomo	found	2.09			2.4	13.0	0.5		7.2
Ben Struewing	164a	1311	Oldenburg	found	1.95			2.3	12.2	0.5		6.4
Hoosier Grain & Supply Co.[220]	164a	1389	Bluffton	found	2.09			2.4	12.3	1.0		**5.6**
Finch & Weisel	164a	1488	Portland	found	1.95			2.3	13.1	0.3		6.2
Redkey Grain Co.	164a	1499	Redkey	found	2.06			2.4	12.2	0.5		6.6
Knecht Milling Co.	164a	1501	Hartford City	found	1.52			2.0	12.3	1.0		6.6
Hobbs Grain Co.	164a	1517	Hobbs	found	2.01			2.4	12.5	0.3		6.1
Pennington Feed Store	164a	1568	Bloomington	found	2.04			2.4	12.5	0.6		6.9
Reutepohler Hardware Co.[221]	164a	1600	Huntingburg	found	1.91			2.3	13.1	0.5		6.1
Bickel Feed Store[222]	164a	1695	Corydon	found	1.77			2.1	13.1	0.4		6.0
Bornwasser-Gwin Implement Co.[223]	164a	1711	New Albany	found	1.81			2.2	13.3	0.4		6.4
Hagerstown Grain Co.	164a	1771	Hagerstown	found	2.00			2.4	12.6	0.5		6.3
Lafayette Co-op. Elevator Co.	164a	1831	Lafayette	found	1.55			2.0	13.5	0.5		6.9
Henry Beckley Feed Store	164a	1836	Goodland	found	2.05			2.5	12.4	0.2		6.6
Walton Elevator Co.	164a	1869	Walton	found	1.87			2.2	12.8	0.7		6.0
Brookston Grain Corp. Elevator	164a	1910	Brookston	found	1.95			2.3	13.2	0.3		6.1
Hoosier Grain & Supply Co.	164a	2159	Montpelier	found	1.82			2.3	12.9	0.5		6.8
Thos. Owens' Son	164a	2176	Angola	found	1.76			2.2	12.5	0.6		6.9
H. M. Overpeck	164a	2370	Rockville	found	1.84			2.3	13.3	0.4		7.1
Logansport Elevator Co.	164a	2377	Logansport	found	1.74			2.2	13.4	0.3		6.7
Reveal & Beydler	164a	2401	Lebanon	found	1.50			2.0	14.1	0.1		0.8
Hoosier Grain & Supply Co.	164a	2410	Bluffton	found	1.80			2.3	12.8	0.8		6.8
Tipton Hatchery	164a	2458	Tipton	found	1.65			2.1	13.0	0.6		6.1
Farmers Grain & Coal Co.	164a	2459	Frankton	found	1.60			2.1	13.1	0.7		6.1
W. S. Oneal	164a	2475	Rushville	found	1.75			2.1	14.4	0.2		6.2
Chas. W. Brizius Co.	164a	2502	Evansville	found	1.84			2.3	13.7	0.6		7.0
Aurora Farmers Supply Co.	164a	2545	Aurora	found	2.05			2.4	13.6	0.5		6.2
Reutepohler Hardware Co.	164a	2567	Huntingburg	found	1.75			2.3	14.2	0.5		6.1
J. A. Fortwendel	164a	2598	Troy	found	1.51			2.1	14.0	0.3		6.0
J. O. Best	164a	2618	Floyds Knobs	found	1.53			2.1	13.5	0.4		6.4
Bornwasser-Gwin Implement Co.	164a	2619	New Albany	found	1.88			2.2	12.4	1.5		6.7
Bickel Feed Store	164a	2624	Corydon	found	1.64			2.2	13.3	0.4		6.1
Three-Fight-Six Tobacco Fertilizer	165a			guaranteed				3.0	8.0			6.0
Pennington Feed Store	165a	1571	Bloomington	found	2.88			3.2	8.0	0.5		6.7
Bickel Feed Store	165a	1694	Corydon	found	2.68			3.1	8.8	0.2		6.0

Where 60.0 per cent or more of the total nitrogen guaranteed was found to be water soluble, the active and inactive insoluble organic nitrogen was not determined.

Percentages appearing in bold type in the "Inactive water insoluble organic" column denote inferior nitrogen.

[216] Distributed by N. V. Potash Export, My, Inc., Baltimore, Md.

[217] Sample received in the spring.

[218] Sample received in the spring.

[219] Sample received in the spring.

[220] Sample received in the spring.

[221] Sample received in the spring.

[222] Sample received in the spring.

[223] Sample received in the spring.

TABLE 13. Report of Inspection of Fertilizer Collected in 1935—Continued

Labels and Names of Persons from Whom Samples were Secured	Official No.	Inspection No. L	Samples Taken at		Nitrogen (N)				Phosphoric acid (P_2O_5)			Potash (K_2O) soluble in water, per cent
					Water soluble as nitrates, ammonia salts and organic, per cent	Active water insoluble organic, per cent	Inactive water insoluble organic, per cent	Total per cent	Soluble and reverted (available), per cent	Insoluble, per cent	Total per cent	
Brookston Grain Corp. Elevator	165a	1905	Brookston	found	2.75			3.2	8.9	0.1		6.0
Aurora Farmers Supply Co.	165a	2543	Aurora	found	2.68			3.1	9.1	0.6		6.1
Concentrated Special	167a			guaranteed				4.0	24.0			4.0
Lafayette Co-op. Elevator Co.[221]	167a	1830	Lafayette	found	3.95			4.3	**22.7**	0.4		4.6
Walton Elevator Co.	167a	1868	Walton	found	3.35			**3.7**	25.7	0.2		4.0
J. A. Bertch & Son	167a	2483	Liberty	found	3.98			4.0	25.6	0.7		5.3
Big Forty	168a			guaranteed				4.0	24.0			12.0
Walton Elevator Co.	168a	1879	Walton	found	3.78			4.2	24.3	0.8		12.7
Hoosier Grain & Supply Co.	168a	2156	Montpelier	found	3.77			4.1	24.6	0.6		13.0
Thos. Owens' Son	168a	2170	Angola	found	3.68			4.1	24.2	0.8		12.5
J. A. Bertch & Son	168a	2488	Liberty	found	3.64			4.1	24.0	1.4		12.5
Economy Grain	594a			guaranteed				1.0	11.0			3.0
Logansport Elevator Co.	594a	1275	Logansport	found	1.10			1.3	11.2	0.3		3.1
Farmers Grain & Coal Co.	594a	2457	Frankton	found	0.90			1.1	11.9	0.6		2.8
T. J. Shepherd & Son	594a	2640	Orleans	found	0.81			1.1	12.1	0.6		3.2
Phosphate and Potash	680a			guaranteed					12.0			6.0
Logansport Elevator Co.	680a	1280	Logansport	found					12.8			6.1
Henry Beckley Feed Store	680a	1841	Goodland	found					13.3	0.1		**5.7**
30% Grain Grower (3-18-9)	870a			guaranteed				3.0	18.0			9.0
Logansport Elevator Co.	870a	1279	Logansport	found	2.91			3.3	18.0	0.5		9.0
Walton Elevator Co.	870a	1863	Walton	found	2.75			3.2	18.0	0.3		8.8
Two-Eight-Ten Fertilizer	1064a			guaranteed				2.0	8.0			10.0
Howard County Farmers Mercantile Ass'n[225]	1064a	1293	Kokomo	found	1.84			2.2	8.1	0.5		**7.6**
George Steckley	1064a	1435	Kendallville	found	1.68			2.1	8.5	0.4		10.5
45% Superphosphate	1089a			guaranteed					45.0			
Henry Matthys	1089a	1258	South Bend	found					45.3	0.1		
Bone Grain Grower	1246a			guaranteed				2.0	8.0	4.0		6.0
Hoosier Grain & Supply Co.	1246a	2155	Montpelier	found	1.51			2.3	9.5	3.4		6.2
Thos Owens' Son	1246a	2171	Angola	found	1.30			2.0	10.1	2.8		6.0
Reveal & Beydler	1246a	2404	Lebanon	found	1.35			2.0	9.3	3.4		6.3
Hoosier Grain & Supply Co.	1246a	2425	Bluffton	found	1.46			2.3	8.5	4.2		6.3
Special Bone Mixture	1247a			guaranteed				2.0	8.0	4.0		2.0
Reveal & Beydler	1247a	2407	Lebanon	found	1.60			2.3	8.5	4.3		2.6
Corn and Wheat Fertilizer 2-10-4	1351a			guaranteed				2.0	10.0			4.0
George Steckley	1351a	2275	Kendallville	found	1.93			2.2	10.1	1.1		4.1
J. A. Fortwendel	1351a	2606	Troy	found	1.55			2.0	11.7	0.3		4.1

Little Giant	1365a			guaranteed				1.0	11.0			5.0
Uhl-Snider Milling Co.	1365a	2487	Connersville	found	0.76			1.1	12.5	0.1		5.6
30% Truck	1366a			guaranteed				3.0	15.0			12.0
Farmers Co-op. Co.	1366a	1736	Southport	found	2.80			3.2	15.0	1.2		12.1
Lawn and Trees 10-6-4	1368a			guaranteed				10.0	6.0			4.0
Wolf & Son	1368a	1339	North Judson	found	9.32			**9.6**	7.0	0.9		4.3
George Steckley[226]	1368a	1438	Kendallville	found	8.78			**9.1**	7.9	0.2		5.4
Pulverized Manure Company, Chicago, Ill.												
Wizard Brand Pulverized Sheep Manure	797a			guaranteed				2.0			1.0	2.0
A. C. Heitschmidt	797a	1952	Michigan City	found	0.40	0.50	**1.10**	2.0			1.7	2.3
Rauh & Sons Fertilizer Company, E., Indianapolis, Ind.												
Nitrate of Soda	3742			guaranteed				15.0				
Standard Hatcheries	3742	1465	Terre Haute	found				15.6				
Sulphate of Ammonia	8033			guaranteed				19.7				
Kiesling Bros.	8033	1257	Logansport	found				20.5				
Louis Ruderman	8033	1427	LaOtto	found				20.2				
Standard Hatcheries	8033	1467	Terre Haute	found				21.1				
Natural Products, Inc.	8033	2103	Daleville	found				20.8				
Rauh's Red Star Brand 16% Superphosphate	8726			guaranteed					16.0			
E. K. Sowash	8726	1345	Crown Point	found					16.3	1.1		
Pennington Feed Store	8726	2355	Bloomington	found					16.4	1.1		
Indiana Grain Producers, Inc.	8726	2472	Shelbyville	found					17.4	1.2		
L. N. Jobe & Son	8726	2629	English	found					16.6	1.5		
Red Star Brand 20% Superphosphate	8727			guaranteed					20.0			
Kiesling Bros.	8727	1250	Logansport	found					20.1	1.2		
E. K. Sowash	8727	1341	Crown Point	found					20.8	1.2		
Louis Ruderman[227]	8727	1436	LaOtto	found					21.0	0.6		
W. K. Gast	8727	1532	Akron	found					20.4	1.2		
Richard Gurnz	8727	1803	Denham	found					20.0	1.5		
Versailles Feed Co.	8727	1974	Versailles	found					20.0	1.4		
Red Star Brand 0-10-10	8732			guaranteed					10.0			10.0
L. N. Jobe & Son	8732	1700	English	found					10.4	0.7		10.3
James Robertson	8732	1852	Otterbein, R. R. 1	found					10.0	0.9		10.1
Versailles Feed Co.	8732	1991	Versailles	found					10.8	0.9		**9.7**
Rauh's Red Star 0-14-6	9953			guaranteed					14.0			6.0
L. N. Jobe & Son	9953	1703	English	found					14.0	1.3		6.0
Mooreland Grain Co.	9953	2337	Mooreland	found					14.9	0.7		6.1
Rauh's Red Star 2-12-6 Fertilizer	89a			guaranteed				2.0	12.0			6.0
Versailles Feed Co.	89a	1267	Versailles	found	1.82			2.1	**11.3**	2.5		6.2
Busenbark Grain Co.[228]	89a	1304	Crawfordsville	found	1.69			2.0	**10.9**	2.2		6.5
E. K. Sowash	89a	1346	Crown Point	found	1.78			2.0	12.0	1.2		6.0
L. N. Jobe & Son[229]	89a	1704	English	found	1.66			2.0	**11.7**	1.9		6.1
Hughes Lumber & Grain Co.	89a	1735	Brooklyn	found	1.76			2.1	12.1	1.8		6.0
Robinson Grain Co.	89a	1860	Williamsport	found	1.76			2.0	**11.7**	1.6		6.0

Where 60.0 per cent or more of the total nitrogen guaranteed was found to be water soluble, the active and inactive insoluble organic nitrogen was not determined.
Percentages appearing in bold type in the "Inactive water insoluble organic" column denote inferior nitrogen.

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[224] Refund $1.30.

[225] Refund $1.20.

[226] Refund $1.80.

[227] Sample drawn at Huntertown, Ind.

[228] Refund $2.75.

[229] Sample received in the spring.

TABLE 13. Report of Inspection of Fertilizer Collected in 1935—Continued

Labels and Names of Persons from Whom Samples were Secured	Official No.	Inspection No. L	Samples Taken at		Nitrogen (N)				Phosphoric acid (P₂O₅)			
					Water soluble as nitrates, ammonia salts and organic, per cent	Active water insoluble organic, per cent	Inactive water insoluble organic, per cent	Total per cent	Soluble and reverted (available), per cent	Insoluble, per cent	Total per cent	Potash (K_2O), soluble in water, per cent
Scarlett Feed Store	89a	2043	West Baden	found	1.75	......	......	2.0	**11.5**	2.2	......	6.0
Martin Grain Co.	89a	2150	Sweetser	found	1.92	......	......	2.2	12.5	1.0	......	6.2
Victoria Mill & Elevator Co.	89a	2585	Jasper	found	1.75	......	......	2.1	12.0	1.9	......	6.2
L. N. Jobe & Son	89a	2627	English	found	1.75	......	......	2.0	**11.7**	2.3	......	6.1
Versailles Feed Co.	89a	2653	Versailles	found	1.82	......	......	2.1	11.9	2.6	......	6.4
James L. Records	89a	2678	Edinburg	found	2.07	......	......	2.3	12.0	1.2	......	6.0
Rauh's Red Star 2-14-4 Fertilizer	90a	......	......	guaranteed	......	......	......	2.0	14.0	......	......	4.0
Conrad Windish	90a	2625	Corydon	found	1.75	......	......	2.0	13.9	2.1	......	4.4
Rauh's Red Star 10-6-4 Fertilizer	93a	......	......	guaranteed	......	......	......	10.0	6.0	......	......	4.0
E. K. Sowash	93a	1350	Crown Point	found	9.53	......	......	9.8	6.0	0.8	......	4.5
Rauh's Red Star 4-24-12 Fertilizer	95a	......	......	guaranteed	......	......	......	4.0	24.0	......	......	12.0
J. W. Strauss & Son	95a	2300	North Manchester	found	3.61	......	......	3.9	24.0	1.8	......	12.2
Rauh's Red Star 2-12-2	550a	......	......	guaranteed	......	......	......	2.0	12.0	......	......	2.0
Versailles Feed Co.	550a	1268	Versailles	found	1.82	......	......	2.1	**11.4**	1.9	......	2.1
J. W. Strauss & Son	550a	2290	North Manchester	found	1.83	......	......	2.2	12.0	1.3	......	2.0
Young & Cox	550a	2491	Richmond	found	1.82	......	......	2.1	12.1	1.7	......	2.2
Rauh's Red Star 1-8-2	617a	......	......	guaranteed	......	......	......	1.0	8.0	......	......	2.0
L. N. Jobe & Son	617a	1702	English	found	0.75	......	......	1.0	8.1	1.2	......	2.1
Scarlett Feed Store[230]	617a	2042	West Baden	found	0.90	......	......	1.1	8.0	1.0	......	2.0
Scarlett Feed Store	617a	2635	West Baden	found	0.96	......	......	1.1	8.0	1.0	......	2.2
Rauh's Red Star 2-8-10	784a	......	......	guaranteed	......	......	......	2.0	8.0	......	......	10.0
Burnettsville Elevator Co.	784a	1878	Burnettsville	found	2.00	......	......	2.0	**7.2**	1.8	......	10.0
Bernard Fettig[231]	784a	1917	Frankton, R. R. 1	found	1.80	......	......	2.0	**7.1**	1.3	......	11.7
Rauh's Red Star 2-8-16	786a	......	......	guaranteed	......	......	......	2.0	8.0	......	......	16.0
Richard Gurnz	786a	1801	Denham	found	1.80	......	......	2.0	9.0	1.9	......	16.2
Rauh's Red Star 1-12-3	924a	......	......	guaranteed	......	......	......	1.0	12.0	......	......	3.0
L. N. Jobe & Son	924a	1701	English	found	0.84	......	......	1.2	**11.1**	1.6	......	3.4
Rauh's Red Star 0-20-20	1103a	......	......	guaranteed	......	......	......	......	20.0	......	......	20.0
Wm. F. Collins[232]	1103a	1303	Indianapolis	found	......	......	......	......	**19.6**	0.4	......	20.0
Rauh's Red Star 0-8-24	1104a	......	......	guaranteed	......	......	......	......	8.0	......	......	24.0
Richard Gurnz[233]	1104a	1797	Denham	found	......	......	......	......	9.2	0.5	......	**22.3**
Burnettsville Elevator Co.	1104a	1875	Burnettsville	found	......	......	......	......	8.3	0.6	......	24.3
Rauh's 60% Muriate of Potash	1113a	......	......	guaranteed	......	......	......	......	......	......	......	60.0
Natural Products, Inc.	1113a	2101	Dalesville	found	......	......	......	......	......	......	......	60.8
Rauh's 50% Muriate of Potash	1211a	......	......	guaranteed	......	......	......	......	......	......	......	50.0
Kiesling Bros.	1211a	1254	Logansport	found	......	......	......	......	......	......	......	50.7

Louis Ruderman	1211a	1437	LaOtto	found								51.6
W. K. Gast	1211a	1526	Akron	found								50.5
Richard Gurnz	1211a	1790	Denham	found								**49.4**
Richard Gurnz	1211a	1791	Denham	found								**49.5**
Rauh's Red Star 0-12-12	1231a			guaranteed					12.0			12.0
Farmers Co-op. Co.	1231a	1834	Wolcott	found					12.5	0.7		12.0
Farmers Co-op. Co.	1231a	1975	Wolcott	found					12.5	1.2		12.6
Rauh's Red Star 4-8-6	1289a			guaranteed				4.0	8.0			6.0
E. K. Sowash	1289a	1342	Crown Point	found	3.78			4.0	8.2	1.0		6.0
Standard Hatcheries	1289a	2369	Terre Haute	found	3.57			3.8	8.1	1.9		6.0
Rauh's Red Star 40% Superphosphate	1292a			guaranteed					40.0			
Richard Gurnz	1292a	1802	Denham	found					40.1	0.9		
Rauh's Red Star 2-8-6 Bone Mixture	1348a			guaranteed				2.0	8.0	4.0		6.0
Victoria Mill & Elevator Co.	1348a	2586	Jasper	found	1.35			2.0	9.1	4.0		6.0
Rauh's Fertilizer Tankage	1372a			guaranteed				3.5			23.0	
Kiesling Bros.	1372a	1249	Logansport	found	1.23	1.95	0.42	3.6			23.0	
Louis Ruderman[234]	1372a	1434	LaOtto	found	1.40	1.69	0.71	3.8			23.0	
Rauh's Red Star 2-8-5	1388a			guaranteed				2.0	8.0			5.0
Conrad Windish[235]	1388a	1689	Corydon	found	1.88			2.1	8.0	1.2		**4.5**
Conrad Windish	1388a	2616	Corydon	found	1.79			2.0	8.9	1.1		5.3
Read Phosphate Company, Nashville, Tenn.												
Nitrate of Soda	3045			guaranteed				14.7				
Scott Bolton	3045	1998	Hanover	found				15.4				
Read Phosphate Company, New Albany, Ind.												
Twenty-Twenty All Available	8450			guaranteed					20.0	1.0		20.0
Harry C. Dibell[236]	8450	1994	Wolcott	found					**19.5**	0.4		20.4
Eight-Twenty-four	9061			guaranteed					8.0	1.0		24.0
Robert G. Musall[237]	9061	1993	Idaville	found					8.9	0.3		24.1
Twelve-Twelve	9144			guaranteed					12.0	1.0		12.0
Frank C. Babcock[238]	9144	1995	Goodland	found					12.6	0.2		12.1
Callahan & Kanne	9144	2249	Rensselaer	found					12.3	0.4		13.0
Royal Grain Grower	463a			guaranteed				2.0	10.0	1.0		3.0
North Madison Coal & Feed Co.[239]	463a	2005	North Madison	found	1.81			2.2	10.2	1.1		3.3
North Madison Coal & Feed Co.	463a	2648	North Madison	found	1.58			2.0	10.1	1.5		3.4
Two-Twelve-Six	466a			guaranteed				2.0	12.0	1.0		6.0
Hirsch Bros. Grain Co.	466a	1882	Clymers	found	1.68			2.1	12.0	0.8		6.1
Royster Guano Company, The F. S., Toledo, Ohio												
Royster's 16% Superphosphate	7578			guaranteed					16.0	0.5		
Lakeville Elevator Co.	7578	2147	Lakeville	found					16.5	0.5		
Muriate of Potash	7664			guaranteed								50.0

Where 60.0 per cent or more of the total nitrogen guaranteed was found to be water soluble, the active and inactive insoluble organic nitrogen was not determined.

Percentages appearing in bold type in the "Inactive water insoluble organic" column denote inferior nitrogen.

[230] Sample received in the spring.

[231] Purchased from Fettig Canning Corp., Elwood, Ind.

[232] Sample drawn at Crawfordsville, Ind.

[233] Refund $1.70.

[234] Not tagged. Labels furnished. Sample drawn at Huntertown, Ind.

[235] Sample received in the spring.

[236] Purchased from Ladoga Canning Co., Brookston, Ind. Sample drawn at Brookston, Ind.

[237] Purchased from Ladoga Canning Co., Brookston, Ind. Sample drawn at Brookston, Ind.

[238] Purchased from Ladoga Canning Co., Brookston, Ind. Sample drawn at Brookston, Ind.

[239] Sample received in the spring.

TABLE 13. Report of Inspection of Fertilizer Collected in 1935—Continued

Labels and Names of Persons from Whom Samples were Secured	Official No.	Inspection No. L	Samples Taken at		Nitrogen (N)				Phosphoric acid (P₂O₅)			Potash (K₂O), soluble in water, per cent
					Water soluble as nitrates, ammonia salts and organic, per cent	Active water insoluble organic, per cent	Inactive water insoluble organic, per cent	Total per cent	Soluble and reverted (available), per cent	Insoluble, per cent	Total per cent	
Roper & Brown[210]	7664	1965	Wheeler	found								51.1
Royster's 20% Superphosphate	8508			guaranteed					20.0	0.5		
Lakeville Elevator Co.	8508	2153	Lakeville	found					20.6	0.2		
Frank George	8508	2201	Nappanee	found					20.4	0.6		
Pook Feed & Coal Co.	8508	2291	South Whitley	found					21.2	0.3		
Royster's 20-20 Phosphate and Potash	9993			guaranteed					20.0	0.5		20.0
Ready Coal & Construction Co. Ranch[211]	9993	2028	Pleasant Ridge	found					20.3	0.4		21.4
Royster's 2-8-10	556a			guaranteed				2.0	8.0	0.5		10.0
Frank Aker	556a	2208	Bremen	found	1.62			2.1	8.5	1.2		10.0
Royster's 2-8-16	557a			guaranteed				2.0	8.0	0.5		16.0
Stiefel Grain Co.	557a	1452	Kimmell	found	1.64			2.0	8.1	0.7		17.3
Royster's 2-12-2	558a			guaranteed				2.0	12.0	0.5		2.0
Lakeville Elevator Co.	558a	2148	Lakeville	found	1.68			2.2	12.5	1.4		2.2
Royster's 2-12-6	559a			guaranteed				2.0	12.0	0.5		6.0
Roper & Brown	559a	1967	Wheeler	found	1.65			2.1	12.1	1.5		6.1
Lakeville Elevator Co.	559a	2135	Lakeville	found	1.55			2.0	12.9	0.9		7.0
Frank George	559a	2184	Nappanee	found	1.58			2.0	12.7	1.6		6.6
Frank Aker	559a	2214	Bremen	found	1.62			2.1	12.1	1.6		6.5
Corunna Feed Mill	559a	2266	Corunna	found	1.68			2.1	12.0	2.3		6.8
Royster's 2-16-2	560a			guaranteed				2.0	16.0	0.5		2.0
Corunna Feed Mill	560a	2274	Corunna	found	1.73			2.1	17.1	1.1		2.5
Royster's 4-8-6	562a			guaranteed				4.0	8.0	0.5		6.0
Herman Niksch[212]	562a	1963	Hobart, R. R. 1	found	3.27			4.0	8.3	0.7		7.7
Royster's 0-14-4	569a			guaranteed					14.0	0.5		4.0
Corunna Feed Mill	569a	2265	Corunna	found					14.2	1.2		5.7
Royster's 0-8-24	570a			guaranteed					8.0	0.5		24.0
Stiefel Grain Co.	570a	1446	Kimmell	found					9.4	0.2		24.2
Royster's 0-10-10	571a			guaranteed					10.0	0.5		10.0
Callahan & Kanne	571a	1804	Rensselaer	found					11.1	0.3		10.1
Frank George	571a	2203	Nappanee	found					10.0	0.5		10.3
Callahan & Kanne	571a	2250	Rensselaer	found					10.3	0.8		11.5
Royster's 0-14-6	960a			guaranteed					14.0	0.5		6.0
R. M. Crisman[213]	960a	1951	Hobart, R. R. 2	found					14.4	0.6		6.0
Lakeville Elevator Co.	960a	2138	Lakeville	found					14.5	0.6		6.0
Frank George	960a	2192	Nappanee	found					14.0	0.9		6.3
Royster's 0-12-12	961a			guaranteed					12.0	0.5		12.0

Callahan & Kanne[244]	961a	1806	Rensselaer	found					12.4	0.5		12.3
Callahan & Kanne	961a	2251	Rensselaer	found					12.0	0.8		12.5
Royster's 3-9-18	1379a			guaranteed				3.0	9.0	0.5		18.0
Stiefel Grain Co.[245]	1379a	1457	Kimmell	found	2.35			2.8	9.6	0.7		**15.2**
Sewerage Commission of the City of Milwaukee, Milwaukee, Wis.												
Milorganite	1257a			guaranteed				6.0	2.0	2.7		
Quinlan Seed Store[246]	1257a	2091	Terre Haute	found	0 56	3 56	1.88	6.0	**1.9**	0.6		
Smith Agricultural Chemical Company, The, Indianapolis, Ind.												
Sixteen Per Cent Superphosphate	5525			guaranteed					16.0			
Vanek Bros.	5525	1347	North Judson	found					20.6			
Syler & Syler[247]	5525	1540	Plymouth	found					16.5	1.0		
Al Konovsky	5525	1807	DeMotte	found					16.5	0.8		
B. A. Haley	5525	1816	Charlestown	found					16.5	1.1		
Farmers Feed & Coal Co.[248]	5525	2108	Bloomington	found					16.0	1.1		
The Smith Agricultural Chemical Co.	5525	2109	Indianapolis	found					15.9	1.1		
Syler & Syler	5525	2130	Plymouth	found					17.2	0.9		
Smith's 20% Superphosphate	8418			guaranteed					20 0			
C. E. Knapp	8418	1251	South Bend	found					21.4	1.1		
Wilson Grain & Coal Co.	8418	1527	Rochester	found					20 7	0.8		
Syler & Syler[249]	8418	1530	Plymouth	found					20 9	0.6		
B. A. Haley	8418	1814	Charlestown	found					20.3	1.3		
J. S. Oehler[250]	8418	2111	Portland	found					21.2	0.9		
Syler & Syler	8418	2152	Plymouth	found					20 9	1 0		
Home Grain Co.	8418	2197	Lagrange	found					20.4	1.3		
Flora Art Stone Co.	8418	2442	Flora	found					21.0	0.9		
Sulphate of Ammonia	8470			guaranteed				20.5				
Acme Coal & Lime Co.	8470	1402	Terre Haute	found				21.0				
Smith's Standard Twelve-Six	8787			guaranteed					12.0			6.0
Alba Sultenright[251]	8787	2179	Butler	found					12.0	0.6		6.1
Smith's Sacco 0-20-20	9977			guaranteed					20.0			20.0
Syler & Syler	9977	2154	Plymouth	found					20.9	0.4		**19.1**
Sacco 2-12-2	212a			guaranteed				2.0	12.0			2.0
Bremen Elevator Co.	212a	1542	Bremen	found	1.85			2.1	12.0	0.6		2.3
Martinsville Milling Co.	212a	1744	Martinsville	found	1.82			2.1	12.1	0.8		2.6
John S. Oaks	212a	1871	Flora	found	1.69			2.0	12.0	0.7		2.0
Soy Seed Co.	212a	1877	Camden	found	1.79			2.1	12.1	0.8		2.0
Elza Kramer	212a	2020	Boonville	found	1 85			2 1	12.4	0.7		2.3
The Smith Agricultural Chemical Co.	212a	2105	Indianapolis	found	1 67			2 2	12.0	1.3		2.1
Home Grain Co.	212a	2187	Lagrange	found	1.57			2.1	12.0	1.0		2.2
Worthington Grain Co.	212a	2359	Worthington	found	1.70			2.2	12.6	1.2		2.3
Flora Art Stone Co.	212a	2443	Flora	found	1.57			2.1	12.9	1.2		2.2

Where 60.0 per cent or more of the total nitrogen guaranteed was found to water soluble, the active and inactive insoluble organic nitrogen was not determined.
Percentages appearing in bold type in the "Inactive water insoluble organic" column denote inferior nitrogen.

[240] Distributed by Henry Ewing, Black Oak, P. O., Hammond, Ind.

[241] Purchased from Conrad Kellner, Rensselaer, Ind.

[242] Purchased from Roper & Brown, Wheeler, Ind.

[243] Purchased from Roper & Brown, Wheeler, Ind.

[244] Sample received in the spring.

[245] Refund $2.80. Sample to manufacturer.

[246] Sample to manufacturer.

[247] Sample received in the spring.

[248] Sample drawn at Indianapolis, Ind.

[249] Sample received in the spring.

[250] Sample drawn at Indianapolis, Ind.

[251] Purchased from G. A. Wagner, Butler, Ind.

TABLE 13. Report of Inspection of Fertilizer Collected in 1935—Continued

Labels and Names of Persons from Whom Samples were Secured	Official No.	Inspection No. L	Samples Taken at		Nitrogen (N)				Phosphoric acid (P_2O_5)			Potash (K_2O), soluble in water, per cent
					Water soluble as nitrates, ammonia salts and organic, per cent	Active water insoluble organic, per cent	Inactive water insoluble organic, per cent	Total per cent	Soluble and reverted (available), per cent	Insoluble, per cent	Total per cent	
Beck Grain & Feed Co.	212a	2549	Shelbyville	found	1.54			2.1	12.7	1.5		2.1
Hugo Steinkamp	212a	2580	Huntingburg	found	1.68			2.1	13.0	0.6		2.4
Sacco 2-14-4	213a			guaranteed				2.0	14.0			4.0
Flora Art Stone Co.	213a	2439	Flora	found	1.68			2.1	14.8	1.1		4.2
Sacco 2-16-2	214a			guaranteed				2.0	16.0			2.0
Flora Art Stone Co.	214a	2441	Flora	found	1.82			2.1	17.0	0.8		2.2
Sacco 2-12-6	215a			guaranteed				2.0	12.0			6.0
Acme Coal & Lime Co.	215a	1396	Terre Haute	found	1.89			2.2	12.7	0.3		6.0
Dickey Grain Co.	215a	1511	Parker	found	1.90			2.1	12.4	0.6		6.1
Syler & Syler[252]	215a	1534	Plymouth	found	1.85			2.1	12.6	0.6		6.5
Bremen Elevator Co.[253]	215a	1535	Bremen	found	1.85			2.1	12.4	0.6		6.1
Wilson Grain & Coal Co.[254]	215a	1556	Rochester	found	1.89			2.2	12.4	0.8		6.1
Greene-Homm Coal & Supply[255]	215a	1650	Goshen	found	1.86			2.2	13.3	0.6		6.0
Shine Milling Co.	215a	1692	New Albany	found	1.77			2.1	12.1	1.1		6.1
Farmers Co-op. Co.	215a	1733	Southport	found	1.82			2.1	12.1	0.8		6.4
Maxwell Hardware Co.[256]	215a	1739	Martinsville	found	1.79			2.1	12.7	0.4		6.1
Oren W. Deer & Son	215a	1740	Franklin	found	1.89			2.2	12.4	0.8		6.2
Martinsville Milling Co.	215a	1743	Martinsville	found	1.79			2.1	12.4	0.9		6.0
Morgan Adams Co.	215a	1855	Cayuga	found	1.89			2.2	12.9			6.0
John S. Oaks	215a	1880	Flora	found	1.89			2.2	12.9	0.5		6.1
Griffith Feed Store[257]	215a	1895	Coal City	found	1.92			2.2	12.3	0.5		6.0
Elza Kramer	215a	2019	Boonville	found	1.82			2.1	12.9	0.7		6.3
The Smith Agricultural Chemical Co.	215a	2104	Indianapolis	found	1.76			2.0	12.0	1.0		6.3
Wilson Grain & Coal Co.	215a	2124	Rochester	found	1.62			2.1	12.0	1.0		6.8
Syler & Syler	215a	2142	Plymouth	found	1.72			2.2	12.6	0.8		6.1
Home Grain Co.	215a	2186	Lagrange	found	1.62			2.1	12.0	1.1		6.7
Greene-Homm Coal & Supply	215a	2199	Goshen	found	1.61			2.1	12.5	1.0		6.0
Bremen Elevator Co.	215a	2205	Bremen	found	1.60			2.1	12.2	1.1		6.7
Medaryville Co-op. Co.	215a	2309	Medaryville	found	1.60			2.1	13.0	0.8		6.0
Vanek Bros.	215a	2318	North Judson	found	1.78			2.2	13.3	1.1		7.1
Maxwell Hardware Co.	215a	2352	Martinsville	found	1.73			2.2	12.3	1.3		6.1
Penman Bros.	215a	2363	Brazil	found	1.71			2.1	12.0	1.3		6.2
Johnson Feed & Supply Co.	215a	2367	Linton	found	1.66			2.1	13.5	0.9		6.9
Griffith Feed Store	215a	2368	Coal City	found	1.71			2.1	12.6	1.1		6.1
Flora Art Stone Co.	215a	2437	Flora	found	1.62			2.1	12.5	1.0		6.4
Kiefer Feed & Supply Co.	215a	2444	Elwood	found	1.72			2.2	12.2	1.0		6.0

Beck Grain & Feed Co.	215a	2495	Shelbyville	found	2.03	....	....	2.1	12.8	1.1	....	6.7
Bob Jones	215a	2524	Shoals, R. R. 5	found	1.78	....	....	2.2	13.6	0.9	....	6.2
Boonville Elevator Co.	215a	2609	Boonville	found	1.79	....	....	2.2	12.6	0.9	....	6.6
Graves-Brown Hardware Co.	215a	2642	Paoli	found	1.60	....	....	2.2	12.8	1.0	....	6.0
Osgood Grain Co.	215a	2656	Osgood	found	1.71	....	....	2.1	12.6	1.0	....	6.3
Sacco 2-8-10	216a	....	....	guaranteed	....	....	....	2.0	8.0	....	....	10.0
Syler & Syler	216a	1539	Plymouth	found	1.75	....	....	2.0	8.2	0.5	....	10.3
Sacco 2-8-16	217a	....	....	guaranteed	....	....	....	2.0	8.0	....	....	16.0
Acme Coal & Lime Co.	217a	1399	Terre Haute	found	1.88	....	....	2.1	8.6	0.5	....	16.0
Syler & Syler	217a	1524	Plymouth	found	1.82	....	....	2.1	8.1	0.3	....	16.4
Wilson Grain & Coal Co.	217a	1538	Rochester	found	1.82	....	....	2.1	8.2	0.4	....	16.0
Sacco 4-16-4	218a	....	....	guaranteed	....	....	....	4.0	16.0	....	....	4.0
Hugo Steinkamp[258]	218a	2106	Holland	found	3.66	....	....	4.0	16.5	0.6	....	4.2
Sacco 4-24-12	220a	....	....	guaranteed	....	....	....	4.0	24.0	....	....	12.0
The Smith Agricultural Chemical Co.	220a	2107	Indianapolis	found	3.88	....	....	4.1	25.0	0.8	....	12.3
Syler & Syler	220a	2151	Plymouth	found	3.79	....	....	4.0	24.0	0.7	....	12.6
Sacco 4-8-6	221a	....	....	guaranteed	....	....	....	4.0	8.0	....	....	6.0
C. E. Knapp	221a	1255	South Bend	found	3.58	....	....	4.0	10.7	0.3	....	6.0
Wilson Grain & Coal Co.	221a	1531	Rochester	found	3.72	....	....	4.0	8.2	0.4	....	6.1
Bremen Elevator Co.	221a	1541	Bremen	found	3.82	....	....	4.1	8.0	0.6	....	7.1
Shine Milling Co.	221a	1690	New Albany	found	3.79	....	....	4.1	8.0	0.6	....	6.2
B. A. Haley	221a	1826	Charlestown	found	3.85	....	....	4.1	8.5	0.5	....	6.0
Co-operative Elevator Co.	221a	1886	Winamac	found	3.89	....	....	4.2	8.4	0.6	....	6.3
Sacco 1-8-4	222a	....	....	guaranteed	....	....	....	1.0	8.0	....	....	4.0
The Smith Agricultural Chemical Co.	222a	2112	Indianapolis	found	0.98	....	....	1.4	9.3	0.4	....	4.0
Sacco 0-14-6	223a	....	....	guaranteed	....	....	....	....	14.0	....	....	6.0
Flora Art Stone Co.	223a	2440	Flora	found	....	....	....	....	14.5	0.8	....	6.0
Sacco 0-10-10	224a	....	....	guaranteed	....	....	....	....	10.0	....	....	10.0
Syler & Syler	224a	1547	Plymouth	found	....	....	....	....	10.7	0.5	....	10.0
John S. Oaks	224a	1884	Flora	found	....	....	....	....	10.0	0.7	....	10.5
Worthington Grain Co.	224a	2351	Worthington	found	....	....	....	....	10.5	0.4	....	10.0
Flora Art Stone Co.	224a	2438	Flora	found	....	....	....	....	10.4	0.4	....	10.9
Hugo Steinkamp	224a	2581	Huntingburg	found	....	....	....	....	10.2	0.4	....	11.6
Sacco 0-12-12	225a	....	....	guaranteed	....	....	....	....	12.0	....	....	12.0
Wilson Grain & Coal Co.	225a	1537	Rochester	found	....	....	....	....	12.5	0.7	....	12.0
Syler & Syler	225a	1543	Plymouth	found	....	....	....	....	12.4	0.5	....	12.0
Greene-Homm Coal & Supply[259]	225a	1640	Goshen	found	....	....	....	....	12.8	0.6	....	12.0
Greene-Homm Coal & Supply	225a	2202	Goshen	found	....	....	....	....	12.0	0.6	....	12.0
Medaryville Co-op. Co.	225a	2313	Medaryville	found	....	....	....	....	12.3	0.7	....	12.6
Vanek Bros.	225a	2316	North Judson	found	....	....	....	....	13.1	0.3	....	12.4
Sacco 0-8-24	226a	....	....	guaranteed	....	....	....	....	8.0	....	....	24.0
Acme Coal & Lime Co.	226a	1397	Terre Haute	found	....	....	....	....	9.2	0.3	....	24.0
Smith's Sacco 0-16-6	739a	....	....	guaranteed	....	....	....	....	16.0	....	....	6.0
Walter S. Campbell	739a	2356	Greencastle	found	....	....	....	....	16.3	1.1	....	6.3
Smith's Sacco 3-12-12	740a	....	....	guaranteed	....	....	....	3.0	12.0	....	....	12.0

Where 60.0 per cent or more of the total nitrogen guaranteed was found to be water soluble, the active and inactive insoluble organic nitrogen was not determined.
Percentages appearing in bold type in the "Inactive water insoluble organic" column denote inferior nitrogen.

[252] Sample received in the spring.

[253] Sample received in the spring.

[254] Sample received in the spring.

[255] Sample received in the spring.

[256] Sample received in the spring.

[257] Sample received in the spring.

[258] Sample drawn at Indianapolis, Ind.

[259] Sample received in the spring.

TABLE 13. Report of Inspection of Fertilizer Collected in 1935—Continued

Labels and Names of Persons from Whom Samples were Secured	Official N	Inspection No. L	Samples Taken at		Nitrogen (N): Water soluble as nitrates, ammonia salts and organic, per cent	Nitrogen (N): Active water insoluble organic, per cent	Nitrogen (N): Inactive water insoluble organic, per cent	Nitrogen (N): Total per cent	Phosphoric acid (P_2O_5): Soluble and reverted (available), per cent	Phosphoric acid (P_2O_5): Insoluble, per cent	Phosphoric acid (P_2O_5): Total per cent	Potash (K_2O), soluble in water, per cent
Bremen Elevator Co.	740a	1525	Bremen	found	2.90			3.1	12.3	0.4		12.8
Sacco 45% Superphosphate	1046a			guaranteed					45.0			
J. S. Oehler[260]	1046a	2110	Portland	found					45.0	0.7		
Sacco Bone Meal	1079a			guaranteed				2.0			26.0	
C. E. Knapp	1079a	1256	South Bend	found	0.44	1.13	0.63	2.2			27.2	
Acme Coal & Lime Co.	1079a	1401	Terre Haute	found	0.46	0.97	0.57	2.0			26.7	
Standard Wholesale Phosphate & Acid Works, Inc., Baltimore, Md.												
Standard United States 2-12-2	1252a			guaranteed				2.0	12.0	0.5		2.0
Wanatah Mercantile Co.[261]	1252a	2237	Wanatah	found	1.92			2.4	12.8	0.8		2.6
Standard U. S. 2-12-6	1500a			guaranteed				2.0	12.0			6.0
Hamlet Co-op. Farm Shipping Ass'n[262]	1500a	2325	Hamlet	found	1.66			2.1	13.2	0.4		6.4
Steinkamp, Hugo, Holland, Ind.												
Steinkamp's 2-12-6	1134a			guaranteed				2.0	12.0			6.0
Hugo Steinkamp[263]	1134a	1596	Huntingburg	found	1.75			2.0	12.0	1.0		6.0
Hugo Steinkamp[264]	1134a	2024	Huntingburg	found	1.90			2.2	12.3	0.9		6.3
Hugo Steinkamp	1134a	2571	Huntingburg	found	1.71			2.1	13.1	1.3		6.9
Graves Implement Store	1134a	2602	Tell City	found	1.78			2.2	12.9	0.8		6.6
Grain Grower 1-8-3	1135a			guaranteed				1.0	8.0			3.0
Hugo Steinkamp[265]	1135a	1593	Huntingburg	found	0.79			1.1	8.0	1.0		3.1
Hugo Steinkamp[266]	1135a	2025	Huntingburg	found	0.68			1.1	8.3	1.2		3.7
Hugo Steinkamp	1135a	2572	Huntingburg	found	0.60			1.0	8.8	0.7		3.0
Potash Mixture	1146a			guaranteed					10.0			10.0
Hugo Steinkamp	1146a	1598	Huntingburg	found					10.7	0.3		10.4
Tobacco Base 2-12-2	1181a			guaranteed				2.0	12.0			2.0
Hugo Steinkamp	1181a	1597	Huntingburg	found	1.72			2.0	12.0	2.0		2.0
Raw Bone Meal	1236a			guaranteed				3.6			22.0	
Graves Implement Store	1236a	2098	Tell City	found	0.26	3.05	0.69	4.0			23.6	
Bone Meal Mixture	1255a			guaranteed				2.0	8.0	4.0		6.0
Hugo Steinkamp	1255a	2096	Huntingburg	found	1.37			2.1	9.2	3.2		6.1
Sulphate of Ammonia	1441a			guaranteed				20.0				
Dubois County Farm Bureau Co-op. Ass'n, Inc.[267]	1441a	1592	Jasper	found				20.8				
30% Superphosphate	1448a			guaranteed					30.0			
Dubois County Farm Bureau Co-op. Ass'n, Inc.[268]	1448a	1589	Jasper	found					30.9	0.9		

Swift & Company, Fertilizer Works, Chicago, Ill.												
Swift's Muriate of Potash	7955			guaranteed								50.0
Ort & Co.[269]	7955	1439	Churubusco	found								52.2
Swift's Sulphate of Ammonia	7960			guaranteed				20.5				
Ort & Co.[270]	7960	1472	Churubusco	found				20.9				
Swift's Red Steer 0-10-10 Fertilizer	8614			guaranteed					10.0	0.5		10.0
Clayton Mills	8614	2342	Clayton	found					10.5	0.7		10.1
Swift's Red Steer 0-12-12 Fertilizer	8793			guaranteed					12.0	0.5		12.0
Kiest Milling Co.	8793	1337	Knox	found					12.5	1.7		12.0
Warsaw Feed Store[271]	8793	1553	Warsaw	found					12.1	1.2		**9.7**
Medaryville Co-op. Co.	8793	1793	Medaryville	found					12.0	2.0		12.5
Farmers Grain & Lumber Co.	8793	1800	South Wanatah	found					12.1	1.7		12.0
Peoples Co-op. Store	8793	1842	Wolcott	found					12.0	2.0		12.2
Farmers Elevator Co.	8793	1907	Monticello	found					12.4	1.3		12.6
Greene-Homm Coal & Supply	8793	2200	Goshen	found					12.2	0.5		12.4
Swift's Red Steer 0-8-24 Fertilizer	8827			guaranteed					8.0	0.5		24.0
Warsaw Feed Store	8827	1549	Warsaw	found					8.9	0.1		24.4
Farmers Elevator Co.	8827	1900	Monticello	found					8.2	0.3		25.8
Farmers Grain & Lumber Co.	8827	1961	South Wanatah						8.3	0.3		24.2
Swift's Red Steer 0-20-20	9561			guaranteed					20.0			20.0
Farmers Elevator Co.	9561	1902	Monticello	found					20.0	0.1		21.6
Swift's Red Steer 4-24-12	335a			guaranteed				4.0	24.0			12.0
Haynes Milling Co.[272]	335a	1495	Portland	found	3.23			**3.4**	**23.5**	0.4		12.0
Clayton Mills	335a	2343	Clayton	found	3.83			4.0	24.0	0.8		13.3
Swift's Red Steer 4-8-8	338a			guaranteed				4.0	8.0			8.0
Warsaw Feed Store	338a	1551	Warsaw	found	3.76			3.9	9.1	0.2		9.1
Swift's Red Steer 3-12-4	341a			guaranteed				3.0	12.0			4.0
Warsaw Feed Store	341a	1548	Warsaw	found	2.84			3.1	13.0	0.4		4.3
Swift's Red Steer 3-9-18	342a			guaranteed				3.0	9.0			18.0
Graham Grain & Supply Co.	342a	1466	Terre Haute	found	3.09			3.2	9.4	0.4		18.0
Greene-Homm Coal & Supply	342a	1652	Goshen	found	2.99			3.1	9.9	0.2		18.8
Swift's Red Steer 2-12-6	344a			guaranteed				2.0	12.0			6.0
Haynes Milling Co.	344a	1487	Portland	found	1.88			2.1	12.4	0.4		6.4
Warsaw Feed Store[273]	344a	1628	Warsaw	found	1.82			2.1	12.7	0.6		6.3
D. M. Bottorff	344a	1729	Columbus	found	1.92			2.2	12.3	0.6		6.7
Medaryville Co-op. Co.	344a	1789	Medaryville	found	1.64			2.0	12.0	0.7		6.1
Farmers Elevator Co.	344a	1899	Monticello	found	1.85			2.1	12.0	0.6		6.3
Thos. Owens' Son	344a	2166	Angola	found	1.69			2.0	12.7	0.5		6.4
Greene-Homm Coal & Supply	344a	2198	Goshen	found	1.75			2.0	12.4	0.5		6.2
Bourbon Elevator & Feed Mill	344a	2209	Bourbon	found	1.78			2.0	12.0	0.7		6.0
Warsaw Feed Store	344a	2216	Warsaw	found	1.82			2.1	12.8	0.4		6.3
Peoples Co-op. Store	344a	2252	Wolcott	found	1.87			2.1	12.4	0.4		8.7

Where 60.0 per cent or more of the total nitrogen guaranteed was found to be water soluble, the active and inactive insoluble organic nitrogen was not determined.

Percentages appearing in bold type in the "Inactive water insoluble organic" column denote inferior nitrogen.

[260] Sample drawn at Indianapolis, Ind.

[261] Not tagged. Labels furnished.

[262] Not tagged. Labels furnished.

[263] Sample received in the spring.

[264] Sample received in the spring.

[265] Sample received in the spring.

[266] Sample received in the spring.

[267] Not tagged. Labels furnished.

[268] Not tagged. Labels furnished.

[269] Sample drawn at Huntertown, Ind.

[270] Sample drawn at Huntertown, Ind.

[271] Not tagged. Labels furnished. Refund $1.44.

[272] Refund $1.58.

[273] Sample received in the spring.

TABLE 13. Report of Inspection of Fertilizer Collected in 1935—Continued

Labels and Names of Persons from Whom Samples were Secured	Official No.	Inspection No. L	Samples Taken at		Nitrogen (N)				Phosphoric acid (P₂O₅)			Potash (K₂O), soluble in water, per cent
					Water soluble as nitrates, ammonia salts and organic, per cent	Active water insoluble organic, per cent	Inactive water insoluble organic, per cent	Total per cent	Soluble and reverted (available), per cent	Insoluble, per cent	Total per cent	
City Mills	344a	2328	Noblesville	found	1.79			2.1	13.0	0.2		6.7
New Castle Elevator Co.	344a	2335	Newcastle	found	1.77			2.0	12.7	0.7		6.2
Graham Grain & Supply Co.	344a	2366	Terre Haute	found	1.81			2.0	13.4	0.6		6.1
Roanoke Elevator Co.	344a	2397	Roanoke	found	1.85			2.1	12.8	1.1		6.7
Huebner Hardware Co.	344a	2525	Loogootee	found	2.07			2.2	13.8	0.6		6.8
Swift's Red Steer 2-12-2	345a			guaranteed				2.0	12.0			2.0
D. M. Bottorff	345a	1710	Columbus	found	1.69			2.0	12.5	0.8		2.4
Thos. Owens' Son	345a	2165	Angola	found	1.61			2.0	12.7	0.7		2.3
Newcastle Elevator Co.	345a	2331	Newcastle	found	1.85			2.1	12.9	0.5		2.1
Huebner Hardware Co.	345a	2530	Loogootee	found	1.82			2.1	12.9	1.2		2.1
Geo. P. Wagner Co.	345a	2577	Jasper	found	1.75			2.1	13.1	0.6		2.0
Swift's Red Steer 2-8-16	346a			guaranteed				2.0	8.0			16.0
Ort & Co.	346a	1430	Churubusco	found	1.86			2.0	8.9	0.2		16.0
Swift's Red Steer 20% Superphosphate	373a			guaranteed					20.0			
Logansport Elevator Co.	373a	1276	Logansport	found					20.5	0.3		
Brown Supply Co.	373a	1812	Valparaiso	found					20.5	0.4		
Warsaw Feed Store	373a	2223	Warsaw	found					21.4	0.2		
Fisher Bros.	373a	2267	Columbia City	found					21.4	0.1		
Newcastle Elevator Co.	373a	2332	Newcastle	found					21.4	0.1		
City Mills	373a	2333	Noblesville	found					20.5	0.2		
Swift's Red Steer 3-15-12	692a			guaranteed				3.0	15.0			12.0
Farmers Elevator Co.	692a	1903	Monticello	found	2.95			3.1	15.0	1.0		12.2
Swift's Red Steer 0-14-7	1285a			guaranteed					14.0			7.0
Farmers Grain & Lumber Co.	1285a	1960	South Wanatah	found					14.5	0.1		7.1
Bourbon Elevator & Feed Mill	1285a	2206	Bourbon	found					14.0	0.4		7.6
Fisher Bros.	1285a	2280	Columbia City	found					14.8	0.5		7.1
United States Guano Company, Baltimore, Md.												
20% Superphosphate	9754			guaranteed					20.0	0.5		
Hamlet Co-op. Farm Shipping Ass'n	9754	2305	Hamlet	found					21.1	0.6		
50% Muriate of Potash	9755			guaranteed								50.0
S. A. Craigmile[274]	9755	1334	Knox, R. R. 1	found								52.8
S. A. Craigmile[275]	9755	1335	Knox, R. R. 1	found								50.9
Vanek Bros.	9755	1349	North Judson	found								52.3
Syler & Syler	9755	1529	Plymouth	found								53.0

Co-op. Elevator Co.	9755	1885	Winamac	found								51.8
Hamlet Co-op. Farm Shipping Ass'n	9755	2315	Hamlet	found								51.8
Virginia-Carolina Chemical Corporation, Cincinnati, Ohio												
V.-C. 16% Superphosphate	6133			guaranteed					16.0			
G. Wolff & Sons	6133	2169	Hamilton	found					16.6	1.8		
Huntington Equity Exchange	6133	2387	Huntington	found					17.3	1.3		
V.-C. Pure Bone Meal (Steamed)	9326			guaranteed				1.6			27.0	
Frank Strock	9326	2180	Hudson	found	0.42	1.20	0.70	2.3			27.0	
V.-C. Superphosphate 20%	9617			guaranteed					20.0	1.5		
C. E. Bash & Co.[276]	9617	1363	Huntington	found					20.4	1.2		
C. V. Graft[277]	9617	1509	Winchester	found					20.8	1.3		
Bourbon Elevator & Feed Mill	9617	1550	Bourbon	found					20.9	1.3		
Lakeville Elevator Co.	9617	2139	Lakeville	found					21.6	1.0		
Frank Strock	9617	2175	Hudson	found					21.8	1.3		
G. Wolff & Sons	9617	2177	Hamilton	found					21.4	1.5		
Syler & Syler	9617	2189	Nappanee	found					21.0	1.7		
Rich Valley Co-operative Elevator	9617	2259	Rich Valley	found					21.4	1.1		
Walter Grain Co.	9617	2262	Auburn	found					21.4	1.2		
S. F. Trembley Co.	9617	2272	Columbia City	found					21.3	1.2		
Farmers Elevator	9617	2286	South Whitley	found					21.2	1.2		
Huntington Equity Exchange Co.	9617	2384	Huntington	found					22.4	0.9		
C. E. Bash & Co.	9617	2385	Huntington	found					21.6	1.0		
C. V. Graft	9617	2417	Winchester	found					22.0	0.7		
Henry Dotterer & Son	9617	2421	Bluffton	found					22.0	1.3		
Tocsin Lumber & Grain Co.	9617	2422	Tocsin	found					22.0	1.2		
V.-C. Muck Special 0-8-24	9622			guaranteed					8.0	1.5		24.0
Frank Strock	9622	1420	Hudson	found					8.7	0.3		25.4
V.-C. Acid and Potash 20-20	9624			guaranteed					20.0	1.5		20.0
Frank Strock	9624	1419	Hudson	found					20.4	0.4		20.1
Bourbon Elevator & Feed Mill	9624	1554	Bourbon	found					20.3	0.3	......	20.0
V.-C. Plow Brand 0-10-10	9715			guaranteed					10.0	1.5	......	10.0
Frank Strock	9715	1416	Hudson	found					11.2	0.6	......	10.2
Lakeville Elevator Co.	9715	2160	Lakeville	found					11.0	0.8	......	10.0
V.-C. Ammoniated Phospho Tobacco 2-12-2	186a			guaranteed				2.0	12.0	1.5	......	2.0
Michael Ripperger[278]	186a	2073	Brookville	found	0.89			2.2	13.6	0.4	......	2.5
C. V. Graft	186a	2415	Winchester	found	1.57			2.1	12.0	2.9	......	2.3
Michael Ripperger	186a	2541	Brookville	found	1.61			2.1	13.6	1.3	......	2.2
V.-C. Ammoniated Phospho Tobacco 2-12-6	187a			guaranteed				2.0	12.0	1.5	......	6.0
Henry Lucas	187a	1211	Brownstown	found	1.72			2.0	13.0	0.7	......	6.0
V.-C. Potash Formula 14-6	189a			guaranteed					14.0	1.5	......	6.0
Uhl-Snider Milling Co.[279]	189a	1328	Connersville	found					**12.8**	1.1	......	7.1
Lakeville Elevator Co.	189a	2143	Lakeville	found					14.9	1.0	......	6.0
V.-C. Tip Top 2-8-16	191a			guaranteed				2.0	8.0	1.5	......	16.0
C. E. Bash & Co.	191a	1365	Huntington	found	1.86			2.0	8.4	0.4	......	16.4
Frank Strock	191a	1417	Hudson	found	1.80			2.0	8.6	0.4	......	16.0

Where 60.0 per cent or more of the total nitrogen guaranteed was found to be water soluble, the active and inactive insoluble organic nitrogen was not determined.

Percentages appearing in bold type in the "Inactive water insoluble organic" column denote inferior nitrogen.

[274] Purchased from B. I. Holser & Co., Walkerton, Ind.

[275] Purchased from B. I. Holser & Co., Walkerton, Ind.

[276] Sample received in the spring.

[277] Sample received in the spring.

[278] Sample received in the spring.

[279] Refund $4.80.

TABLE 13. Report of Inspection of Fertilizer Collected in 1935—Continued

Labels and Names of Persons from Whom Samples were Secured	Official No.	Inspection No. I.	Samples Taken at		Nitrogen (N)				Phosphoric acid (P_2O_5)			Potash (K_2O), soluble in water, per cent
					Water soluble as nitrates, ammonia salts and organic, per cent	Active water insoluble organic, per cent	Inactive water insoluble organic, per cent	Total per cent	Soluble and reverted (available), per cent	Insoluble, per cent	Total per cent	
S. F. Trembley Co.	191a	2051	Columbia City	found	1.90			2.1	9.3	0.5		15.7
V.-C. Owl Brand 2-12-2	192a			guaranteed				2.0	12.0	1.5		2.0
Uhl-Snider Milling Co.	192a	1325	Connersville	found	1.59			1.9	13.4	0.3		2.0
Andrews Elevator	192a	1371	Andrews	found	1.82			2.1	12.0	0.9		2.0
H. G. Dotterer & Son	192a	1384	Bluffton	found	1.93			2.1	12.1	1.0		2.0
H. G. Dotterer & Son	192a	1386	Bluffton	found	1.69			2.0	12.6	2.2		2.1
Frank Strock	192a	1414	Hudson	found	1.88			2.1	12.7	0.8		2.1
Lakeville Elevator Co.	192a	2144	Lakeville	found	1.82			2.1	12.5	1.1		2.4
G .Wolff & Sons	192a	2172	Hamilton	found	1.75			2.0	12.6	1.0		2.0
Frank Strock	192a	2173	Hudson	found	1.77			2.1	12.2	1.4		2.3
Rich Valley Co-operative Elevator	192a	2261	Rich Valley	found	1.82			2.1	12.1	1.6		2.1
Farmers Elevator	192a	2287	South Whitley	found	1.71			2.1	12.5	1.2		2.0
Huntington Equity Exchange Co.	192a	2388	Huntington	found	1.82			2.1	12.8	1.2		2.3
Burk Elevator Co.	192a	2411	Decatur	found	1.79			2.1	12.0	1.9		6.1
Tocsin Lumber & Grain Co.	192a	2412	Tocsin	found	1.79			2.1	12.4	2.0		2.0
Preble Equity Exchange	192a	2413	Preble	found	1.76			2.1	12.0	2.2		2.2
V.-C. Good Luck 4-24-4	201a			guaranteed				4.0	24.0	1.5		4.0
G. Wolff & Sons^{280}	201a	2181	Hamilton	found	3.64			4.0	24.4	0.4		4.0
V.-C. Super Fertilizer 4-24-12	530a			guaranteed				4.0	24.0	1.5		12.0
G. Wolff & Sons	530a	2182	Hamilton	found	3.80			4.0	24.2	1.5		12.0
C. E. Bash & Co.	530a	2383	Huntington	found	4.00			4.2	24.6	0.4		12.0
V.-C. Phospho Tobacco 14-6	756a			guaranteed					14.0	1.5		6.0
C. V. Graft^{281}	756a	1507	Winchester	found					14.3	0.8		6.4
C. V. Graft	756a	2416	Winchester	found					15.9	0.6		6.5
V.-C. Farmer's Friend 2-12-6	759a			guaranteed				2.0	12.0	1.5		6.0
Henry Lucas	759a	1213	Brownstown	found	1.88			2.1	12.4	1.2		6.2
Uhl-Snider Milling Co.	759a	1330	Connersville	found	1.80			2.0	12.6	0.9		6.4
C. E. Bash & Co.	759a	1361	Huntington	found	1.81			2.0	12.0	0.9		6.1
H. G. Dotterer & Son^{282}	759a	1385	Bluffton	found	1.83			2.0	12.8	0.8		6.0
Burk Elevator Co.^{283}	759a	1388	Decatur	found	1.99			2.2	12.2	1.3		6.0
Frank Strock	759a	1418	Hudson	found	2.00			2.2	13.1	0.9		6.0
Bryant Elevator Co.	759a	1490	Bryant	found	1.82			2.1	12.6	0.8		6.3
G. Wolff & Sons	759a	2178	Hamilton	found	1.83			2.1	12.1	1.2		6.7
Syler & Syler	759a	2188	Nappanee	found	1.72			2.0	12.0	1.4		6.0
Clay Syler	759a	2289	North Manchester	found	1.89			2.2	12.1	1.4		6.0
Huntington Equity Exchange Co.	759a	2386	Huntington	found	1.78			2.0	13.1	1.0		6.3

Burk Elevator Co.	759a	2389	Decatur	found	1.85	......	......	2.1	12.6	1.5	......	6.6
Preble Equity Exchange	759a	2414	Preble	found	1.82			2.1	12.3	1.5		6.5
Hoosier Grain & Supply Co.	759a	2423	Bluffton	found	1.90			2.1	12.6	1.5		6.4
Henry Dotterer & Son	759a	2424	Bluffton	found	1.75			2.0	12.3	1.6		6.4
V.-C. Truck Hustler 4-10-6	762a			guaranteed				4.0	10.0	1.5		6.0
Burk Elevator Co.	762a	1394	Decatur	found	3.82			4.0	10.8	0.7		6.1
V.-C. Farmer's Relief 1-11-4	932a			guaranteed				1.0	11.0	1.5		4.0
Bryant Elevator Co.	932a	1487	Bryant	found	1.02			1.2	11.8	0.6		4.0
Preble Equity Exchange	932a	2418	Preble	found	0.90			1.1	11.5	0.7		4.2
V.-C. Lawn and Grass 10-6-4	1373a			guaranteed				10.0	6.0	1.5		4.0
Burk Elevator Co.[281]	1373a	1392	Decatur	found	8.22			**8.7**	7.7	0.2		4.0
Walker-Gordon Farms, Juliustown, N. J.												
Driconure	1213a			guaranteed	......	......	......	1.0	......	......	1.0	1.0
North Side Feed Store[285]	1213a	2087	Mishawaka	found	0.34	0.61	**1.15**	2.1	......	......	0.8	1.4
Weekley & Allen, Richmond, Ind.												
American Bat Guano	1514a			guaranteed				9.0			2.0	1.0
Weekley & Allen[286]	1514a	2685	Richmond	found	3.21	4.23	1.06	**8.5**			3.0	1.0
Wenning, A. E., New Salisbury, Ind.												
Wenning's Corn and Wheat Grower 2-12-6	614a			guaranteed				2.0	12.0	1.0		6.0
A. E. Wenning[287]	614a	2620	New Salisbury	found	1.57			2.2	**10.0**	1.7		6.4

Where 60.0 per cent or more of the total nitrogen guaranteed was found to water soluble the active and inactive insoluble organic nitrogen was not determined.

Percentages appearing in bold type in the "Inactive water insoluble organic" column denote inferior nitrogen.

[280] Not tagged. Labels furnished.

[281] Sample received in the spring.

[282] Sample received in the spring.

[283] Sample received in the spring.

[284] Refund $0.39.

[285] Not tagged. Labels furnished.

[286] Not tagged. Labels furnished. Refund $0.40.

[287] Refund $24.00.

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Circular No. 223 September, 1936

INSECT PESTS OF MUCK CROPS

UNIVERSITY OF

PURDUE UNIVERSITY
AGRICULTURAL EXPERIMENT STATION
LAFAYETTE, INDIANA

INSECT PESTS OF MUCK CROPS

GEORGE E. GOULD, Department of Entomology

Muck crops of Northern Indiana are attacked by a number of serious insect pests, most of which can be readily controlled by the application of proper remedial measures. Determination of the proper methods of control requires some knowledge of the life history and habits of these insects and their type of mouthparts. In this bulletin the latest developments in control of the principal muck crop pests are discussed.

Cultural and sanitary practices about the farm are important in the reduction of insect populations and often check pests before they multiply and become widespread. Crop rotation, summer fallowing, clean cultivation, early fall plowing, and the destruction of old crop remnants are often determining factors in maintaining insect populations at a minimum. Weeds in cultivated fields, in fence rows and in adjoining pasture or waste land, are ideal breeding grounds for many pests. Under normal conditions many of our common insects are held in check by weather and by parasites and predators. Among recent investigations the development of varieties that are resistant or tolerant of insect attack offers some promise in the economical production of certain muck crops, which heretofore have been treated with insecticides with only partial success.

Control through the use of insecticides is based on a knowledge of insect structures, especially of the mouthparts. In this respect insects are generally divided into two groups, according to whether they have jaws or mandibles for chewing portions of plant tissue, or whether they have a beak for sucking out the plant juices. Chewing insects are usually controlled by the use of stomach poisons, such as arsenate of lead, calcium arsenate and Paris green, which are applied to the plant surfaces and are eaten with the food. Sucking insects are controlled by the use of contact poisons, such as nicotine, pyrethrum and derris extracts, oils and soaps, which kill by coming in contact with the body of the insect. Injury by chewing insects, of which beetles, grasshoppers, caterpillars and grubs are examples, is recognized by defoliation of leaves, by small holes in the leaves, by tunnelling or mining of leaves, stems or roots, or by skeletonizing of leaves. Injury by sucking insects, of which plant lice, plant bugs and leafhoppers are examples, is more difficult to recognize but is usually noticeable by the curling of leaves, the malformation of terminal plant growth, wilting of the plant, failure to make growth, and often by the yellowing of affected parts.

Successful insect control depends largely upon the proper treatment at the proper time. A small, localized infestation is much cheaper and more easily controlled than when the pest is widespread over the field. Suitable spraying and dusting equipment is essential, if insecticides are to be economically and effectively applied. Every muck farm with two or more acres of mint and vegetables should have either a power sprayer or a power or traction duster. When a grower has over a hundred acres in crops that may need treatment, at least two outfits should be available. Most growers prefer spraying and in normal seasons have no difficulty in pulling a full sprayer over their fields, especially if the wheels are equipped with extension rims. In purchasing a sprayer a grower should obtain one capable of maintaining at least 200 pounds pressure and equipped with three nozzles per row. Dusters because of their lighter weight and lower cost, are preferred by some. Most traction dusters are capable of covering four rows with two adjustable nozzles per row. Every farm should also have either a hand duster or sprayer for crops grown on a small scale, for spot treatment of isolated, infested plants, or for plants in seed beds. All spraying and dusting equipment should be equipped with adjustable, angle nozzles, which are so essential in properly applying materials to the undersides of the foliage.

A recent complicating problem in the chemical control of insects is the Federal regulation on the amount of spray residue on marketed vegetables, which is recognized in the insecticidal recommendations hereafter suggested.

INSECT PESTS OF CABBAGE AND RELATED CROPS

Cabbage, and to a lesser degree, cauliflower, broccoli, Brussels sprouts, kohlrabi, Chinese cabbage, kale, turnips, and radishes are important crops on muck soils and are severely damaged by a number of pests. These include several kinds of cabbage worms, plant lice, cabbage maggot, cutworm, and flea beetles.

Cabbage Worms.—Four different caterpillars feed on cabbage and of these the imported cabbage worm is perhaps the commonest and most important. The common cabbage worm (Fig. 2) which is the larval stage of a white butterfly, is velvety green in color and about an inch long. It feeds on the upper leaves and about the cabbage head, often eating into the head itself. This insect breeds throughout the summer and is more destructive to the later crops. Hibernation takes place as pupae under old cabbage plant debris.

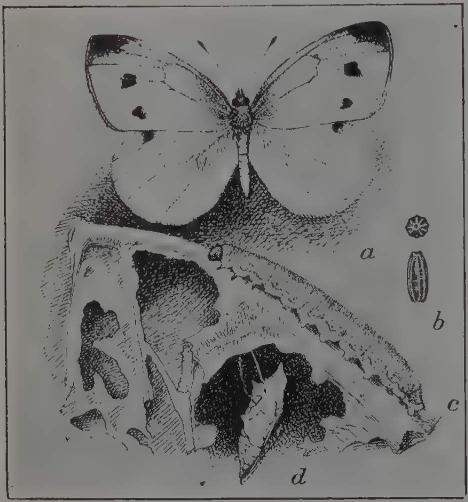

Fig. 2. The common green cabbage worm is the larval stage of the familiar white butterfly. (After Chittenden).

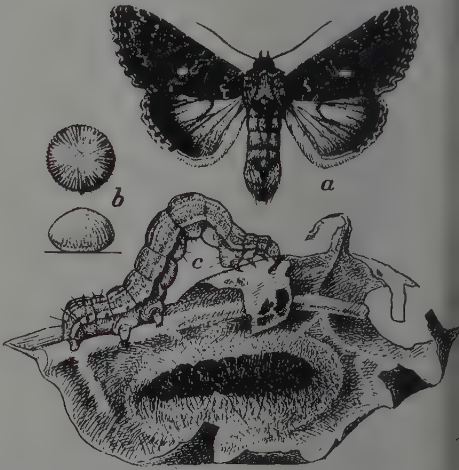

Fig. 3. The cabbage looper is the larva of a brownish moth. (After Chittenden).

The Cabbage Looper (Fig. 3) is quite destructive certain seasons but is normally held in check by parasitic insects and diseases. This pest, which is the larval stage of a brown moth, is light green in color and one and a half or more inches in length. It is readily distinguished from the common cabbage worm by its looping movement similar to a "measuring worm" and by its habit of feeding on the lower surfaces of the older or lower leaves. Damage usually occurs from this pest in late summer and early fall.

The other two worms, *the caterpillar of the diamond-back moth,* a small green worm, and *the zebra caterpillar,* a striped yellow and black worm, are pests of minor importance. They are controlled by the same applications used for the other cabbage worms.

Control.—Cabbage worms and loopers are difficult to kill and so it is advisable to use strong poisons early in the seasons. Applications should be made about 10 days after setting plants in the field and again 10 days later. Occasionally it may be necessary to treat the plants in the seed bed or to dip them in the process of transplanting. For these early applications the cheaper metallic poisons, such as arsenate of lead, can be used, but after the cabbage commences to head, only non-poisonous materials, such as derris, cube and pyrethrum, are recommended. Dusts usually give better control, as sprays adhere poorly to cabbage foliage.

Three dust mixtures, Paris green 1 pound mixed with 9 pounds of hydrated lime; arsenate of lead 1 pound with 5 pounds of lime; or cryolite 1 pound with 2 pounds of clay or talc and 1 pound dusting sulphur, will give good results when dusted on both surfaces of the foliage, especially if loopers are present. As a spray, 2 pounds of arsenate of lead and 2 to 3 pounds of good laundry soap are used in 50 gallons of water.

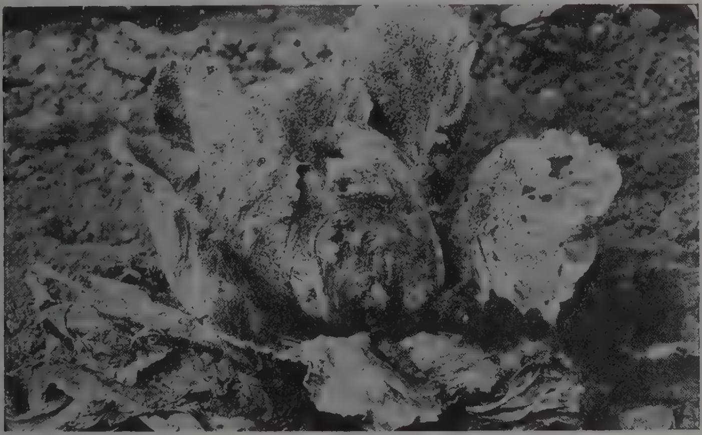

Fig. 4. Cabbage is often infested with gray, mealy lice or aphids. (After Davis).

Normally two applications early in the season will check cabbage worms but if late treatments are necessary, the non-poisonous derris powder should be used. Derris powder is mixed with powdered clay, flour or other inert dust to contain ½ per cent active ingredients and is used dry as a dust. In experimental tests derris powder containing 5 per cent active ingredients used in water at a rate of 2 pounds in 50 gallons and with a spreader added gave results even better than the dust. Derris powder and the ready-mixed derris dust, which is sometimes called rotenone dust, are rather high in cost but do give exceptionally good control of the worms and are especially useful when treatment is necessary shortly before the crop is harvested.

Cabbage Louse.—Cabbage lice or aphids are often a serious problem in the production of a cabbage crop. These small, waxy insects appear soon after the plants are set in the field and with favorable climatic conditions breed up in large numbers (Fig. 4) and kill the plants. Turnip lice, which prefer turnips and mustard, and spinach lice are also common on various cabbage crops. These insects have a short life cycle and can increase to enormous numbers if allowed to go unchecked. The first infested plants must be thoroughly sprayed or burned if the infestation is to be stopped. Parasites are important in keeping lice under control in warm weather, but in the cooler seasons the lice breed faster than their enemies.

Control.—In order to control plant lice infested plants must be thoroughly sprayed with a solution of 2/3 pint of 40 per cent nicotine sulphate in 50 gallons of water in which 2 or 3 pounds of good laundry soap has been dissolved. All lice should actually be hit with the spray. For dusting, 5 pounds of 40 per cent nicotine sulphate is mixed with 95 pounds of hydrated lime. This mixture must be prepared fresh and should be applied on quiet days when the temperature is above 65° or 70° F.

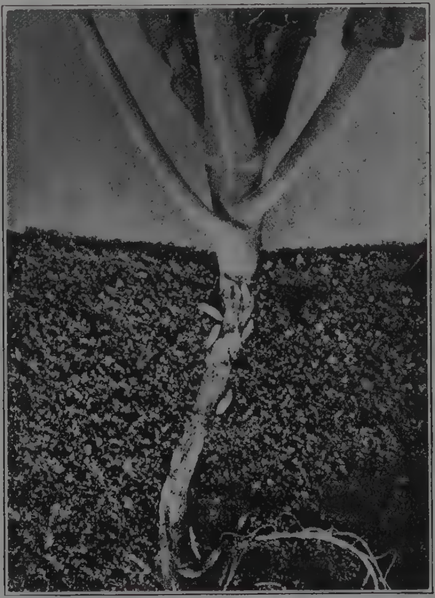

Fig. 5. The roots of cabbage, radishes, and onions are frequently attacked by white, legless maggots.

Cabbage Maggot.—Cabbage maggots are small, white, legless worms, the larval stage of a fly, which feed on the roots of cabbage (Fig. 5), radish and related crops, especially in cool, wet seasons. Plants may be attacked in the seed bed or after being transplanted in the field. The feeding on the roots cuts off the food supply and causes wilting and in severe infestations the death of the plant. This pest winters in a brown puparium in the soil and the adult flies emerge in early spring. Eggs are laid in the soil near the plant.

Control.—The maggots can be controlled by the use of a corrosive sublimate solution applied about the plants. This solution is made by dissolving 1 ounce of corrosive sublimate (bichloride of mercury) in a small quantity of hot water in a glass, earthenware or wooden receptacle and then adding sufficient water to make 10 gallons. This material is poisonous and will corrode all metals. The solution is applied around each plant so that the soil is thoroughly wet. The first application should be made in early May as soon as the eggs become abundant. A second application a week later may be necessary if the weather continues wet and cold. The solution can be applied with a sprinkling can with the sprinkler removed, or from a barrel mounted on a wagon, using two or more leads of hose. A gallon of solution should treat 75 small plants.

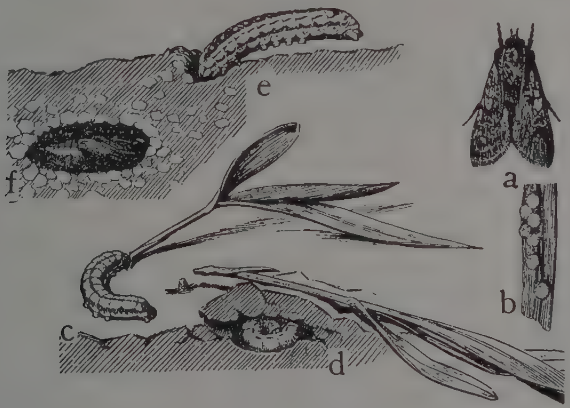

Fig. 6. Cutworms are common pests of muck crops growing in the spring. a, moth; b, eggs (enlarged); c, d, and e, larvae; f, pupa. (U. S. D. A.)

Cutworms.—Cutworms (Fig. 6) of many varieties are found in muck fields attacking practically all crops grown. Cabbage, especially when first transplanted, is subject to severe loss from several species of cutworms, some of which cut off the plants at the ground surface and some of which feed underground. The adult stages of these insects are the common dull, brownish moths that are attracted to lights during early summer. The female moth lays her eggs usually on grasses and the caterpillars are about half grown by fall. After spending the winter sheltered by weeds, grass, and other debris, the cutworms become active in the spring and feed voraciously on whatever green food they can find. These pests are nocturnal in habits and can cut off many plants during a night. Grassy fields and cold, damp springs are favorable for cutworm abundance.

Control.—In small garden areas cutworms can be trapped under boards placed on the ground. The cutworms collecting under the boards are removed and destroyed daily. Damage to transplanted plants, such as cabbage and tomatoes, can be prevented by loosely wrapping them with a three-inch band of paper so that about half of the paper is below the surface. The most effective control measure in the farm garden or in large fields is, of course, the use of a poison bran bait. This bait is made by mixing dry 1 pound of Paris green in 25 pounds of bran, and then adding 2 quarts of cheap, strong molasses and sufficient water (about 2 gallons) to make the mixture slightly damp. This mixture should be scattered about sunset over the infested field either previous to planting the crop or about the plants as they come up. The rate of application should not be more than 15 pounds to the acre.

INSECT PESTS OF CELERY

Tarnished Plant Bug.—This insect is perhaps the commonest pest found in the vegetable garden and in addition feeds on many weeds, greenhouse plants and some fruit trees. The adults of this insect are mottled brown in color. The young bugs resemble the mature form, except they are smaller, wings are absent and they have a greenish tint. All stages of the insect are quite active and disappear quickly when disturbed. The tarnished plant bug is a sucking insect and feeds on celery, potatoes, tomatoes, beans, Chinese cabbage, turnips, cabbage and cauliflower. Its abundance on cultivated crops is correlated closely with weeds in the field, along the fence rows or in adjoining pasture or idle land. A definite migration from white top and related composite plants, takes place in late July and August as these weeds dry up and die.

Fig. 7. Weeds growing in and around fields of celery and potatoes are breeding places for the tarnished plant bug.

Damage to celery is particularly noticeable at the joints where the bugs prefer to feed. These feeding punctures cause some injury and often allow bacteria and other disease organisms to enter. Such celery has to be trimmed and often only the hearts are marketable. In the case of potatoes the damage is caused by puncturing the growing tips, which subsequently wilt and die. Injury is more severe to crops growing or maturing in August. There are three or four generations of these insects each season in Northern Indiana.

Control.—This pest is exceedingly difficult to control with insecticides because it is active and contact insecticides have little effect even on the younger

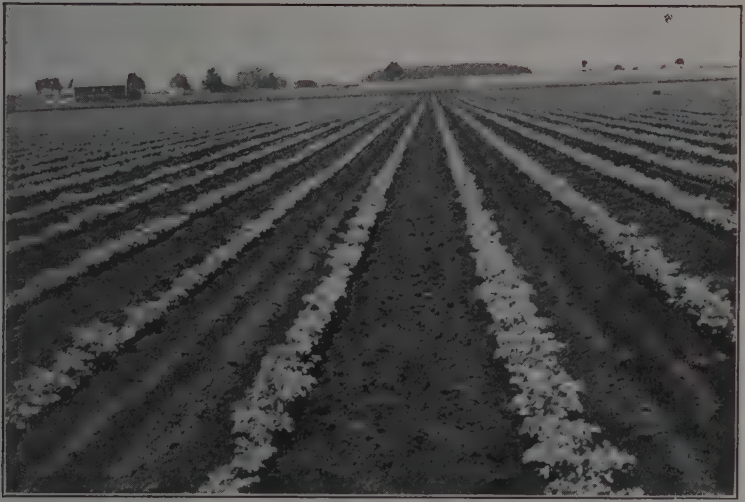

Fig. 8. Clean cultivation of muck crops helps to eliminate many insect pests, including the tarnished plant bug.

stages. Of greatest importance in control is the elimination of all weeds in the fields (Figs. 7 and 8) and also the elimination, before blossom time, of weeds growing in adjoining land. The commonly used Bordeaux spray and copper-lime dust on celery for disease control and on potatoes for disease and leafhopper control are of some value as repellents. In New York State growers find that dusting with hydrated lime lessens the injury, while dusting sulphur (300 mesh) when used alone or combined with lime in either a dust or spray gave good control on both early and late celery at a reasonable cost. An average of four or five applications of 25 to 35 pounds per acre of dust and 100 gallons of a 12-12-50 sulphur-lime-water spray are necessary when the bugs are numerous. A mixture of 1 pound of fresh, finely ground pyrethrum powder and 3 pounds dusting sulphur may be used when the young are present in large numbers.

Certain celery varieties are more resistant or tolerant to plant bug injury than others. While these resistant strains are of the green celery type, they offer some hope that the plant breeders can develop immunity in the more desirable yellow types.

Minor Pests of Celery.—Several kinds of leafhoppers, plant bugs and plant lice occasionally are found on celery but are rarely of sufficient importance to justify control measures. The celery looper and the celery caterpillar are sometimes found on celery but seldom in large numbers. In some sections of the state, especially where southern celery has been shipped in during the winter and spring months, the celery leaf tier has appeared in destructive numbers. This insect also works on various plants in the greenhouse and it is possible for greenhouse-grown celery plants to become infested. In Florida the control of this pest is by the use of fresh pyrethrum powder, applied twice at a 30-minute interval.

INSECT PESTS OF CUCUMBERS, MELONS AND SQUASH

Cucumber Beetles.—The most destructive pests on all cucurbit crops are the striped and the spotted cucumber beetles, which not only destroy the small plants as they first come through the ground, but also feed on the foliage and blossoms of mature plants and carry the wilt disease organism from plant to plant. The striped cucumber beetle, which is yellow with three black stripes (Fig. 9) is usually the common variety observed while the 12-spotted cucumber beetle, which is slightly larger in size and with 12 black spots on the wings, feeds on a number of different crops and is sometimes conspicuous attacking cucurbits. The exact hibernation habits of the spotted beetle are not known but they appear in late May or early June and possibly have two generations in Northern Indiana. The striped cucumber beetles winter on southern slopes in woods under leaves and loose soil and especially in lowlands. They come out early in the spring and feed on the pollen of many early-blooming trees and plants. As cucurbit crops come up, these beetles migrate into the fields in large numbers and often destroy all of the small seedling plants. There are two and perhaps three generations of the striped form each year with the fall individuals feeding on the pollen of wild flowering plants. In addition the slender white larvae or worms, hatching from the eggs laid in the soil, feed on the roots of cucurbits.

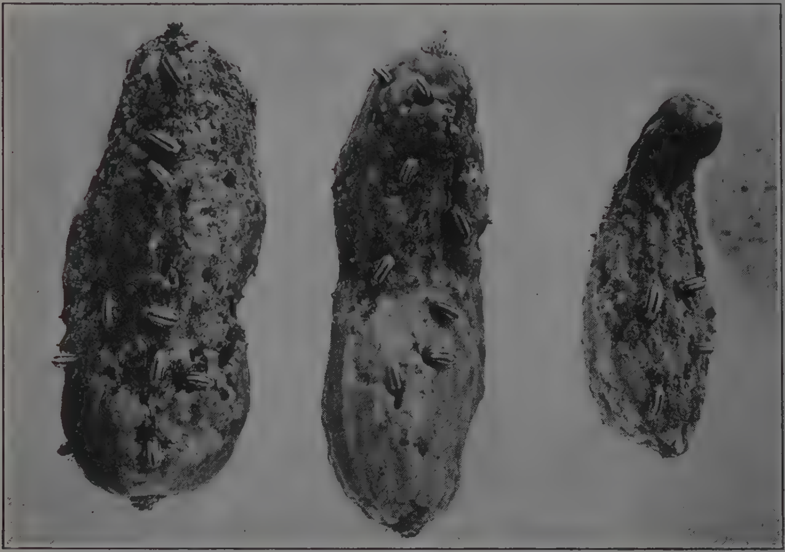

Fig. 9. The striped cucumber beetle destroys cucumber by its feeding and by spreading cucurbit wilt.

Even more destructive than the feeding of the beetles or the larvae is the wilt disease they spread among cucumbers and melons. The only carrier of this disease from plant to plant and through the winter is this beetle. A single bite on a healthy plant is sufficient to infect it although the symptoms of the disease do not show up for several weeks. The first evidence of the disease is the wilting of the vines during the heat of the day. After alternately wilting and recovering for several days, the leaves turn brown and the plant dies. Death of plants from wilt starts about the time of the first harvest and continues throughout the season. It is estimated that the yield of pickles in Northern Indiana is cut at least in half by this disease. The only known control of wilt is to completely control the striped cucumber beetle.

Control.—Cucumber beetles are rather difficult to control as they are repelled from plants covered with lime or arsenicals. The most effective mixture consists of 1 pound of calcium arsenate in 9 pounds of gypsum or land plaster (300 mesh grade). While this mixture is somewhat repellent, a thorough but not necessarily heavy coating over the plants at all times gives good results. The first application should be made as the plants come through the ground and repeated at four to seven day intervals, depending upon the plant growth and rainfall. A total of six to nine applications are necessary in the normal season. The material can be applied with a small duster or, if such equipment is not available, by shaking in a burlap sack or a bucket with small holes in the bottom. Hydrated lime or mixtures containing lime, such as Bordeaux spray or copper-lime dust are not advised on cucurbits as they often cause severe burning and stunting. In recent experiments at this station preliminary tests with certain insoluble copper compounds in both spray and dust forms gave excellent control of the beetles and wilt but the results of a single season's test would not warrant recommendations.

Melon Louse.—Plant lice or aphids are frequently serious pests on cucurbit crops. They breed very rapidly, living on the undersides of the leaves and causing the leaves to curl.

Control.—Successful control using the nicotine sulphate as for cabbage lice is accomplished only by thoroughly applying the insecticide to the under surfaces of the leaves. It is often possible to prevent an infestation from spreading by roguing out and burying the first hills infested.

Squash Bug.—The squash bug is often a serious problem in the growing of squash and pumpkins. This insect is a grayish black "stink bug" about three-fourths of an inch long when mature and is grayish or greenish gray when young. The eggs are bronze in color and are usually found on the upper sides of the leaves. Both the adults and young feed by sucking the sap from the leaves and stems and may interfere with normal sap flow. Small plants are quickly killed, while the leaves and vines of older plants wilt and often die.

Control is difficult as nicotine sprays have no effect on the adults and but little on the nymphs. Practices, such as destruction of crop remnants in the fall and hand picking of adults and eggs, will aid in reducing damage from these pests.

Squash Vine Borer.—Much of the loss on squash and pumpkins attributed to squash bugs and disease is caused by a white, grub-like borer found working at the base of plants. This borer is the larval stage of a clear-winged moth. Eggs are deposited on the stems of the plant and shortly after hatching, the small caterpillars bore into the stems. Their feeding cuts off the water and food supply, causing the leaves to wilt as if attacked by the wilt disease. Often two to 20 borers are found feeding in the base of one plant.

Control.—Since these insects feed inside the the stems, except for the first day or so after hatching, poisons are of little value against them after they burrow into the shoots. However, a 4-4-50 Bordeaux spray, with 1½ pounds of arsenate of lead added, applied at five- or six-day intervals, starting shortly after the plants come up and continuing for two or three weeks, will give effective control. Destruction of the vines immediately after the gathering of fruit will kill many borers. Cultivation of the ground in the fall where squash have grown will bring up and expose many of the cocoons. In the home garden the borers can be dug out of the stem with a sharp knife. Moist soil should be placed over the base of the plant after destroying the borers, to give them a chance to form new roots.

INSECT PESTS OF MINT

The insect enemies of the mint crop are discussed in some detail in Purdue Circular No. 211. Of the many pests attacking peppermint and spearmint, the mint flea beetle is the only major pest, while occasionally millipeds, cutworms and white grubs cause some damage.

Mint Flea Beetle.—The mint flea beetle is a new pest in Indiana but has now become established in all mint-growing areas. In the adult stage the small light brown beetles feed on the terminal foliage, while the small white worm-like grubs feed on the roots of the plant. It is essential for every grower to watch for indications of this pest in order that he may understand the relation between life history and control measures. This pest passes ten or eleven months of each year in the soil and so cultural practices and insecticide applications must be carefully timed.

The adult beetles start emerging from the soil early in July, with a peak of emergence usually around the middle of the month. They feed for ten days or two weeks before mating and egg deposition. The eggs, which are laid in the soil near the roots, remain here until the following spring when the small, white larvae hatch and commence feeding on the small rootlets. The larval stage lasts until the middle of June when they undergo a pupal or resting stage before emerging from the soil as adult beetles in July.

Injury to the roots is often hard to recognize by examining the foliage of the plants. With only a moderate amount of feeding on the roots, the foliage becomes reddish in color similar to frost injury. In cases of severe injury the foliage changes to a brownish color and often dies. The larvae when small feed on the smaller roots but later often girdle and tunnel into the large roots. Such feeding, of course, prevents the natural spread of the roots. The beetles feed upon the foliage, especially the terminal growth. Feeding occurs during the cooler portions of the day, the beetles remaining on the lower leaves, the stems or ground under the plant when the sun is bright. The beetles eat small, round holes in the leaves which will often cause them to drop when feeding is excessive.

Control.—Insecticide applications must be timed so that the poison is on the foliage when the majority of the beetles have emerged from the soil and *before* the females start to lay eggs. This period in normal seasons is between July 20 and August 5 for most Indiana mint sections or approximately 15 days after the first beetles appear. On growing mint the best material to use is calcium arsenate, which is applied undiluted, or with 5 to 10 per cent bentonite, at the rate of 15 to 20 pounds per acre. After the mint is harvested, a Paris green-flour mixture at a 1 to 9 dilution is safe to use, and gives a better kill, but it cannot be used on growing mint. Either mixture should be applied early in the morning when the air is calm and the plants moist with dew.

When the standing mint is dusted with calcium arsenate, it should not be used as hay for animals after the oil is distilled from it. In those seasons when insecticide applications will interfere with the normal harvesting of the crop, it is advisable to cut the mint a week or so early. Then the Paris green mixture can be applied to the mint stubble at the proper time to obtain the most efficient results. Special care should be taken to prevent infestation of first-year mint. When ready to cut a field of meadow mint adjoining row mint, a 20-foot border strip should be thoroughly poisoned and left uncut to kill the beetles as they migrate from the stubble.

Infestations in new fields are often started by carrying some stage of the insect on the roots used in setting out the new area. In that portion of the farm where plants for transplanting are to be obtained, special care should be taken to kill all beetles. At least three applications should be made to such areas. In digging the plants for transplanting, as much soil as possible should be shaken from the roots.

INSECT PESTS OF POTATOES

Potato Leafhopper.—The most destructive pest of potatoes on muck soils is the potato leafhopper. This small insect has sucking mouthparts and through its feeding causes a pathological condition, a dying of the plant cells,

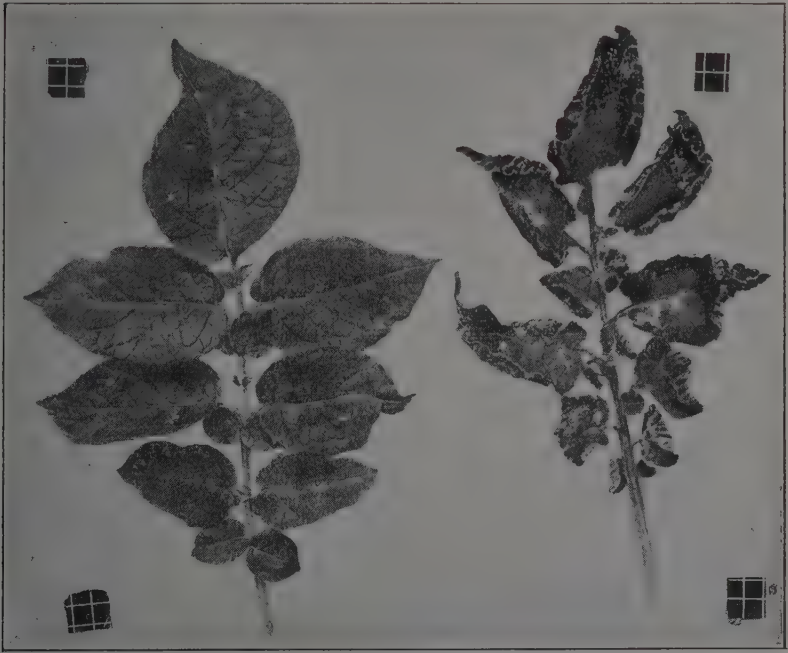

Fig. 10. The feeding of leafhoppers on potato foliage is toxic to the plant cells, causing curling and browning of leaves as shown at right. (After Parrott.)

known as hopperburn. Although more damage is caused to potatoes than any other crop, this insect also feeds on beans, apples and a number of cultivated and wild plants. Hopperburn first appears on the edges of the leaves as a browning dying area followed by curling and eventual death of the entire and eventual death of the leaf. (Fig. 10.) This condition is not caused by a disease organism and does not spread from leaf to leaf through the sap, but appears only after the feeding of the leafhoppers. In case of severe infestations the entire plant is affected and often dies two to four weeks prematurely.

These leafhoppers are small, greenish-white insects, very active and capable of jumping or flying when disturbed. The young resemble the adults except that they lack wings and cannot fly. Both stages are found on the under surface of the leaves. There is some question as to where these insects hibernate during the winter, but in the spring they suddenly appear in large numbers on weeds. After a generation here, there is a definite migration to apples and during late June still another migration to potatoes and beans. Eggs are laid in the stems or veins of the host leaves. As a rule leafhoppers cause little damage to the early potato crop as they do not migrate to them until shortly before the normal death of the plants. On late potatoes in Northern Indiana there are usually two generations a year, and damage is often severe.

Control.—Both the leafhopper and hopperburn are usually controlled through the use of Bordeaux spray or copper-lime dust. In a series of tests conducted over a period of five years on late potatoes at Goshen, the 4-6-50 Bordeaux spray applied five times at 10- to 14-day intervals gave increases in yield sufficient to show a very good profit over and above the additional cost involved in the treatment. A 20-80 copper-lime dust, while not so good as the spray, also gave yields that showed a net profit.

The Bordeaux spray should be freshly prepared before each application and is made as follows: dissolve 4 pounds of copper sulphate in a portion of the water and pour into the spray tank. Mix 4 to 6 pounds of chemical hydrated lime in sufficient water to make a thin paste and add to solution in tank while the agitation is running. Then add the remainder of the 50 gallons of water. Copper sulphate can now be purchased in a powdered form which dissolves readily in water and does not necessitate the over-night soaking of the lump form. Bordeaux spray should be applied at a rate of 100-125 gallons per acre with at least 200 pounds of pressure. The sprayer should have three nozzles per row, one for the top and one on each side.

A 20-80 copper-lime dust can be purchased ready-mixed or can be mixed at home. In mixing, 20 pounds of *fresh monohydrated* copper sulphate and 80 pounds of fresh hydrated lime are thoroughly combined. All materials should be kept tightly sealed until ready for use and should be purchased fresh each season. This dust must be applied early in the morning when the air is calm and the plants are wet with dew. The first application should be made when the plants are four to six inches high and at a rate of 20 pounds per acre. As the plants increase in size, the amount should be increased to about 35 pounds per acre.

A regular dust or spray schedule should be carried out every year on late potatoes, regardless of the presence or absence of leafhoppers. Although yields on the early crop seldom are increased sufficiently to pay for the extra cost involved, treatment of the late crop has always resulted in increased yields. Copper applied to the leaves in same way acts upon the plant and stimulates them to produce additional foliage. In New York State it has been found that the copper content should be high on the first application and reduced later. No treatments should be made after September first, in order to allow for maturity of the tubers.

Colorado Potato Beetle.—The globular yellow and black striped adults and brick-red grubs of the Colorado potato beetle (Fig. 11) are well known to most potato growers. As a rule, the damage from this pest is more serious on early potatoes.

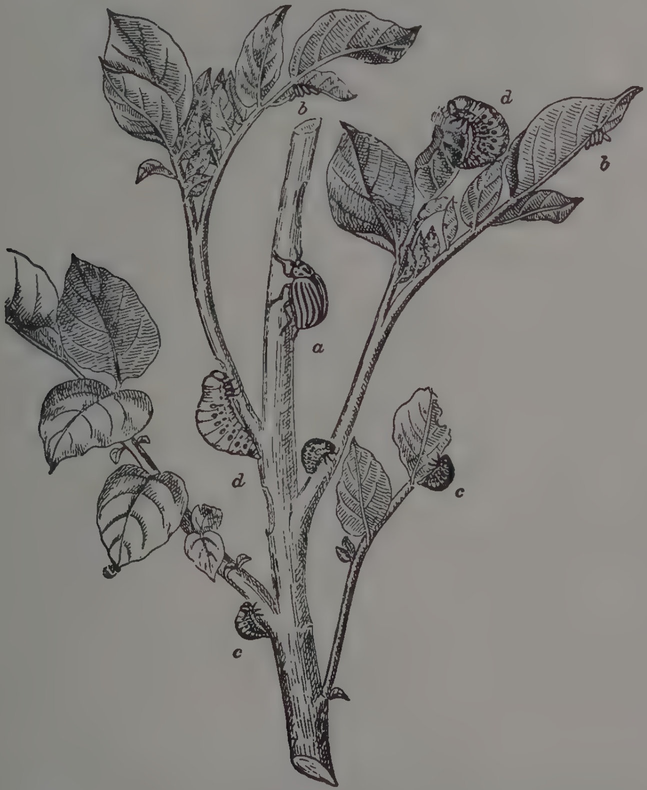

Fig. 11. The common yellow and black striped Colorado potato beetle attacks the foliage of potatoes in the larva and adult stages. (After Chittenden, U. S. D. A.)

Control is rather simple as the beetles and grubs are slow-moving and feed readily on poisoned foliage. For spraying arsenate of lead can be used alone in water or in Bordeaux at a rate of 1½ pounds to 50 gallons. For dusting calcium arsenate is used with lime in a 1 to 5 dilution or in a copper-lime dust formula of 20-20-60, where the first figure indicates the poison.

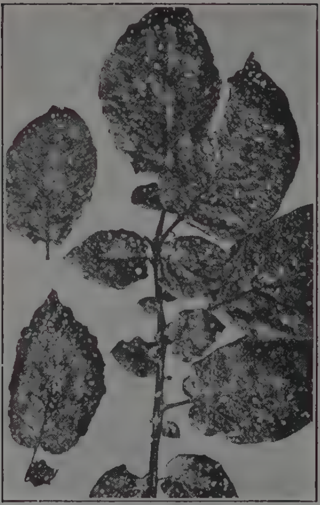

Fig. 12. Flea beetles eat small holes in the foliage.

Potato Flea Beetle.—These small, black, jumping beetles are occasionally injurious to muck potatoes. They injure the potato foliage by eating small circular holes (Fig. 12), while their small, white larvae tunnel on the surface of the tubers.

Control.—The beetles are controlled by the use of the poisoned copper-lime-dust or Bordeaux spray, prepared as indicated under the Colorado potato beetle.

Blister Beetles.—Blister beetles of several varieties may migrate into a portion of the field and rapidly strip the potato plants of foliage. The common, long black and yellow striped beetle is known as the old-fashioned potato beetle, while gray and black varieties also feed on potatoes.

Control.—These insects are repelled by the presence of arsenicals and lime on the foliage. Barium fluosilicate diluted with equal parts of dusting clay or flour will give excellent control, but should not be applied to plants coated with other insecticides or when the plants are wet.

White Grubs.—White grubs are frequently serious pests of corn, potatoes, and many vegetable crops on land which has been in sod within two years. These insects, which in the adult stage are common June beetles, have a three-year cycle, most of which is spent in the soil. The beetles feed on many kinds of trees and lay eggs in nearby sod or grassland. The grubs prefer the roots of grasses and corn but do feed upon a number of other plants. (Fig. 13). The first two seasons following the plowing of sod land may see considerable damage to susceptible crops.

Control.—Since these pests spend most of their life in the soil, control is difficult. Rotation of crops is important and susceptible crops such as corn, strawberries, potatoes and root crops should not be planted in sod land for at least two seasons after plowing. Certain legume crops and some vegetables suffer but little damage from the grubs. Early fall plow-

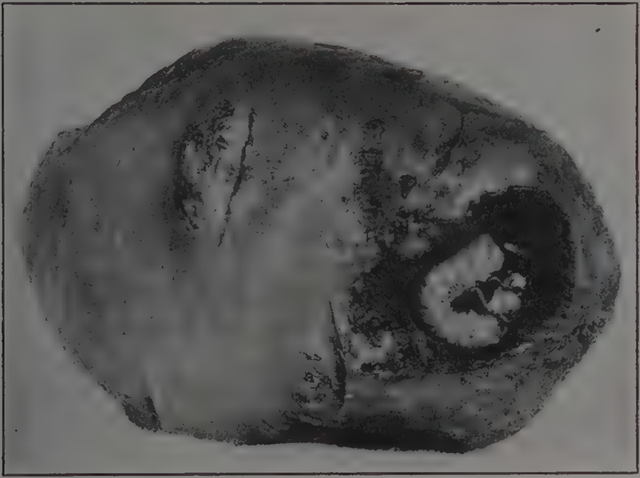

Fig. 13. The common white grub cuts off the roots of most muck crops and eats into the tubers of potatoes. (After Davis, U. S. D. A.)

ing before the grubs go down for the winter will expose them to birds and other predators.

Wireworms.—Wireworms of several different varieties are frequently common in muck soils. In some respects they resemble the white grub in habits as they have a long life cycle (two to five years) and all but a month or so of this time is spent in the soil. Wireworms are hard, brownish, wiry worms about an inch long, while the adult is the common click or "snapping" beetle. The larval stage prefers to feed on the roots of grass crops and will burrow into potato tubers. The injury on potatoes consists of holes usually less than ¼ inch in diameter eaten into the tubers, while injury by white grubs is larger but shallower.

Control.—Control of wireworms is difficult and depends largely upon cultural practices. Rotation, using a legume if possible, and early fall plowing are of some value. As a rule, wireworms are associated with poor drainage and the correction of this trouble will often eliminate damage. The adult female lays her eggs during May and June in the soil of grassy or weedy land. If the soil is bare of all vegetation during this egg-laying period, the females will avoid this land. Crops should be thoroughly cultivated to eliminate grass. Bait crops, in which rows of wheat, corn or cull onions are planted in severely infested fields, are of some value. A week after placing the baits the wireworms in the nearby soil will have collected about them and can be dug up and destroyed or may be killed by drilling calcium cyanide along side the bait crop.

Millipeds.—Millipeds (Fig. 14) are not insects, but belong in a closely related group of animals, characterized by having two pair of legs on each body segment. They are usually dark brown in color, round in cross section, and have a length of one to two inches. When disturbed they quickly curl up in a tight roll. These pests prefer soils with a high organic content and

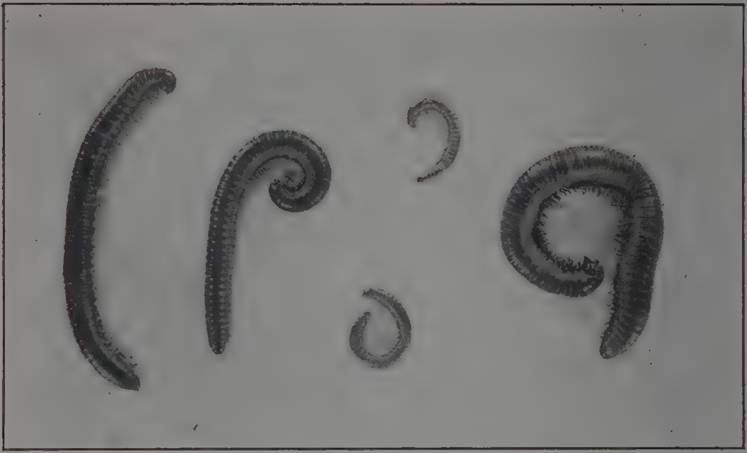

Fig. 14. Millipeds are common in many muck soils and are especially injurious to potato tubers.

especially those where crop remnants have been plowed under or soil conditions are moist. Their food consists of various organic substances in the soil and in some instances roots of plants are attacked. Damage to potatoes on some Indiana muck farms has ran as high as 50 to 60 per cent of the tubers.

Control.—Millipeds live in the soil year after year and are exceedingly difficult to eradicate. Thorough summer fallowing of heavily-infested muck land is advisable. Green crops, manure, and plant debris should not be plowed under, if at all possible to avoid. Highly acid soils are avoided by millipeds. Soils with a pH reaction of around 5 have little trouble from these pests, but with a pH 5.5 and above, millipeds will multiply rapidly if they ever become established. Sulphur has been used a great deal in the past few years to acidify the soil, but should be used only after careful tests of the soil. Acid forming fertilizers are also of value on soils with a reaction of not over pH 6.0.

INSECT PESTS OF ONIONS

A number of insects attack the onion crop and two, the onion thrips and the onion maggot, cause losses almost every year. Chemical control measures, however, are not entirely effective and supplementary measures must be relied on to keep insect population at a minimum.

Onion Maggot.—Onion maggots occasionally cause severe damage to the onion crop, especially in damp seasons. This insect in its adult stage is a small, dull-gray fly, somewhat smaller than a house fly, and as a larvae is a small, white, legless maggot. The winter is passed in a brown puparium in the soil in old onions or in the onion screening pile. In late April and May the flies emerge and lay their eggs in the soil near the small seedling onions. On hatching the small maggots eat into the small onions near the base. Frequently the maggots will leave the first onion and bore into a second and sometimes a third onion. These small onions may be killed outright by the feeding of the larvae, or rot organisms may enter through the injuries made by the maggot. Injury is much more severe on the pickling onions or onions grown for sets as in these cases the seed is planted thick and one insect can work into a number of closely crowded plants. Damage is always more severe during May as the plants are then small and that brood of maggots is usually the largest. The second and third generations are rarely of importance.

Control.—Control of the onion maggot with a Bordeaux-oil emulsion spray is successful if applied at the proper time. However, this insect does not appear in destructive abundance every season and the spray causes some burning on the small onion seedlings. No method has been devised whereby maggot abundance can be predicted in advance, so cultural practices must be relied upon to hold this pest in check. Cull onions should be removed from the fields as soon after harvest as possible, and should never be spread back on the land for fertilizer. The piles of culls and of onion screenings should be drenched with used crank-case oil and burned by March 1.

Onion Thrips.—Damage by onion thrips occurs annually in some portions of the Northern Indiana muck section. Usually losses are greater on the so-called "higher mucks" in the northeastern part of the state. However, growers in this section claim that the thrips cause them no loss but actually aid in "maturing" their onions at the proper time. Onions injured by thrips are characterized by a silvery appearance of the plants. A hot, dry season is favorable for a rapid increase of these small pests and the first evidence of injury begins to show in early June. From then on, the insect and the injury increase rapidly until late July or early August when the plants are killed. Onion yields are often reduced as much as 50 per cent.

Thrips overwinter on a wide variety of wild and cultivated plants growing in and about the onion fields. In the spring the adults migrate to green plants and feed and reproduce these. As the onions come up, thrips start feeding on these plants and rapidly produce several generations. In their development the young feed for several days and then undergo a resting stage, either in the soil or between the leaf sheaths. During the early part of the day few insects are to be seen but in late afternoons most of them come out to feed. There are at least six generations of this insect a year.

Control through the use of insecticides has never proved to be entirely successful. Thrips have a rasping type of mouthpart which is intermediate between chewing and sucking. Contact sprays, such as nicotine, have been widely recommended and used, but because of the habit of the insects of living between the tightly fitting leaves, these materials have given only a moderate degree of success. Experiments are being continued using various contact materials as well as some of the repellent dusts and sprays.

Perhaps the best hope for a solution to the thrips problem is the development of resistant or tolerant varieties of onions. At present one commercial variety, the Sweet Spanish onion, has proved to be decidedly tolerant to thrips attack. This onion has both a vigorous root system and large sturdy neck and tops, and can withstand the feeding of thrips that would kill other types of onions in a short time. While the Sweet Spanish type may never replace common Southport varieties because of poor keeping qualities, growers are planting an increased acreage of them each year. Further studies on the factors of resistance and tolerance in onions are being continued in many parts of the country.

Cultural practices play an important part in the elimination of thrips. Set onions with their early start in the spring are the first hosts of the strips and from here they migrate to the later seed onions. It is important, therefore, to plant the seed onions as far from the set onions as possible. Clean cultivation of the field is important as these pests feed on many weeds. Weeds and plant debris along the fence rows and ditch banks should be destroyed in the fall as they afford thrips ideal hibernating quarters.

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TWENTY-SECOND ANNUAL REPORT OF THE CREAMERY LICENSE DIVISION FOR THE YEAR ENDING MARCH 31, 1936

PURDUE UNIVERSITY
AGRICULTURAL EXPERIMENT STATION
LAFAYETTE, INDIANA

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MR. W. F. EPPLE	Glassware Inspector
MR. V. D. RHODES	Assistant Creamery Inspector
MR. C. E. SCHUMACHER	Assistant Creamery Inspector

MILK HANDLED BY LICENSED PLANTS, 1920-1935

YEAR	Number of Licensed Plants	Pounds of Milk or Its Equivalent Handled by Licensed Plants	*Number of Milk Cows
1920	183	1,227,971,123	659,000
1921	198	1,350,320,469	653,000
1922	234	1,471,978,897	659,000
1923	220	1,439,266,503	652,000
1924	234	1,698,110,981	659,000
1925	243	1,758,946,467	679,000
1926	272	1,830,970,397	678,000
1927	307	2,132,280,140	680,000
1928	334	2,444,867,845	686,000
1929	344	2,434,039,990	693,000
1930	369	2,552,288,533	702,000
1931	372	2,912,519,251	730,000
1932	389	2,639,138,629	758,000
1933	401	2,598,374,017	786,000
1934	418	2,718,411,140	828,000
1935	431	2,611,297,445	814,000
1936	...	....	781,000

*Indiana Crops and Livestock, 1936. Department of Agricultural Statistics.

TWENTY-SECOND ANNUAL REPORT OF THE CREAMERY LICENSE DIVISION

T. H. BINNEY

Indiana Dairy Statistics

At the time of applying for the renewal of creamery licenses, all creameries, milk plants, cheese factories, condenseries, etc., report the amount of butter, milk, cheese, or other dairy products made or sold during the year. With this information, together with figures supplied through a co-operative agreement with the United States Department of Agriculture, Bureau of Agricultural Economics, it is possible to compile reliable statistics concerning the total production of licensed dairy manufacturing plants.

The following table is a summary of the reports received from licensed plants for the years indicated:

Output of Licensed Plants in Indiana for 1914, 1924, 1934 and 1935.

	1914	1924	1934	1935
Pounds of Butter	26,636,520	53,462,104	77,061,858	73,934,938
Pounds of Milk	51,067,066	257,417,090	486,921,912	473,718,006
Pounds of Cream	5,421,838	25,219,252	27,640,066	22,184,720
Gallons of Ice Cream	2,035,874	4,865,465	3,346,232	3,810,368
Pounds of Cheese	211,922	574,686	23,362,975	22,225,598
Pounds of Sweetened Condensed Milk	1,019,400	8,735,498	2,733,998	1,536,790
Pounds of Evaporated Milk	10,106,800	23,912,054	41,175,957	38,688,310
Pounds of Unsweetened Condensed Milk	2,450,988	19,065,245	22,095,158	29,784,737

By comparing the figures for 1934 with those of 1935 in the above table, it will be noted that with the exception of unsweetened condensed milk and ice cream all products show a decrease. The decrease in the amount of butter made is 3,126,920 pounds, or 4.0 per cent. A total of 473,718,006 pounds of milk and 22,184,720 pounds of sweet cream were sold in licensed plants during the past year. This represents a decrease of 2.7 per cent of milk and 19.7 per cent of cream in 1935 as compared with 1934. The amount of ice cream manufactured during the past year shows an increase of 464,136 gallons, or 13.8 per cent. Cheese production decreased 1,137,377 pounds, or 4.0 per cent. Sweetened condensed milk decreased 1,197,208 pounds, or 43.7 per cent; evaporated milk (case goods) decreased 2,487,647 pounds, or 6.0 per cent, and unsweetened condensed milk increased 7,689,579 pounds, or 34.8 per cent.

In addition to the above products, dairy plants of the state manufactured 17,012,050 pounds of sweetened condensed skim milk; 1,563,255 pounds of unsweetened condensed skim milk; 745,317 pounds of concentrated skim milk (for animal feed); 9, 707,806 pounds of condensed or evaporated buttermilk; 3,584,857 pounds of dried or powdered skim milk, and 1,320,263 pounds of dried or powdered buttermilk.

The following table gives the amount of milk which goes into the various dairy products handled in licensed plants:

DISTRIBUTION OF MILK IN LICENSED PLANTS

Creamery Butter Used	1,552,633,693 pounds or	59.5%
Cheese Used	222,255,980 pounds or	8.5%
Ice Cream Used	52,392,560 pounds or	2.0%
Condensed and Evaporated Used	175,024,592 pounds or	6.7%
Cream Used	135,272,609 pounds or	5.2%
Milk Used	473,718,006 pounds or	18.1%
Total	2,611,297,445 pounds or	100.0%

CREAMERY LICENSES

Every creamery, shipping station, milk factory, cheese factory, or person, agent, firm, company, association or corporation, receiving, buying and paying, for milk or cream on the basis of the amount of butterfat contained therein, shall be required to hold a creamery license. (Section 6, Chapter 340, Acts of 1913, Indiana). The license is issued by the Purdue University Agricultural Experiment Station upon complying with the provisions of the Indiana Creamery and Testers' License Law. Such license is valid for a term of one year unless revoked by the Purdue University Agricultural Experiment Station.

During the past year 1,722 creamery licenses were issued. This is a decrease of 67 from the previous year's total of 1,789. Plant licenses show a gain of 13 in number, while the number of station licenses show a decrease of 80.

The following table is a summary of the kind of plants issued creamery licenses during the year ending March 31, 1936, and for previous years, as indicated.

CREAMERY LICENSES ISSUED FROM 1930-1935 INCLUSIVE

Plants and Stations	Number and Year					
	1930	1931	1932	1933	1934	1935
Butter	56	58	57	56	56	60
Milk	162	147	162	175	172	186
Ice Cream	18	16	12	14	14	13
Cheese	18	19	18	22	26	31
Condensed Milk	8	10	10	11	13	12
Butter and Milk	36	46	54	51	61	51
Butter and Ice Cream	10	13	9	11	5	7
Butter and Cheese	1	2	3	2	5	4
Butter, Milk, and Ice Cream	20	17	23	26	25	25
Butter, Milk, and Condensed Milk	7	6	2	4	2	1
Butter, Milk, Cheese	0	0	0	0	2	3
Butter, Milk, Ice Cream, Condensed Milk, and Cheese	0	0	0	0	1	2
Butter, Milk, Ice Cream and Condensed Milk	6	6	7	5	5	5
Butter, Ice Cream, Cheese	0	1	1	1	3	4
Butter, Milk, Cheese and Condensed Milk	0	0	1	1	1	1
Milk and Ice Cream	19	26	25	19	26	25
Milk and Condensed Milk	4	5	4	3	1	1
Total number of Plants	369	372	389	401	418	431
Stations	1,524	1,457	1,363	1,355	1,371	1,291
Total Licenses Issued	1,893	1,829	1,752	1,756	1,789	1,722

The following table shows the number of plants which reported each of the five major products handled in licensed plants for the years indicated.

Product	Number of Plants Reporting					
	1930	1931	1932	1933	1934	1935
Butter	136	149	158	157	166	163
Milk	257	254	279	284	296	305
Ice Cream	76	79	77	76	79	81
Cheese	20	22	22	26	38	45
Condensed Milk	28	31	25	24	23	22

TESTERS' LICENSES AND EXAMINATIONS

To insure accurate tests to the producer and manufacturer, licensed testers are employed by all plants and stations where milk and cream are bought on a butterfat basis.

Before securing a license an operator must pass an examination which consists of both laboratory and written work. The laboratory work consists of testing samples of milk and cream in duplicate; the written work consists of answering twenty questions which pertain to the testing of milk and cream.

Five hundred and eighteen candidates appeared for the testers' examination during the past year. This is an increase of ninety-six candidates over the previous year. Out of this number fifty-five failed to receive a passing grade; thirty-four of the failures were due to unsatisfactory written work, nine were due to laboratory work and twelve were due to both written and laboratory work.

Twenty hundred and twenty-five testers' licenses were issued during the past year, a decrease of fifty from the previous year's total of twenty hundred and forty.

The following table shows the number of candidates examined and testers' licenses issued for the years indicated:

NUMBER OF CANDIDATES EXAMINED AND TESTERS' LICENSES ISSUED FOR THE YEARS ENDING MARCH 31, 1920, 1925, 1930, 1935, AND 1936

	1920	1925	1930	1935	1936
Number of Individual Examinations	1,339	830	691	512	518
Number of Failures	226	166	144	53	55
Number of Persons Passing Examinations	1,113	664	547	459	463
Number of Testers' Licenses Issued	2,371	2,523	2,562	2,075	2,025

The results of the forty-four examinations which were held at the seven examination points in the state are given in the following table:

RESULTS OF TESTERS' EXAMINATIONS 1935-1936

PLACE OF EXAMINATION	Number of Examinations	Number of Candidates	AVERAGE GRADES (PER CENT) All Candidates	Candidates Passed	Candidate Failed
Lafayette	8	165	82.6	85.1	51.5
Muncie	6	56	80.5	83.8	46.3
Fort Wayne	6	58	84.0	85.4	42.0
Evansville	6	65	78.3	80.9	66.3
Terre Haute	6	41	81.6	83.4	57.2
Indianapolis	6	50	82.2	84.0	65.1
Seymour	6	83	79.1	83.3	63.8
Totals	44	518	81.2	83.7	56.7

GLASSWARE INSPECTION

The Indiana Creamery and Testers' License Law requires that all milk and cream test bottles, milk pipettes, and nine-gram weights be examined for accuracy by the Purdue University Agricultural Experiment Station before being used in Indiana cream stations and dairy plants. All glassware conforming to the specifications given in Section 13 of the Law (Acts of 1913, Chapter 340) and found to be within the allowable tolerance are stamped with the letters "S.G.P." meaning "Standard Glassware, Purdue". The use of standard inspected glassware eliminates the possibility of incorrect tests from this source.

During the past fiscal year 39,280 pieces of Babcock testing glassware were examined by the Glassware Inspector of the Agricultural Experiment Station. In addition, 314 nine-gram weights were inspected and found to be correct. This is 6,100 less pieces of glassware and 139 more nine-gram weights than were inspected last year.

The following table gives the amount of each kind of glassware inspected, and the number of pieces found to be incorrect:

KINDS OF GLASSWARE	Total Number of Pieces	Number Incorrect	Per Cent Incorrect
Cream Test Bottles	27,132	22	.081
Milk Test Bottles	8,531	0	.000
Milk Pipettes	3,617	0	.000
Summary	39,280	22	.056

LICENSES REVOKED

Inspectors of the Creamery License Division check the weights and tests made by operators of the Babcock test to determine their accuracy. If an operator is found to be testing incorrectly the inspector cautions him to be more careful in the sampling, weighing, and testing of milk and cream. Should later inspections show that incorrect testing is being done, whether intentionally or unintentionally, evidence is secured and presented to the State Creamery Examining Board at one of their regular meetings. At this meeting the operator is given an opportunity to explain the cause for differences between his tests and the tests made by the inspector. After careful consideration of the facts presented, the Board recommends to the Purdue University Agricultural Experiment Station the action to be taken.

During the past year the following testers were requested to appear before the Examining Board and, after considering the evidence, the Board recommended that their testers' licenses be revoked:

Mrs. Waty Herron, Cory, Clay County, Indiana, tester for Highland Creamery Company, Terre Haute, Indiana.

Mr. Howard Hockett, Lynn, Randolph County, Indiana, tester for Sherman White and Company, Fort Wayne, Indiana.

Miss Cora Hubbell, Coal City, Owen County, Indiana, tester for Johnson Creamery Company, Bloomington, Indiana.

Mr. Harold Rickert, Saratoga, Randolph County, Indiana, tester for Farm Bureau Creamery, Portland, Indiana.

Mr. Henry Welkie, Wanatah, LaPorte County, Indiana, tester for Kosanke Brothers, Argos, Indiana.

Mrs. Grace Hayward, Liberty, Union County, Indiana, tester for Sherman White and Company, Fort Wayne, Indiana.

Mrs. Hurma Parker, Farmland, Randolph County, Indiana, an independent buyer.

Mrs. Pearl Worster, Warren, Huntington County, Indiana, tester for Schlosser Brothers, Frankfort, Indiana.

Mr. Raymond Ahles, Evansville, Vanderburg County, Indiana, tester for Edgewood Dairy, Evansville, Indiana.

Mr. Marion Abell, Madison, Jefferson County, Indiana, tester for Ewing-Von Allmen Dairy Company, Louisville, Kentucky.

Miss Roberta Rasure, Evansville, Vanderburg County, Indiana, tester for Sugar Creek Creamery Company, Evansville, Indiana.

Mr. C. W. Leslie, Evansville, Vanderburg County, Indiana, tester for Sugar Creek Creamery Company, Evansville, Indiana.

Miss Genevieve Snyder, Zanesville, Wells County, Indiana, tester for Zanesville Creamery, Zanesville, Indiana.

Mr. E. L. Bishop, Connersville, Fayette County, Indiana, tester for City Dairy, Connersville, Indiana.

Mr. F. H. Carpenter, Dale, Spencer County, Indiana, tester for Kraft-Phenix Cheese Company, Dale, Indiana.

LICENSED MANUFACTURING PLANTS IN INDIANA

October 1, 1936

Adams Products, Inc., Fairmount	Butter, Milk, Ice Cream
Oscar Adler Dairy, Fort Wayne	Milk
Adler Milk Co., Fort Wayne	Milk
Alexandria Pure Milk Co., Alexandria	Milk
American Dairy Co., Evansville	Butter, Milk
Anthony Dairy, Fort Wayne	Milk
Armour Creameries, Rochester	Butter, Cheese
Associated Dairies Co., Fort Wayne	Milk
Auburn Dairy, Auburn	Milk
Babybrand Dairy Co., Fort Wayne	Milk
Baker's Dairy, Fremont	Ice Cream
Ballard Ice Cream Co., Indianapolis	Milk, Ice Cream
Banner Farms Dairy, Indianapolis	Milk
Banquet Ice Cream & Milk Co., Indianapolis	Milk, Ice Cream
Barnett Bros. Sunlight Creamery, Logansport	Butter, Milk
Beatrice Creamery Co., Muncie	Butter, Ice Cream
Beauty Brand Dairy, Fort Wayne	Milk
Bedford Dairy Co., Bedford	Milk, Ice Cream
Bellville Dairy, South Bend	Milk
Berkes Dairy Co., Auburn	Milk
Bettenbrock Dairy, Terre Haute	Milk, Butter
Betty Lou Farms, Kokomo	Milk
Blue Ribbon Dairy, Inc., Evansville	Milk
Blue Ribbon Dairy, Gary	Milk, Butter
Blue Ribbon Dairy Co., Noblesville	Milk
Blue Valley Creamery Co., Indianapolis	Butter
Borden-Wieland, Inc., Akron	Milk
Borden-Wieland, Inc., Hammond	Milk
Mitchell C. Bosma, Beech Grove	Milk
Bowman Dairy Co., Francesville	Milk
Bowman Dairy Co., Kouts	Milk
O. A. Bowne Dairy, Terre Haute	Milk, Butter
Brandywine Creamery, Fountaintown	Milk, Butter
Breezy Heights Dairy, Evansville	Milk
Chris Bullerman & Sons, Fort Wayne	Milk
Bunker Hill Creamery, Bunker Hill	Butter
Calvert's Dairy, Edinburg	Milk
Capitol Dairies, Inc., Indianapolis	Milk
Carey & Sons, Indianapolis	Milk
Carmel Dairy, Inc., Carmel	Milk
Carringer Dairy, LaPorte	Milk
Central Dairy, Ossian	Milk
Chapman Dairy, Frankfort	Milk
Chapman Milk Co., New Castle	Milk
City Dairy Co., Connersville	Milk

City Dairy, Inc., Elkhart	Milk
City Dairy, Kendallville	Milk
City Dairy Co., South Bend	Milk, Butter
C. C. Clark & Son, Muncie	Butter
Cloverdale Dairy, Columbus	Milk
Cloverleaf Dairy, Culver	Milk, Butter
Cloverleaf Creameries, Inc., Decatur	Butter, Cheese
Cloverleaf Dairy Co., Gary	Milk
Cloverleaf Creameries, Inc., Huntington	Butter, Ice Cream, Cheese
Collier Brothers Creamery, Martinsville	Butter, Milk, Ice Cream
Collier Brothers Creamery, Spencer	Milk
Collier Brothers Creamery, Vincennes	Milk
Columbia Dairy, Columbia City	Ice Cream, Milk
Compton Dairy, Edinburg	Milk
Cook Brothers Dairy, Elkhart	Milk, Butter
Corydon Cheese Co., Corydon	Cheese
County Line Cheese Factory, Auburn	Cheese
Coussens Dairy, Granger	Milk
Covalt Dairy Co., Muncie	Milk
Crescent Creamery, Inc., Fort Wayne	Milk
Crescent Dairy Co., Inc., Kokomo	Milk, Butter
Crystal Dairy, Warsaw	Milk

Dairy Service, Inc., Evansville	Milk
Dale Creamery Ass'n., Dale	Butter
Daum Dairies, Connersville	Milk, Ice Cream
Davis Dairy Farm, Anderson	Milk
Dearmin & Co., Odon	Butter
DeBeck's Sanitary Dairy, Mishawaka	Butter, Milk
Decatur County Creamery, Greensburg	Butter
Deer Creek Dairy, Marion	Milk
Deer Creek Valley Dairy, Delphi	Milk
Delphi Dairy Products Co., Delphi	Cheese
Walter M. Denehie, Terre Haute	Milk
Dimitt Dairy, West Middleton	Milk
Dixie Dairy Co., Gary	Milk
Dyer Dairy & Farm Prod. Co., New Goshen	Milk

East Central Cooperative Co., Rushville	Butter
East End Dairies, Inc., Indianapolis	Milk
East Side Jersey Dairy Co., Anderson	Milk, Butter, Ice Cream
Eby's Guernsey Dairy, Elkhart	Milk
Economy Creamery, Economy	Butter
Eel River Creamery Co., North Manchester	Butter
Edgewood Dairy, Evansville	Milk
Elkhart Creamery Co., Elkhart	Butter
Ellsworth Ice Cream Co., Inc., Huntingburg	Milk, Butter, Ice Cream
Elmore's Creamery, Elwood	Milk
Elwood Creamery Co., Elwood	Ice Cream
English Lake Creamery, English Lake	Butter

Eskay Dairy Co., Fort Wayne	Milk, Butter
Evans Milling Co., Indianapolis	Malted Milk
Ewing-Von Allmen Dairy Co., Madison	Milk
Fairmount Dairy, Fairmount	Milk
Fairview Sanitary Dairy Co., Anderson	Milk
Family Dairy, Inc., South Bend	Milk
Farm Bureau Creamery, Portland	Butter
Farmers Dairy Co., Carlos City	Butter
Farmer's Marketing Ass'n., Columbus	Butter
Farmer's Produce Ass'n., Crawfordsville	Butter
Fertig Dairy Co., Franklin	Ice Cream
Fertig Dairy Co., Indianapolis	Ice Cream
Fertile Acres Dairy, Lakeville	Milk
Henry Flaugh & Son, Fort Wayne	Milk
Forest Dairy, Fort Wayne	Milk
Forgey Dairy, Logansport	Milk
Fort Wayne Pure Milk, Inc., Fort Wayne	Milk
Fort Wayne Milk Producers Corp., Garrett	Condensed
Fred Fowler Dairy, Fort Wayne	Milk
Franklin Pure Milk Co., Franklin	Milk, Butter, Ice Cream
Frazier's Dairy, Frankfort	Milk
George Freese's Sons, Nappanee	Butter, Ice Cream, Cheese
Furnas Ice Cream Co., Fort Wayne	Ice Cream
Furnas Ice Cream Co., Indianapolis	Milk, Ice Cream
Furnas Ice Cream Co., Morristown	Condensed
Furnas Ice Cream Co., South Bend	Ice Cream
Galveston Cheese Co., Galveston	Cheese
F. H. George & Co., Fort Wayne	Butter
Gingrich Dairy, Lafayette	Milk, Butter, Cheese
Fred Glass Co., Madison	Milk, Ice Cream
Glenwood Dairy, Inglefield	Milk
Gnau Brothers Dairy, Tell City	Milk
Golden Guernsey Dairy, Inc., Frankfort	Milk
Gold Medal Dairy Co., Evansville	Milk, Ice Cream
Gordon Baking Co., LaGrange	Condensed
Gordon Baking Co., Nappanee	Milk
Goshen Milk Condensing Co., Goshen	Milk, Condensed
Grady's Milk Co., Elkhart	Milk
Graham Farms, Elnora	Cheese
Graham Farms, Washington	Cheese, Butter
Grandview Dairy, Lafayette	Milk
Green & Son, Shelbyville	Milk
Greendale Ice Cream Co., Lawrenceburg	Ice Cream
Greenfield Ice Cream Co., Greenfield	Milk, Ice Cream
Greenwood Dairy Farms, Greenwood	Milk, Butter
Guernsey Milk & Ice Cream Co., Lebanon	Milk, Ice Cream
Hagerstown Dairy, Hagerstown	Milk

Hall Dairy, Bloomington	Milk
Hamilton Dairy, Terre Haute	Milk
Handy's Sanitary Dairy, Greencastle	Milk, Butter
Hartford City Dairy, Hartford City	Milk
Hartley's Dairy, Portland	Milk, Butter, Ice Cream
Haxson Dairy Co., Inc., Gary	Milk
Haynes Dairy, Garrett	Milk
Heckaman Dairy, Nappanee	Milk, Ice Cream
Hedges Dairy Products, Inc., Terre Haute	Milk, Butter
Hewins Dairy, Boonville	Milk, Butter
Highland Creamery Co., Terre Haute	Butter
L. F. Hill & Son, Winchester	Milk
Hillside Cheese Co., Decatur	Cheese
Himes Bros. Dairy, Richmond	Milk
Hoffmeister Cheese Co., Seymour	Cheese
Holland Creamery Ass'n., Holland	Butter
Holland Custard & Ice Cream Co., Holland	Ice Cream, Milk
Fred Holle & Sons Dairy, Fort Wayne	Milk
Home Creamery, Morocco	Butter
Hoosier Condensed Milk Co., Bluffton	Condensed
Hoosier Dairy Products Co., Noblesville	Ice Cream, Milk
Hoosier Dairy Products Co., Rushville	Milk, Ice Cream
Hoosier Milk Co., Indianapolis	Ice Cream
Hoosier State Creamery, Rensselaer	Butter
Hoovens Dairy, Goshen	Milk
Hornaday Milk Co., Indianapolis	Milk, Butter
Hough Dairy, Richmond	Milk
Huff's Creamery, Bremen	Butter
Hunding Dairy Co., Wellsboro	Milk
Huntingburg Creamery Co., Huntingburg	Butter
Hy-Grade Dairy Products, Inc., Crawfordsville	Butter, Ice Cream

Ideal Pure Milk Co., Evansville	Milk, Butter, Ice Cream, Condensed
Indiana Condensed Milk Co., Lebanon	Condensed
Indiana Condensed Milk Co., Sheridan	Condensed
Indiana Condensed Milk Co., Veedersburg	Butter
Indiana Dairy Co., South Bend	Milk
Indiana Dairy Marketing Ass'n., Muncie	Milk, Butter, Cheese, Condensed
Indiana Ice & Dairy Co., Anderson	Milk, Butter, Condensed
Indiana Produce Co., Huntingburg	Butter
International Dairy Co., Deep River	Milk
Isleman's Dairy, LaPorte	Milk, Ice Cream

Jacobi Dairy, New Albany	Milk
Jersey Creamery Co., Newcastle	Milk, Butter, Ice Cream
Jersey-Maid Dairy Co., Hammond	Milk
Jessup Milk Co., Plainfield	Milk
Johnson Butter Co., Terre Haute	Butter, Milk, Ice Cream
Johnson Creamery Co., Bedford	Milk
Johnson Creamery Co., Bloomington	Milk, Butter, Ice Cream
W. A. Jones & Sons Dairy, Syracuse	Milk

Keener Township Dairy Co., De Motte	Cheese
Kentland Dairy Products Co., Kentland	Cheese
Kentland Dairy Products Co., Mulberry	Cheese
Kewanna Co-op Creamery, Kewanna	Butter
Kimmel Farms, Inc., Kendallville	Milk, Butter
A. W. King's Dairy, Richmond	Milk
Kline's Dairy, Logansport	Milk, Butter
Knispel Dairy, Fort Wayne	Milk
Koch Dairy Co., Evansville	Butter, Ice Cream
Kosanke Bros., Argos	Butter
Kraft-Phenix Cheese Corp., Bloomfield	Cheese
Kraft-Phenix Cheese Corp., Dale	Cheese
Kraft-Phenix Cheese Corp., Kendallville	Cheese
Kraft-Phenix Cheese Corp., Marshall	Cheese
Kraft-Phenix Cheese Corp., Paoli	Cheese
Kraft-Phenix Cheese Corp., Ridgeville	Cheese
Kraft-Phenix Cheese Corp., Salem	Cheese
Kraft-Phenix Cheese Corp., Sharpsville	Cheese
Kraft-Phenix Cheese Corp., Shirley	Cheese
Kraft-Phenix Cheese Corp., Sullivan	Cheese
Kraft-Phenix Cheese Corp., Summitville	Cheese
Kraft-Phenix Cheese Corp., Sweetsers	Cheese
Kroger Grocery & Baking Co., Indianapolis	Milk, Condensed
Krueger Dairy Products Co., Monon	Butter
Kyle Creamery Ass'n., Aurora	Butter

Lafayette Ice Cream Co., Lafayette	Milk, Ice Cream
Lake View Dairy, Gary	Milk
Lanesville Creamery Co., Lanesville	Butter
Lemont Dairy, Brook	Milk
Lenick's Dairy, LaPorte	Milk, Ice Cream, Butter
Leonard Creamery Co., Paoli	Ice Cream
Liberty Creamery Co., Liberty	Butter
Ligonier Dairy Products, Inc., Ligonier	Milk
Lincoln Avenue Dairy, Evansville	Milk
Will Linsmith Milk Co., Columbus	Milk
Linton Ice & Cold Storge Co., Linton	Ice Cream, Milk Butter
Linton Milk Co., Linton	Milk
Litchfield Creamery Co., Warsaw	Condensed
Longfield Creamery, Wakarusa	Butter, Ice Cream
W. H. Lowe Creamery, Versailles	Butter

Madison Creamery Co., Madison	Butter
Maplehurst Farms, Indianapolis	Milk, Butter
Marion Pure Milk, Marion	Milk
Marten's Dairy, Fort Wayne	Milk
Matthew's Dairy, South Bend	Milk
Maywood Milk Co., Maywood	Milk
McKinstray Bros., Indianapolis	Milk
Meadowbrook Farm, Hicksville, O.	Butter

Medaryville Cheese Factory, Medaryville	Cheese
Med-O-Bloom Dairy, Kokomo	Milk
Middlebury Coop. Creamery Co., Middlebury	Butter
Milford Dairy, Milford	Butter
J. M. Miller Dairy, Culver	Milk, Butter
Miller Ice & Dairy Co., Cambridge City	Milk, Ice Cream
Miller-Yarling Dairy, Shelbyville	Milk, Ice Cream
Mishawaka Farmers Dairy Co., Mishawaka	Milk, Butter
Model Creamery, Indianapolis	Milk, Ice Cream
Model Milk & Ice Cream Co., Terre Haute	Butter, Milk, Ice Cream, Condensed
Modern Dairy, Hobart	Milk
Modern Dairy, Marion	Milk
Modern Dairy, Mexico	Milk, Butter
Mt. Vernon Cheese Factory, Mt. Vernon	Cheese
Mt. Vernon Creamery Co., Mt. Vernon	Butter, Milk, Ice Cream
Muncie Pure Milk Co., Muncie	Milk, Butter
Murfield Creamery, Mishawaka	Butter
Murphy Dairy, Scottsburg	Milk, Butter
Mutual Milk Co., Indianapolis	Milk
Myers Brothers, Bourbon	Butter
Nances Creamery, Brazil	Butter, Milk, Ice Cream
Napoleon Creamery, Napoleon	Butter
Nappanee Dairy, Nappanee	Milk
National Dairy Co., Whiting	Milk, Butter
National Milk Co., Inc., South Bend	Milk, Butter
Newby Dairy, Seymour	Milk
New Paris Creamery, New Paris	Butter, Milk
Nieter Dairy, Inc., Fort Wayne	Milk, Butter, Cheese
Northwestern Milk Co., Indianapolis	Milk
Oak-Ridge Creamery Co., Mishawaka	Milk, Butter
Old Homestead Dairy, Fort Wayne	Milk
Olympia Dairy, Columbus	Milk
Orchard Hill Creamery, Mitchell	Milk
Orchard Knoll Farm Creamery, Moores Hill	Butter
Orrco Farms Dairy, Liberty	Milk, Butter
Osgood Milk Co., Osgood	Condensed
Osterhaus Dairy, Fort Wayne	Milk
Page Milk Co., Greensburg	Milk
Page Milk Co., Shelbyville	Butter, Powdered Milk
Pardieck and Franke, Columbus	Milk
Parlor City Creamery, Bluffton	Butter
Peoples Dairy, Fort Wayne	Milk
Perfection Butter Co., Kokomo	Butter
Peters Dairy, Michigan City	Milk
Phend Dairy Co., Goshen	Milk
Pleasant Hill Dairy, Fort Wayne	Milk

Pleasant View Dairy, Highland	Milk
Plymouth Dairy, Plymouth	Milk
Polk Sanitary Milk Co., Indianapolis	Milk, Butter
Prairie View Dairy Co., East Chicago	Milk
Pranges Dairy, Fort Wayne	Milk
Producers Co-operative Dairy, Inc., Evansville	Milk, Butter
Producers Creamery, Hartford City	Cheese
Producers Creamery, Kokomo	Milk
Producers Creamery Co., Marion	Butter, Milk, Condensed, Ice Cream
Producers Creamery, Wabash	Milk
Producers Dairy Marketing Ass'n., Orleans	Butter, Ice Cream
Producers Dairy Products Co., Crawfordsville	Milk, Ice Cream
Pure Cream Products Co., Tell City	Butter, Ice Cream, Milk
Purdue University Creamery, West Lafayette	Milk, Butter, Ice Cream
Purity Dairy Co., Evansville	Milk, Ice Cream
Purity Maid Products Co., New Albany	Butter, Milk, Ice Cream
Purity Milk Co., East Columbus	Milk
Purity Dairy Co., Huntington	Milk
Quality Dairy Co., Boonville	Milk, Butter, Ice Cream
Ray's Creamery, Logansport	Butter, Milk
Reid's Creamery, Vincennes	Milk, Butter
Reliable Dairy, Fort Wayne	Milk
Reliable Dairy Co., South Bend	Milk, Butter
Rensselaer Creamery & Prod. Co., Rensselaer	Butter
Richmilk Dairy, Fort Wayne	Milk
Rife's Dairy, Warsaw	Milk
Rea Riggin & Sons, Muncie	Milk, Butter, Ice Cream
Rising Sun Creamery, Rising Sun	Butter
W. F. Ritzmann, Lawrenceburg	Butter, Ice Cream
Riverside Dairy, Columbia City	Milk, Butter
Riverside Dairy, Mishawaka	Milk
Roanoke Creamery, Roanoke	Butter
Wm. H. Roberts & Sons, Indianapolis	Milk
Rose City Sanitary Dairy, Newcastle	Milk
Rowe Dairy Co., Fort Wayne	Milk
Russell's Dairy, Hartford City	Milk
Salem Creamery, Salem	Milk, Butter
Sample's Dairy, Connersville	Milk
Sanitary Dairy, Crown Point	Milk
Sanitary Dairy, Logansport	Milk
Sanitary Dairy Co., Michigan City	Milk, Ice Cream
Sanitary Dairy Products Co., Columbus	Milk
Sanitary Milk & Ice Cream Co., Peru	Milk, Butter, Ice Cream, Condensed, Cheese
Schaefer Dairy Co., Inc., Indianapolis	Milk
Schaper's Dairy, Fort Wayne	Milk
Schlosser Brothers, Bremen	Cheese

Schlosser Brothers, Frankfort	Butter
Schlosser Brothers, Indianapolis	Butter
Schlosser Brothers, Plymouth	Butter, Ice Cream
Schlosser's Creamery Prod. Inc., Fort Wayne	Butter, Ice Cream, Cheese
Theodore Schmitz Milk Plant, Palmer	Milk
Schnaitter Ice Cream Plant, Madison	Ice Cream
Schoen Dairy, South Bend	Milk
Scholl Dairy Co., Michigan City	Milk, Ice Cream, Butter
Shannon's Dairy, Jeffersonville	Milk, Butter
Sherman White & Co., Fort Wayne	Butter
Shively's Dairy, Greenfield	Milk
Shively's Dairy, North Manchester	Milk
Shortle Dairy Farms, Kokomo	Milk
Snyder Dairy, Seymour	Milk
Sodus Creamery Corp., Centerville	Cheese
South Bend Pure Milk Co., South Bend	Milk, Butter
South Side Dairy, Mishawaka	Milk
South Side Dairy, South Bend	Milk
Spriggs Dairy Products, Inc., Bloomington	Milk
Spring Brook Dairy, Bremen	Milk
Spring Grove Dairy, Richmond	Milk
Staley Dairy Products Co., Decatur	Butter, Ice Cream
Standard Dairy, Evansville	Milk
State Creamery, Fort Wayne	Milk, Butter
State Street Creamery, Huntington	Butter
Suabedissen-Wittner Dairy, South Bend	Milk
Sugar Creamery Co., Evansville	Butter
Sugar Creamery Co., Indianapolis	Butter
Sullivan Dairy, Sullivan	Milk
Summers & Son, Elwood	Milk
Sunderman's Dairy, Crown Point	Milk, Butter
Sunlit Dairy, Goshen	Milk
Sunnydale Dairy, Union City	Milk, Butter
Sunny Side Dairy Co., Anderson	Milk
Sunrise Dairy, Angola	Milk
Sunrise Dairies, Laketon	Butter
Sunshine Dairy, Fort Wayne	Milk
Sunshine Dairy, Marion	Milk
Sunshine Farms, Lafayette	Milk, Butter, Condensed
Superior Dairy, Garrett	Milk, Ice Cream
Swift & Co., Alexandria	Cheese
Swift & Co., Evansville	Butter
Swift & Co., Logansport	Butter
Swift & Co., Marion	Butter
Swift & Co., Vincennes	Cheese
Swift & Co., Wabash	Cheese
Tansy Milk Co., Beech Grove	Milk
Teegarden Dairy Corp., Teegarden	Milk

Tell City Creamery, Tell City	Butter
Terr Haute Milk & Ice Cream, Terre Haute	Milk, Ice Cream, Butter, Condensed
Thayers Dairy, Delphi	Milk
Thomas Dairy, Elkhart	Milk
Thompson Dairy Co., North Vernon	Milk
Thompson Dairy Co., Seymour	Milk, Ice Cream
Thompson Sanitary Dairy, Richmond	Milk
Tipton Ice Cream Co., Tipton	Ice Cream, Milk
Tip Top Creamery Co., Princeton	Milk
Tip Top Creamery, Vincennes	Butter, Milk, Ice Cream, Condensed, Cheese
Tip Top Creamery Co., Washington	Milk
Tolleston Dairy, Inc., Gary	Milk, Ice Cream
Tonne Dairy, Fort Wayne	Milk
Turner Creamery Co., Paoli	Milk, Butter, Ice Cream
United Dairy Co., Indiana Harbor	Milk, Butter
United Milk Products Co., Berne	Condensed
United Milk Products Co., Bulter	Condensed
United Milk Products Co., Wolcottville	Condensed
United Milk Products Co., Yorktown	Condensed
Valparaiso Home Ice Co., Valparaiso	Milk, Ice Cream, Butter
Van Camp Milk Co., Inc., Angola	Condensed
Wadley Co., Indianapolis	Butter
Wagner & Sons, Logansport	Milk, Butter
Wakarusa Co-operative Creamery, Wakarusa	Butter, Milk
Walkers Dairy Products Co., Wabash	Milk
Wambaughs Sanitary Milk Co., Elkhart	Milk
Sidney Wanzer & Sons, Inc., Monterey	Milk
Sidney Wanzer & Sons, Servia	Milk
Warsaw Milk Co., Warsaw	Milk
Waterloo Dairy, Waterloo	Milk, Butter
Wayne Dairy Products Co., Richmond	Butter, Milk
L. H. Weaver, Indianapolis	Milk, Butter
Weber Milk Co., Indianapolis	Milk, Butter
C. M. Wert & Son, Wabash	Milk
West End Milk Co., Newcastle	Milk
Western Indiana Dairy Ass'n., New Richmond	Cheese
White Lily Milk & Ice Cream Co., Evansville	Milk, Butter, Ice Cream
Whitney Dairy, Muncie	Milk
Williams Dairy, North Liberty	Milk
Williams Dairy, Richmond	Milk
Wilson & Co., Warsaw	Butter
Winona Dairy, Winona Lake	Milk
O. J. Wittner Dairy, South Bend	Milk
Zanesville Creamery, Zanesville	Butter
Zapp's Dairy and Creamery, New Albany	Milk, Butter

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Circular No. 225 November, 1936

INSPECTION OF AGRICULTURAL SEEDS

A Section of the Indiana Seed Laboratory where Purity Tests of Seeds are made by Trained Analysts.

AGRICULTURAL EXPERIMENT STATION
PURDUE UNIVERSITY
LAFAYETTE, INDIANA

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Otis Sidney Roberts, Inspector in the Department of the State Chemist and State Seed Commissioner for more than twenty-eight years including twenty-five years as Chief Inspector and one year as Acting State Chemist and State Seed Commissioner, died December 19, 1935. In the passing of Mr. Roberts, the seed, feed and fertilizer industries, as well as the agricultural interests of Indiana, have suffered a distinct loss of a loyal friend and an able worker.

Herein is presented a report of the Agricultural Seed Inspection for the year from July 1, 1935, to June 30, 1936. The complete analyses of 1,362 official seed samples are given in detail. In addition 318 official samples drawn for test and 3,069 free test samples of seed were tested during the year.

Violations of the Indiana Seed Law and of the Federal Seed Act are discussed together with helpful suggestions to seed dealers and seed purchasers.

This Circular also contains the Rulings of the State Seed Commissioner, discussions on free testing of seeds, directions for taking samples and directions for making germination tests at home.

Statements concerning Stained, Certified, Verified-Origin and Affidavit seed are given.

Tables 1 to 7 show in a general way the quality of the seed represented by the official samples while Table 8 gives in detail the analyses of the 1,362 official samples.

INSPECTION OF AGRICULTURAL SEEDS

H. R. KRAYBILL, State Seed Commissioner
P. B. CURTIS, Associate Chemist
A. S. Carter,* Chief Inspector. Regina B. Schulte,† Seed Analyst
Assistant Seed Analysts: Pauline Balbach, Mary E. Grey
Assistant Inspectors: C. M. Cohee, J. W. Jackman

The Indiana Seed Law enacted in 1921 is an Act to regulate the sale of and commerce in agricultural seeds. The purpose of this law is to give the purchaser of seeds sufficient information to enable him to buy good seed and also to protect the honest seed dealer and the farmer against the practices of dishonest, careless and irresponsible seedsmen. This is accomplished by requiring the seed that is sold or offered for sale within the state for seeding purposes to be labeled with Official Indiana State Seed Tags showing minimum percentages of purity and germination and the maximum number per pound of each of the noxious weed seeds. Table 5 on page 12 lists the weed seeds that are considered noxious under the Indiana Seed Law. The date of the germination test and state or foreign country in which the seed was grown must also be designated on the tag.

In addition to the tagging requirement the Indiana Seed Law provides for inspection and testing of samples of seed to determine whether or not the statements of the seedsmen on the tags are correct. Inspectors secure representative samples from shipments or lots of seed offered for sale in all sections of the state. These samples are then forwarded to the seed laboratory where they are tested.

RESULTS OF INSPECTION

During the year from July 1, 1935, to June 30, 1936, 1,680 official seed samples were collected and tested. Reports of these tests were sent to the distributors, dealers, and consumers from whom the samples were secured. In addition 3,069 free test samples and 71 Custom House samples were analyzed. The testing of all of these samples entailed the making of 3,376 purity tests, 20,648 individual germination tests, 30 examinations and 156 identifications. Of the 1,680 official samples, 318 of them were drawn and tested upon request of seedsmen in order that they might know the percentages of purity and germination and the number per pound of each of the noxious weed seeds to list on their tags. Of the remaining 1,362 samples, 234 of them were found to be seriously misbranded. This represents 17.2 per cent of the samples as compared to 18.1 per cent in the preceding year. This is a good record considering the fact that 65 of the 234 samples were samples of corn seriously misbranded as to germination. Due to the wet weather in the fall of 1935 and severe early freezes in the winter a large portion of the seed corn in the spring was so seriously damaged that it was difficult for the seedsmen to make accurate statements of germination unless special care was taken to conduct individual ear tests. This unusual circumstance necessitated the testing for germination of the greatest number of official samples of corn ever tested in a single year in the history of the Indiana Seed Law. Due to the inferior condition of the seed corn the department was called upon to investigate many cases where poor results were obtained and was instrumental in securing adjustments.

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* Appointed Chief Inspector, effective February 1, 1936.

† Assistant Botanist, in coöperation with the Division of Seed Investigations, Bureau of Plant Industry, U. S. D. A.

In addition to testing seeds the seed laboratory in coöperation with the Agronomy Department conducted a three weeks' intensive course in official methods of seed testing from June 29 to July 18, 1936. Twelve persons were enrolled in this course.

VIOLATIONS OF THE INDIANA SEED LAW

Violations of the Indiana Seed Law may be divided into two classes: first where the seed is sold or offered for sale without Official Indiana State Seed Tags, and second where the seed is tagged but fails to meet the seedsman's claim stated on the tags. In both of these cases shipments or lots of seed were removed from sale until proper tags had been attached to cover the particular seed in question. During the past year six cases of non-tagging and one case of misbranding were called to the attention of the prosecuting attorneys. Five of these cases resulted in convictions and payment of fines while two cases have not been reported upon by the prosecuting attorneys.

VIOLATIONS OF THE FEDERAL SEED ACT

Under the Interstate Clause (Sec. 6) of the Federal Seed Act seven cases were reported to the Division of Seed Investigations of the Bureau of Plant Industry of the United States Department of Agriculture.

The following excerpt concerns the disposition of a previous seed case submitted:

Prosecutions and Seizures Under the Interstate Clause (Sec. 6) of the Federal Seed Act Jan. 1, 1935, to June 30, 1935.

73. Misbranding of sweet clover seed. U. S. v. American Field Seed Co Plea of guilty. Fine, $200. (F. S. 120).

American Field Seed Co., Chicago, Ill., shipped on March 27, 1934, from Chicago, Ill., to Remington, Ind., 2 bags (300 pounds) of sweet clover seed

Information was filed in the United States District Court for the Northern District of Illinois alleging that the American Field Seed Co., a corporation unlawfully delivered for transportation in interstate commerce the above mentioned shipment misbranded in violation of the Federal Seed Act.

NATURE OF MISBRANDING

Item	Claimed Per Cent	Found Per Cent	Item	Claimed Per Cent	Found Per Cent
Purity	99.50	94.32	Weed Seeds	0 10	1.26
Inert Matter	0.30	4.29	Germination	92 00	64.00

On December 6, 1934, the case was terminated upon a plea of guilty and the assessment of a fine of $200.

TOLERANCES

Under the most perfect and approved conditions of testing seeds, variations will occur in purity and germination tests. For this reason the Association of Official Seed Analysts, whose methods of testing are followed in this seed laboratory, has adopted tolerances or allowances for purity and germination tests. Samples of seed with a claim within the tolerances are not considered to be misbranded under the provisions of the Indiana Seed Law, but seed dealers are expected to change the claim on the tags of the unsold portion to correspond to the analysis found by the Seed Commissioner.

(a) Purity Tolerance.—In determining the tolerance for purity the sample shall be considered as being composed of two parts: (1) pure seed of the kind certified and (2) everything not pure seed. The tolerance permitted shall be two-tenths of 1 per cent (0.2%) plus 20 per cent of the lesser part. Example: Seed marked 98 per cent pure, the lesser part is 100 minus 98 or 2. Twenty per cent of 2 equals 0.4. Therefore, the tolerance allowed would be 0.2 plus 0.4, or 0.6%.

(b) Germination Tolerance.—A larger tolerance is applied between a given germination and the result of the germination test as follows:

Given Germination (Per Cent)	Allowable Variation (Per Cent)
90 or over	6
80 or over but less than 90	7
70 or over but less than 80	8
60 or over but less than 70	9
Less than 60	10

RULINGS OF THE STATE SEED COMMISSIONER

In accordance with the provisions of the Indiana Seed Law empowering the Seed Commissioner to prescribe and enforce such rules and regulations as he may deem necessary to carry into effect the full intent and meaning of the Act the following rulings have been made:

Ruling No. 1. Hard Seeds. The phrase "minimum percentage of germination," as contained in the Indiana Seed Law, is interpreted to mean the actual percentage of the seeds that sprout or germinate at the end of the time usually allowed for germination test. In the case of leguminous seeds containing "hard seeds," the actual percentage of germination should be given on the official label and this germination percentage may be followed by the percentage of hard seeds. For example, the seed showed 85 per cent actual germination and in addition contained 10 per cent hard seeds. This may be stated on the label as 85 per cent germination and 10 per cent hard seeds. This cannot be stated as 95 per cent germination and 10 per cent hard seeds.

Ruling No. 2. Tagging. All agricultural seed in condition for seeding purposes shipped or delivered in the State of Indiana must have attached to each bag or package of one pound or more an Indiana State Label properly filled out.

The wholesale seedsman is required to attach at least one Indiana State Tag properly filled out to each package of one pound or more of seed shipped to the retail seedsman. The retail seedsman is then required to attach sufficient tags to the seed to cover its net weight before offering or exposing the seed for sale. If the seed is shipped directly to the consumer, sufficient Indiana State Tags must be attached to cover the net weight of the seed.

Ruling No. 3. Hybrid Corn. Field corn, sweet corn or popcorn offered or exposed for sale for seeding purposes in the State of Indiana may be labeled or represented to be *hybrid corn* only when such seed represents the first generation of a cross between strains of different parentage and involving inbred lines of corn and/or their combinations.

FARMERS' EXEMPTION

A farmer is exempt from the provisions of the seed law when the seed is grown, sold and delivered by that farmer on his own premises to the purchaser himself. If, however, the seed is advertised for sale by the public press circular or catalogue, or if the seed is delivered by a common carrier, the farmer is considered a vendor and must comply with the provisions of the Act Seed taken to community sales for sale must be labeled in accordance with the law. Even though the farmers' seed under certain conditions is exempt from the tagging requirements it is always the best plan to have such seed tested

FREE TESTING OF SEEDS

During the past year 3,069 samples of seed were tested free of charge for farmers and seedsmen. The privilege of having these tests made is of much value to the farmer and the smaller seed dealers who do not have facilities for testing seeds. Not all of the tests requested can be made promptly during the busy season from January to March. Therefore, it is important that all samples be sent in as early as possible, preferably from September to December. When submitting a sample of seed for test to the seed laboratory the following directions for securing the sample should be observed in order that the sample may represent as accurately as possible the lot from which it is taken. No matter how accurately an analysis is made it can show only the quality of the sample submitted.

DIRECTIONS FOR TAKING SAMPLES

1. The minimum weight of seed forwarded for test should be approximately:
    - (a) Two ounces (cupful) of grass seed of any kind or of white and alsike clover;
    - (b) Five ounces (cupful) of red and crimson clover, alfalfa, millet flax or seed of like size;
    - (c) One pound (pint) of cereals or seed of like size.
2. Samples may be drawn:
    - (a) With seed triers;
    - (b) With long stickers;
    - (c) By hand, taking approximately equal parts of the sample from at least three different places in the sacks, including the top and opposite sides as near the bottom as practicable.
3. Samples should be drawn from each bag when there are not more than five bags in the lot, from every fifth bag when there are more than five bags but never from less than five bags. All samples so drawn should be combined into one composite sample.

DIRECTIONS FOR MAKING GERMINATION TESTS AT HOME

Satisfactory germination tests may be made of the larger field seeds at home, leaving the laboratory facilities of the Agricultural Experiment Station available for the grasses and clovers which are more difficult to analyze.

The seed to be germinated should be mixed thoroughly and the required number of seeds (100 seeds of grains and 200 of clovers and other small seeds) counted out just as they come.

The plate germinator is satisfactory and very simple to operate. The seeds to be germinated are placed between two thicknesses of folded blotting paper or cloth (heavy grade of muslin or canton flannel). This should be moistened and placed between ordinary tin or porcelain plates and kept in a warm room where the range in temperature is from approximately 85 degrees during the day to 65 degrees at night. The place selected for the test should not be too near a window, stove or register.

The time required for germination tests varies with different kinds of seed. Under favorable conditions grass and clover seeds begin to sprout in three or four days. The tests should be continued for ten days or two weeks. Every two days the tests should be examined and a record made of the number of seeds that have sprouted. Also the blotting paper or cloth must be kept sufficiently moist. The number of seeds which germinate out of the 100 seeds will give the percentage of germination. *However, those seeds which develop weak sprouts should not be counted because they may not continue their development into normal plants.*

FILLING OUT OFFICIAL INDIANA LABELS

PURITY

The minimum purity means the percentage of pure seed of the kind and variety given on the official label. Statement of purity as 97 per cent including two per cent crop seeds, or 95 per cent and two per cent crop seeds, will not be permitted. In cases where the seed contains two or more kinds of agricultural seed, each present in excess of five per cent, the seed mixture should be labeled with the official green colored mixture label, Style C.

The filling out of the column "per cent of seed" on the mixture label can be explained best by an example. For instance if a mixture is composed of 60 per cent Kentucky Blue Grass with a purity of 80 per cent and 40 per cent of Red Top with a purity of 90 per cent, the per cent of Blue Grass should be given as 48 per cent, obtained by taking 80 per cent of 60. The Red Top should be given as 36 per cent, obtained by taking 90 per cent of 40.

The percentage of purity of the large seeds such as soybeans, corn, wheat, vegetable seeds, etc., must be stated on the official label the same as for any other seed.

GERMINATION

The term minimum germination means the percentage of sprouts obtained in the prescribed time for the test. If the seed contains hard seeds this percentage should be stated after the term "hard seed" on the official label. In no case should the sum of the percentages of sprouts and hard seeds be given as the percentage of minimum germination. Hard seeds are those seeds which remain hard at the end of the germination test. Such seeds due to an impermeable seed coat fail to absorb water and produce sprouts.

Distributors should not ship seed until the germination test is completed. The statement "In Test" on the official label does not meet the provisions of the seed law. If there is a demand for the seed the dealer may be tempted to sell the seed before he receives a report on the germination, thus placing himself liable to prosecution.

NOXIOUS WEED SEEDS

The number per pound of each of the noxious weed seeds present in the seed must be listed on the reverse side of the tag irrespective of the number present. The term "trace" is not permissible. The statement of the noxious weed seeds in terms of proportion will not be permitted. Those weed seeds listed as noxious in the Indiana Seed Law may be found in Table 5 on page 12.

PLACE WHERE GROWN

The official Indiana tag must give the name of the state, territory or foreign country where the seed was grown. Terms such as Domestic, U. S. A., Northwestern, and Central States do not meet the requirements of the law, and seed found so labeled will be removed from sale immediately until the tags have been corrected.

The following statement relating to the adaptability of clover seed of different origins is taken from the Report of Progress of the Soils and Crops Experiment Farm conducted by the Department of Agronomy:

"Clover seed produced from native strains in Indiana, Ohio, and probably other central corn belt states, Colorado seed, and the Tennessee disease resistant strain are well adapted to Indiana. Seed from other northern states and Canada is almost as good, although second growth has been considerably less in the tests so far conducted. Seed from Oregon is undesirable, being decidedly less winter hardy. In the tests conducted at Lafayette the Oregon clover has winter-killed an average of 22.5 per cent as against 10.2 per cent in seedings from home-grown seed. Clover from central and north central Europe, except Russia, winter-kills from one-fourth to two-fifths and is very decidedly lacking in ability to make a satisfactory second growth. The lots of Russian clover tested have been quite winter hardy, although the plants are smaller, particularly in the second growth, than native clover. Seed from southern Europe is entirely unfit for use in Indiana. Seed from Chile is also unadapted to Indiana.

"Foreign clover seeds may be of good quality and produce good stands of plants, but when it comes to winter hardiness and yielding ability they cannot be judged by the appearance or germinating quality of the seed. Dealers as well as farmers should bear this in mind and make proper distinction."

STAINED SEED

The Federal Seed Act prescribes that all imported red clover seed of unknown origin and that from Italy must be stained ten per cent red; all from Canada one per cent violet and all other imported red clover seed of known origin one per cent green.

All imported alfalfa seed of unknown origin and that from Africa must be stained ten per cent red; all from Canada one per cent violet; all from Turkestan ten per cent purple-red; all from South America ten per cent orange-red and all other imported alfalfa seed of known origin one per cent green.

CERTIFIED, VERIFIED AND AFFIDAVIT SEED

Certified seed is seed the purity, germination, and variety of which is certified to by some state certifying agency or an agency closely associated with some state office or department. The seed is shipped in sealed sacks with a certified seed tag attached. During the growing season the fields are inspected to ascertain trueness to variety of crop, and after the harvest the seed is tested to determine whether it meets the prescribed standards of the certifying agency. In Indiana the Indiana Corn Growers' Association certifies corn, wheat, oats, lespedeza and soybeans. The State Entomologist in coöperation with the Purdue University Agricultural Experiment Station certifies tomato seed. The other most commonly certified seed found in the state is Grimm Alfalfa.

Verified-Origin seed is seed the origin of which is attested to by certain seed dealers under supervision of the Government. Seed verification service deals with origin only, meaning Place Where Grown, and gives no guarantee as to the variety, purity or viability of the seed. At the present time red clover and alfalfa are the only seeds verified as to origin. Verified seed is tagged with tags bearing the official verification emblem.

Affidavit Grimm is alfalfa seed for which the grower has made affidavit as to its being Grimm Alfalfa. This affidavit seed is not regulated by either State or Federal Government.

ATTENTION DISTRIBUTORS, DEALERS AND TRUCKERS

If seeds such as oats and soybeans are sold for seeding purposes they come under the provisions of the law and must be tagged with Indiana seed tags. It is not proper to say that the oats or soybeans are being offered for sale as feed oats or feed soybeans and thereby attempt to evade the seed law when these seeds are actually being sold for seeding purposes. The mere fact that the dealer or trucker says that he is selling his oats and soybeans as feed when it is generally known and he himself as well knows that they are going to be used for seed does not in any way relieve him from the responsibility of complying with the seed law by properly tagging the oats and soybeans with official Indiana Seed Tags.

The retail seedsman's attention is again called to the fact that it is necessary to fill out additional Indiana seed tags from the tag furnished by the wholesale seedsman and attach a sufficient number of them to the seed to cover its net weight before offering or exposing the seed for sale.

ATTENTION PURCHASERS

The seed purchaser should be careful not to be misled by the offer for sale of seed at abnormally low prices. Reliable dealers go to an expense to assure the correctness of their representations and it is natural that they should be compensated for this care. The buyer should insist that the seed be properly tagged with Indiana state tags. All tags, correspondence and records pertaining to seed purchases should be saved until the buyer is satisfied that the seed he received has met the desired qualifications. Any irregularities should be reported to the State Seed Commissioner. If the case appears to violate the Federal Seed Act the State Seed Commissioner may report the matter to the Division of Seed Investigations, Bureau of Plant Industry of the United States Department of Agriculture.

The Indiana Seed Law does not prohibit the sale of inferior seed when such seed is tagged correctly. For this reason the purchaser should always read the information stated on the tag before buying his seed. Failure to purchase good quality labeled seed may result in poor stands, undesirable varieties and infestation of the soil with noxious weed seeds.

It is unwise to purchase seed from a trucker or a stranger whose reputation is not known. Buyers should also beware of cheap seed advertised by out-of-state so-called "bargain" seed houses. Such seed is usually not tagged and is shipped in small lots directly to the consumer.

The farmer will find that it is to his advantage to buy seed from a reliable seed dealer. Table 8 entitled "Summary of Seed Inspection, July 1, 1935, to June 30, 1936," may be of considerable value to seed purchasers in that it shows just how careful the different seedsmen were in tagging their seeds and also in maintaining the claims on their tags.

Table 1 shows that in general there has been a continued improvement in the correct labeling of seeds in the last few years. A careful survey of the samples listed as seriously misbranded in 1936 reveals some interesting data. Those kinds of seeds seriously misbranded in germination consist mostly of corn, sweet clover, red top, blue grass and lawn grass mixtures while those seriously misbranded as to noxious weed seeds include Korean lespedeza, red clover, red top, timothy and lawn grass mixtures. Fifty per cent of all official samples of lawn grass mixtures were found to be seriously misbranded in some form or other. These mixtures are usually composed of the so-called temporary grasses and contain entirely too much chaff and weed seeds. Curtailment of these inferior mixtures would benefit the general public and the dealers in high-class mixtures.

Examination of Tables 2, 3, 4, 5 and 6 shows a marked improvement in the quality of the seed offered for sale but the quality of much of the seed could be increased a great deal by more thorough cleaning.

Table 8 gives in detail the results of the analyses of 1,362 official samples.

TABLE 1—Progress in Seed Inspection

YEAR	Number of Samples Examined	Number Seriously Misbranded	Per Cent Seriously Misbranded
1925	745	271	36.4
1928	969	289	29.6
1929	1,230	403	32.7
1930	1,044	184	17.6
1931	1,122	201	17.9
1932	926	157	17.0
1933	698	139	19.9
1934	1,139	160	14.0
1935	1,085	196	18.1
1936	1,362	234	17.2

TABLE 2—Average Analysis of Samples in 1922 Seed Inspection

	Number of Samples	Purity Per Cent	Inert Matter Per Cent	Germination Per Cent	Hard Seeds Per Cent	Number of Weed Seeds Per Pound	Number of Noxious Weed Seeds Per Pound
Alfalfa	33	99.19	0.33	81.42	10.44	1,228	128
Blue Grass	20	66.35	28.51	58.50	....	33,001	2,566
Alsike Clover	70	94.27	1.05	78.97	12.94	4,757	2,214
Red Clover	195	98.05	0.54	88.00	6.72	7,358	1,722
Sweet Clover	27	96.40	2.63	66.91	11.87	2,370	387
White Clover	7	95.28	0.62	79.30	14.68	15,650	10,843
Cowpeas	17	97.86	1.88	70.94	....	38	3
Millet	12	98.03	1.55	75.54	....	2,211	15
Oats	47	97.62	1.52	85.97	....	213	51
Orchard Grass	13	82.36	15.83	74.33		32,308	28,847
Rape	11	99.59	0.31	83.23		263	16
Red Top	19	83.69	12.56	81.37	....	75,163	3,810
Soy Beans	12	97.55	2.24	84.04	2.20	37	1
Sudan Grass	8	95.21	2.38	72.50	....	974	....
Timothy	85	98.90	0.55	86.72	....	2,792	1,278
Mixtures	11	76.79	11.97	57.55	11.19	81,833	26,825
Garden Seed	35	98.08	....	71.65	....	....	....
Miscellaneous	13	96.08	2.46	65.15	3.20	3,368	845

TABLE 3—Average Analysis of Samples in 1935 Seed Inspection

	Number of Samples	Purity Per Cent	Inert Matter Per Cent	Germ. Per Cent	Hard Seeds Per Cent	Number of Weed Seeds Per Pound	Number of Noxious Weed Seeds Per Pound	Range in Number of Noxious Weed Seeds Per Pound
Alfalfa	245	99.35	0.29	79.63	11.78	591	22	0— 360
Blue Grass	45	80.71	18.69	69.42	....	8,703	723	0— 2,250
Alsike Clover	36	96.99	0.85	80.19	12.00	3,235	1,053	0—11,025
Red Clover	160	98.75	0.28	88.80	5.28	1,740	1,001	0—15,030
Sweet Clover	178	99.43	0.25	81.69	6.85	830	47	0— 2,070
White Clover	4	98.44	0.60	76.94	10.44	5,119	506	9— 918
Corn	13	99.92	0.08	91.69	....	....	....	....
Lespedeza (Largely Korean)	85	98.46	0.65	84.61	9.81	2,623	855	0— 9,360
Millet	10	98.72	0.99	82.80	....	1,463	23	0— 72
Oats	16	97.88	0.98	89.66	....	40	3	0— 27
Orchard Grass	11	84.03	13.76	82.63	....	4,540	1,829	18— 2,925
Rape	4	99.86	0.10	93.00	....	79	23	0— 90
Red Top	57	91.20	7.20	79.29	....	82,313	658	0— 5,850
Soy Beans	31	98.65	1.26	83.00	0.32	15	....	0— 4
Sudan Grass	13	98.04	1.60	83.96	....	408	4	0— 18
Timothy	96	99.04	0.49	84.70	....	2,735	813	0—17,775
Mixtures	45	84.33	11.47	73.33	6.46	19,062	1,654	0—13,770
Garden Seed	23	99.40	0.58	86.78	....	22	2	0— 45
Miscellaneous	13	97.07	1.51	85.23	....	3,284	218	0— 1,170

TABLE 4—Average Analysis of Samples in 1936 Seed Inspection

	Number of Samples	Purity Per Cent	Inert Matter Per Cent	Germ. Per Cent	Hard Seeds Per Cent	Number Weed Seeds Per Pound	Number of Noxious Weed Seeds Per Pound	Range in Number of Noxious Weed Seeds Per Pound
Alfalfa	225	99.31	0.29	78.19	12.62	994	15	0—603
Blue Grass	56	86.22	13.41	72.18	....	6,149	661	0—9,900
Alsike Clover	48	97.63	0.74	82.62	11.55	3,141	778	0—5,400
Red Clover	200	98.98	0.27	87.25	4.86	1,552	733	0—11,880
Sweet Clover	149	99.46	0.18	79.58	5.72	1,070	15	0—126
White Clover	3	98.03	0.90	84.75	9.83	5,350	2,193	18—5,175
Corn	237	99.85	0.23	79.18	....	....	....	0—5
Lespedeza (Largely Korean)	87	98.50	0.73	82.49	9.99	2,197	527	0—3,060
Millet	4	98.83	0.78	87.38	....	1,154	119	0—414
Oats	19	98.16	0.98	88.55	....	266	78	0—486
Orchard Grass	8	83.57	14.50	83.94	....	11,277	8,915	18—24.300
Red Top	59	92.85	5.82	81.62	....	43,486	1,110	0—4,950
Soy Beans	51	98.39	1.40	83.01	0.48	119	2	0—52
Sudan Grass	12	98.06	1.71	79.54	....	181	....	....
Timothy	144	99.47	0.26	92.98	....	2,161	774	0—17,325
Mixtures	42	90.08	8.74	71.54	8.64	15,881	1,071	0—21,600
Garden Seed	12	99.89	0.09	89.79	....	75	....	....
Miscellaneous	6	99.29	0.32	82.17	3.58	420	23	0—63

TABLE 5—Percentage of Samples Showing the Presence of Each of the Noxious Weed Seeds

NOXIOUS WEED SEEDS	Red Clover			Alfalfa			Sweet Clover		
	1923 per cent	1935 per cent	1936 per cent	1923 per cent	1935 per cent	1936 per cent	1923 per cent	1935 per cent	1936 per cent
Bracted plantain	17.98	11.87	10.50	1.58	2.45	2.67	0.00	1.69	1.34
Buckhorn	68.70	75.62	70.50	11.11	11.02	5.33	15.78	8.99	3.36
Canada thistle	2.51	0.63	1.00	0.00	0.82	0.84	13.15	1.69	2.01
Chicory	1.79	0.63	1.00	1.58	0.41	0.00	0.00	0.00	0.00
Common plantain	71.22	38.13	24.50	0.00	3.67	2.67	2.63	2.25	0.67
Corn cockle	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Curled dock	49.28	58.75	49.50	30.15	15.51	11.11	13.15	17.42	7.38
Dodder	18.70	23.75	22.50	47.61	15.10	19.11	0.00	0.56	0.67
Horse nettle	0.00	8.13	5.50	0.00	3.67	4.44	0.00	0.00	0.00
Mustard	3.23	3.13	2.50	0.00	2.04	1.33	18.40	44.94	44.29
Oxeye daisy	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Prickly lettuce	5.75	2.50	1.50	1.58	1.22	0.00	0.00	0.56	0.00
Quack grass	0.00	0.00	0.00	0.00	0.41	0.00	0.00	0.00	1.34
Red sorrel	15.82	18.75	30.50	7.93	1.63	2.67	0.00	2.81	2.01
White top	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Wild carrot	18.34	14.38	10.00	0.00	2.45	0.44	2.63	2.81	0.00
Wild garlic or onion	0.00	1.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Yellow trefoil	5.75	15.63	20.50	4.76	1.63	4.00	7.89	1.12	0.67

TABLE 6—Percentage of Samples Showing the Presence of Each of the Noxious Weed Seeds

Noxious Weed Seeds	Alsike Clover			Timothy			Korean Lespedeza	
	1923 per cent	1935 per cent	1936 per cent	1923 per cent	1935 per cent	1936 per cent	1935 per cent	1936 per cent
Bracted plantain	2.46	5.56	8.33	1.29	8.33	25.69	61.18	71.26
Buckhorn	13.58	47.22	43.75	11.03	50.00	55.56	40.00	29.89
Canada thistle	3.70	5.56	6.25	0.64	2.08	0.00	0.00	0.00
Chicory	0.00	0.00	0.00	0.00	0.00	0.69	0.00	0.00
Common plantain	22.22	[illegible]7.78	31.25	43.50	63.54	71.53	44.71	29.89
Corn cockle	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Curled dock	59.25	75.00	58.33	22.00	21.87	18.75	32.94	32.18
Dodder	0.00	0.00	0.00	0.00	0.00	0.69	51.76	73.56
Horse nettle	0.00	0.00	0.00	0.00	0.00	0.00	[illegible]7.06	64.37
Mustard	0.00	5.56	2.08	0.00	0.00	0.00	0.00	0.00
Oxeye daisy	1.23	0.00	0.00	1.94	10.42	6.94	0.00	1.15
Prickly lettuce	0.00	0.00	0.00	0.00	5.21	1.39	0.00	0.00
Quack grass	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Red sorrel	34.56	52.78	43.75	28.57	72.91	43.06	3.53	1.15
White top	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Wild carrot	0.00	2.78	2.08	0.64	8.33	0.69	3.53	6.90
Wild garlic or onion	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Yellow trefoil	19.75	58.33	75.00	0.00	0.00	2.08	0.00	0.00

TABLE 7—Summary of Seed Inspection, July 1, 1935, to June 30, 1936

Name and Address of Certifier	Number of Samples Examined	Number of Samples Passed	Number Technically Misbranded	Per Cent* Technically Misbranded	Number Seriously Misbranded	Per Cent* Seriously Misbranded	Number Without State Labels
Ackerman Co., The, Lima, Ohio	1	1					
Adams & Morrow, Inc., Princeton, Ind.	3	2	1				
Alexander & Son, A. B., R. R. 1, Vincennes, Ind.	2	2					
Allied Seed Co., Inc., Fort Wayne, Ind.	40	33	7	17%			
Alvey Feed Store, Terre Haute, Ind.	1						1
American Field Seed Co., Chicago, Ill.	28	8	4	14%	14	50%	28
Annis Feed & Seed Store, Bremen, Ind.	3	1			2		
Armstrong-Landon Co., Kokomo, Ind.	3	3					
Atkinson, Roy C., Fowler, Ind.	1	1					
Aurora Farmers Supply Co., Aurora, Ind.	1		1				
Ayler & Sons, Harry D., Brooksburg, Ind.	3	1	1		1		
Ayres & Co., L. S., Indianapolis, Ind.	1	1					
Baelz, Wm., Corydon, Ind.	1	1					
Bahler Grain & Coal Co., Galveston, Ind.	1	1					
Bahler Grain & Feed Co., Galveston, Ind.	1				1		
Bally, George, Akron, Ind.	1						1
Bash Seed Boxes, Inc., S. D., Indianapolis, Ind.	1	1					
Bash Seed Store, Indianapolis, Ind.	1	1					
Berry Seed Co., Clarinda, Ia.	17	3	3	18%	8	47%	17
Block, Co., Wm. H., Indianapolis, Ind.	3	3					
Bloomfield Mill & Elevator Co., Bloomfield, Ind.	1	1					
Blume Estate, Wolcott, Ind.	1	1					1
Bolles Hardware Co., Brownstown, Ind.	2	2					
Bourbon Grain Exchange, Bourbon, Ind.	1	1					
Bowman Seed Co., Concordia, Kans.	9	5	3	33%			7
Branch Grain & Seed Co., Martinsville, Ind.	1	1					
Brand, Paul, Edinburg, Ind.	1						1
Brazil Flour & Feed Co., Brazil, Ind.	1				1		
Bremen Elevator, Bremen, Ind.	1	1					
Brent Seed Co., C. S., Lexington, Ky.	1		1				
Brodbeck, L. A., Wabash, Ind.	1	1					
Brown Supply Co., Valparaiso, Ind.	1		1				
Bulleit & Son, V. H., Corydon, Ind.	1	1					
Bundy Bros., Vallonia, Ind.	2				2		
Burt & Sons, Theo, Melrose, Ohio	5	2	1	20%	2	40%	2
Butt & Co., L. T., Center Point, Ind.	2				1		1
Byers Seed Co., Franklin, Ind.	6	3	2	33%	1	17%	
Callahan, Ray, R. R. 1, Odon, Ind.	1				1		
Cambridge Feed Mills, Inc., Cambridge City, Ind.	1	1					
Campbell & Co., Kendallville, Ind.	1		1				
Caplinger & Simms, Union City, Ind.	3	2					1
Carter, T. Volney, Seymour, Ind.	1	1					

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*Percentages calculated only on five samples or more examined.

TABLE 7—Summary of Seed Inspection, July 1, 1935, to June 30, 1936—Continued

Name and Address of Certifier	Number of Samples Examined	Number of Samples Passed	Number Technically Misbranded	Per Cent* Technically Misbranded	Number Seriously Misbranded	Per Cent* Seriously Misbranded	Number Without State Labels
Central Michigan Grain Corp., Edwardsburg, Mich.	1		1				
Chambers Seed Co., Louisville, Ky.	7	5	2	29%			1
Chavis Seed Co., Fowler, Ind.	2				2		
Cherry, A. O., Shelbyville, Ind.	7	7					
Coleman, Walter, Martinsville, Ind.	1		1				
Community Store, Prairie Creek, Ind.	1				1		1
Condon Bros., Seedsmen, Rockford, Ill.	2	1			1		
Cook, George D., Birdseye, Ind.	1						1
Cordes Hardware Co., Seymour, Ind.	1						1
Corneli Seed Co., St. Louis, Mo.	3		2		1		1
Crabbs Reynolds Taylor Co., Crawfordsville, Ind.	46	38	5	11%	3	7%	
Crawfordsville Seed Co., Crawfordsville, Ind.	10	9	1	10%			
Cross, Glen & Sexson, Earl, Greenfield, Ind.	1						1
Cruse, Joe, Vincennes, Ind.	1	1					
Culver City Grain & Coal Co., Culver, Ind.	1	1					
Dana Elevator Co., Dana, Ind.	2	2					
Davis Grain Co., Michigantown, Ind.	1				1		
Davis Seed Corp., Lebanon, Ind.	64	54	6	9%	4	6%	
DeWall Seed Co., Gibson City, Ill.	1				1		1
Dickinson Co., The Albert, Chicago, Ill.	70	47	8	11%	12	17%	7
Drabing, C. L., French Lick, Ind.	2						2
Dubois County Farm Bureau, Huntingburg, Ind.	2	2					
Eberts Grain Co., Louisville, Ky.	2				2		
Eberts Grain Co., Scottsburg, Ind.	3	3					
Edgar County Farm Supply Co., Paris, Ill.	1	1					1
Elkhart County Farm Bureau, Goshen, Ind.	1	1					
Elnora Elevator Co., Elnora, Ind.	1				1		1
Ensminger, Aaron, R. R., Danville, Ind.	1				1		
Evans & Hedworth, Remington, Ind.	1	1					
Everitt's Seed Store, Indianapolis, Ind.	1				1		
Fagan Seed Co., Indianapolis, Ind.	1		1				
Farmers Cooperative Co., Cicero, Ind.	1	1					
Farmers Cooperative Co., Monterey, Ind.	1	1					1
Farmers Cooperative Co., Wolcott, Ind.	2		2				
Farmers Cooperative Elevator Co., Seymour, Ind.	1				1		
Farmers Grain Co., Liberty Center, Ind.	1		1				
Farmers Grain Co., Pershing, Ind.	4	4					
Ferry-Morse Seed Co., Detroit, Mich.	7	6					1
Fisher Seed & Feed Store, Columbia City, Ind.	3				1		2
Foster-Kendall Co., Carmel, Ind.	81	61	15	19%	5	6%	
Funk & Sons, Edw. F., Kentland, Ind.	2	2					
Gardner Seed Co., Rochester, N. Y.	4	4					4
Gelzleichter & Son, J., Huntington, Ind.	1		1				
Geneva Milling & Grain Co., Geneva, Ind.	1		1				
Getty, R. E., Clayton, Kans.	1	1					1
Giltner Seed Co., Eminence, Ky.	1				1		
Goodrich Bros. Co., Westfield, Ind.	2	1			1		
Goodrich Bros. Co., Winchester, Ind.	19	10	6	32%	3	16%	
Goodrich Bros. Hay & Grain Co., Gadsden, Ind.	1				1		
Guthrie, James, Henryville, Ind.	1		1				1
Habig Bros., Indianapolis, Ind.	1	1					
Haight, Inc., R. J., Chicago, Ill.	1				1		1
Haldeman-Baum Co., Akron, Ind.	1				1		
Hall Seed Co., Louisville, Ky.	2	1			1		
Hancock County Farm Bureau, Greenfield, Ind.	1						1
Harrison County Farm Bureau, Crandall, Ind.	1						1
Hedden, David, Magnolia, Ind.	3						3
Heise Bros., Bedford, Ind.	1						1
Heldt Co., The, Evansville, Ind.	22	11	7	32%	4	18%	1
Heldt & Voelker, Evansville, Ind.	3	2			1		
Hemlock Grain Co., Hemlock, Ind.	1		1				
Hirsch & Son, Henry, Toledo, Ohio	19	10	8	42%	1	5%	
Hooton-Davis Seed Corp., Lebanon, Ind.	8	7					1
Howat, Thos. E., Francesville, Ind.	3	1	1		1		
Hutton, W. E., R. R. 5, Vincennes, Ind.	1						1
Indiana Farm Bureau Cooperative Ass'n, Inc., Indianapolis, Ind.	72	55	10	14%	7	10%	1
Indiana Feed & Seed Co., Fort Wayne, Ind.	4	3	1				1
Indiana Grain Producers, Inc., Shelbyville, Ind.	1				1		1
Indiana Harbor Feed Store, Indiana Harbor, Ind.	1				1		1
Indiana Seed Co., Indianapolis, Ind.	83	65	13	16%	5	6%	
Isbell Seed Co., Jackson, Mich.	3	2			1		1
Jackson, Forrest, West Fork, Ind.	1						1
Jacobson, J., Formoso, Kans.	1						1
James Seed Co., Jeffersonville, Ind.	1	1					1

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*Percentages calculated only on five samples or more examined.

TABLE 7—Summary of Seed Inspection, July 1, 1935, to June 30, 1936—Continued

NAME AND ADDRESS OF CERTIFIER	Number of Samples Examined	Number of Samples Passed	Number Technically Misbranded	Per Cent* Technically Misbranded	Number Seriously Misbranded	Per Cent* Seriously Misbranded	Number Without State Labels
Jansen-Overman Co., Indianapolis, Ind.	4		3		1		
Jenner & Sons, W. E., Marengo, Ind.	1						1
Johnson, Everett, Orleans, Ind.	1				1		
Johnson, J. Oliver, Chicago, Ill.	1				1		
Johnson, P. L., Vincennes, Ind.	3	3					
Karsell Co., Inc., Bloomington, Ind.	1						1
Kellam & Son, R. P., Newcastle, Ind.	1		1				
Kellen, Charles W., Otterbein, Ind.	1		1				
Kellogg-Kelly Seed Co., St. Joseph, Mo.	9	6			3	33%	1
Kentucky Lespedeza Growers Ass'n, Eminence, Ky.	2	2					1
Kenworthy & Son, Paragon, Ind.	1	1					1
King & Sons, H. C., Battle Creek, Mich.	2	1	1				
Kirk Feed Co., Helmsburg, Ind.	1	1					
Kirksville Seed Co., Kirksville, Mo.	6		1		5	83%	
Klitgord, M., Lima, N. Y.	2	2					
Knapp, C. E., South Bend, Ind.	1	1					
Kraus, Sam, Fort Wayne, Ind.	12	5	3	25%	4	33%	1
Lachmund, Howard, Brookston, Ind.	1		1				
Laffary, Williard, R. R., Martinsville, Ind.	1						1
Lapaz Grain Co., Lapaz, Ind.	1	1					
Laughlin Feed & Grain Co., Scotland, Ind.	1				1		
Lawrence County Farm Bureau, Bedford, Ind.	3				1		2
Lawson, Lewis, R. R. 1, Bloomington, Ind.	1						1
Lewis Implement & Seed Co., Louisville, Ky.	26	16	7	27%	3	12%	
Livingston Seed Co., Columbus, Ohio	3	2	1				
Louisville Seed Co., Louisville, Ky.	8	1	3	37%	4	50%	1
McCarty Seed Co., J. A., Evansville, Ind.	12	4	5	42%	3	25%	
McCormack, C. J., R. R. 3, Vincennes, Ind.	1						1
McCullough Seed Co., The J. Chas., Cincinnati, Ohio	24	12	9	37%	3	12%	1
McCullough's Sons Co., The J. M., Cincinnati, Ohio	3	2			1		1
McGrain, Albert, Corydon, Ind.	1	1					
McMahan Seed Co., LaPorte, Ind.	2	1	1				
McMahan Seed Co., Valparaiso, Ind.	7	2	3	43%	2	29%	
Mangelsdorf & Bros., Ed. F., St. Louis, Mo	8	5	2	25%	1	12%	
Marburger Bros., Peru, Ind.	1						1
Market Gardeners' Seed Co., The, Cincinnati, Ohio	15	8	3	20%	4	27%	
Markleville Elevator Co., Markleville, Ind.	1		1				1
Martin, Howard, R. R. 1, Monroe City, Ind.	1						1
Martin Hardware Co., Clayton, Ind.	2	1	1				
Matthews, H. L., Mitchell, Ind.	1	1					
Mayer Grain Co., South Whitley, Ind.	1	1					
Meacham, Chas. M., Morganfield, Ky.	3	1	1		1		2
Mehne, Lawrence, Jasper, Ind.	1		1				
Metropolitan Seed Corp., New York, N. Y.	1						1
Miers, S. G., Greensburg, Ind.	1	1					
Miller Grain Co., Bainbridge, Ind.	4	3	1				
Moore Bros., Kirklin, Ind.	2				2		
Moore & Kemple Hardware Co., Lafayette, Ind.	1						1
Morgan Packing Co., Brownstown, Ind.	5						5
Morrow Grain Co., Wabash, Ind.	1		1				1
Musgrave, Paul, R. R. 1, Martinsville, Ind.	1				1		
Nashville Poultry Market, Nashville, Ind.	1						1
National Seed Co., Louisville, Ky.	7	2	2	29%	3	43%	
Nebraska Seed Co., Omaha, Neb.	1		1				
New Paris Elevator, New Paris, Ind.	1				1		
New Paris Elevator Co., New Paris, Ohio	5	2	2	40%	1	20%	
Noble Bros., Gibson City, Ill.	2	2					
Noragon & Son, Butler, Ind.	1	1					
North Western Seed Co., Keokuk, Ia.	2		2				
O. & M. Seed Co., The, Green Springs, Ohio	1	1					
Ohio Valley Seed Co., Evansville, Ind.	2	1			1		1
Olds Seed Co., L. L., Madison, Wis.	8	4	3	37%	1	12%	
Ostberg Seed Co., Chicago, Ill.	12		3	25%	9	75%	5
Outland, T. W., Antwerp, Ohio	3	1	1		1		
Parker, Roy W., Pierceton, Ind.	1		1				
Pentecost & Craft, Terre Haute, Ind.	1	1					
Perry, James, Monroe City, Ind.	2						2
Pierce Elevator Co., Union City, Ind.	3	2	1				3
Pritchard & Rafert, Inc., Pendleton, Ind.	1				1		
Probst, Arthur, Indianapolis, Ind.	1						1
Purcell Seed Co., Evansville, Ind.	38	31	6	16%	1	3%	
Purdue, A. V., Rochester, Ind.	1				1		
Quinlan Seed Store, Terre Haute, Ind.	7	2	3	43%	2	29%	2
Quirk, John B., North Madison, Ohio	1	1					

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*Percentages calculated only on five samples or more examined.

TABLE 7—Summary of Seed Inspection, July 1, 1935, to June 30, 1936—Continued

Name and Address of Certifier	Number of Samples Examined	Number of Samples Passed	Number Technically Misbranded	Per Cent* Technically Misbranded	Number Seriously Misbranded	Per Cent* Seriously Misbranded	Number Without State Labels
Rich Valley Cooperative Elevator Co., Rich Valley, Ind.	1	1					
Rose, M. O., R. R. 1, Vincennes, Ind.	1						1
Ross Seed Co., Louisville, Ky.	22	11	8	36%	2	9%	1
Royal Hatchery & Supply Co., R. R. 2, Union City, Ind.	3	2			1		
Royce Co., Lewis, El Reno, Okla.	2						2
Rudy-Huston Grain Co., St. Bernice, Ind.	1						1
Rush Service Co., Inc., Rushville, Ind.	5	3	2	40%			
Rychener, S., Pettisville, Ohio	12	5	1	8%	6	50%	
Scarff's Sons, W. N., New Carlisle, Ohio	2	2					2
Schmocker, John, Batesville, Ind.	1	1					
Schultz Seed Co., J. M., Dieterich, Ill.	5	3	1	20%	1	20%	
Scott & Sons Co., O. M., Marysville, Ohio	1	1					
Scott Seed Co., New Albany, Ind.	49	23	16	33%	10	20%	
Seberger Seed Co., Crown Point, Ind.	1	1					
Shine Milling Co., New Albany, Ind.	1	1					
Shultz Seed Co., Olney, Ill.	1		1				
Shumway, R. H., Seedsman, Rockford, Ill.	1						1
Sink, Floyd, Camden, Ind.	1						1
Soy Seed Co., Camden, Ind.	1		1				
Standard Hatcheries, Terre Haute, Ind.	4	2			2		
Standard Seed Co., Chicago, Ill.	25	11	6	24%	8	32%	1
Steckley Feed Mill, Kendallville, Ind.	2		1		1		
Steinkamp, Hugo, Holland, Ind.	1	1					1
Stiefel Grain Co., Albion, Ind.	1		1				
Stiefel Grain Co., Avilla, Ind.	1		1				
Sugar Creek Grain Co., Thorntown, Ind.	1						1
Sullivan County Farm Bureau, Sullivan, Ind.	1		1				
Sun-Field Seed Service, Chicago, Ill.	14	3	4	29%	7	50%	
Sunshine Feed Store, Greenfield, Ind.	1		1				
Sunshine Feed Store, Rushville, Ind.	1	1					
Sunshine Feed Store, Scottsburg, Ind.	3	1			2		3
Syler & Syler, Nappanee, Ind.	21	15	3	14%	3	14%	
Syler & Syler, Plymouth, Ind.	15	10	1	7%	4	27%	
Tempest, Thomas R., R. R. 1, Columbus, Ind.	1				1		
Teweles Seed Co., L., Milwaukee, Wis.	33	20	8	24%	5	15%	
Thomas Co., R. N., Madison, Ind.	2	2					
Thompson, Alexander, R. R. 6, Lafayette, Ind.	1	1					
Thompson, John H., R. R. 5, Madison, Ind.	1				1		
Tri-County Farm Bureau Cooperative Ass'n, Inc., Evansville, Ind.	1	1					
Troyer, C. E., LaFontaine, Ind.	5	5					
Troyer Seed Co., Goshen, Ind.	5	2	1	20%	2	40%	
Vanest, W. T., Westport, Ind.	1						1
Vaughn's Seed Store, Chicago, Ill.	1	1					1
Victoria Mill & Elevator Co., Jasper, Ind.	1				1		
Vogler & Son, L. A., Hope, Ind.	1		1				
Vonnegut Hardware Co., Indianapolis, Ind.	5	3	1	20%	1	20%	
Wabash County Farm Bureau Cooperative Ass'n, Inc., Wabash, Ind.	1	1					
Walley Agricultural Service, Fort Wayne, Ind.	1	1					
Warren Seed Co., Indianapolis, Ind.	3	2			1		
Werst & Co., Peter, Brookville, Ind.	4	4					
Wessel, Wm. A., Batesville, Ind.	1				1		
Whitley County Farm Bureau Cooperative Ass'n, Inc., Columbia City, Ind.	1	1					
Williams, James, Corydon, Ind.	2						2
Wilson, John, Roachdale, Ind.	1	1					
Wolf Seed Co., Fort Wayne, Ind.	7	2	4	57%	1	14%	
Woodruff & Sons, F. H., Milford, Conn.	1				1		
Woodruff & Sons, F. H., Toledo, Ohio	3	3					
Woodstock Mills, Seymour, Ind.	1						1
Wyatt Elevator, Petersburg, Ind.	13	4	5	38%	4	31%	
Wyatt Seed & Feed Store, Petersburg, Ind.	1				1		
Young & Cox, Richmond, Ind.	1						1

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*Percentages calculated only on five samples or more examined.

TABLE 8—Alfalfa

Laboratory No. S.	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, Per Cent	Inert Matter, Per Cent	Germination, Per Cent	Hard Seeds, Per Cent	Date of Germination	Total Number Weed Seeds Per Lb. of Seeds	Number per Pound of Each of the Noxious Weed Seeds Specified in the Law
7418	Berne Equity Exchange Co., The, Berne	Allied Seed Co., Inc., Ft. Wayne, Ind.	C	99.50		85.00	5.00	1-36		C None
	Common Alfalfa, Lot B469		F	99.76	0.16	81.00	3.50	4-36	909	F Dodder, 9
7602	Bremen Elevator, Bremen	Allied Seed Co., Inc., Ft. Wayne, Ind.	C	99.50		82.00	8.00	1-36		C None
	Grimm Alfalfa, Lot B490		F	99.41	0.06	88.50	5.50	4-36	95	F Dodder, 5
7849	Columbia Feed & Dairy Supply Co., Ft. Wayne	Allied Seed Co., Inc., Ft. Wayne, Ind.	C	99.70		87.00	4.00	1-36		C None
	Grimm Alfalfa, Lot 311		F	99.86	0.04	86.50	6.50	5-36	180	F None
7865	Columbia Feed & Dairy Supply Co., Ft. Wayne	Allied Seed Co., Inc., Ft. Wayne, Ind.	C	99.60		85.00	5.00	2-36		C None
	Common Alfalfa, Lot B465		F	99.44	0.22	88.50	2.00	5-36	198	F Buckhorn, 18
7866	Columbia Feed & Dairy Supply Co., Ft. Wayne	Allied Seed Co., Inc., Ft. Wayne, Ind.	C	99.00		83.00	7.00	2-36		C None
	Grimm Alfalfa, Lot B476		F	99.38	0.06	85.00	4.00	5-36	207	F Buckhorn, 18; curled dock, 9
6836	Hartford City Milling Co., Hartford City	Allied Seed Co., Inc., Ft. Wayne, Ind.	C	99.60		85.00	5.00	7-35		C None
	Common Alfalfa, Lot B447		F	99.90	0.04	85.00	8.00	9-35	270	F None
7904	Home Grain Co., Lagrange	Allied Seed Co., Inc., Ft. Wayne, Ind.	C	99.50		85.00	5.00	2-36		C None
	Common Alfalfa, Lot B505		F	99.66	0.14	79.50	8.50	5-36	1,080	F None
6840	Lapaz Grain Co., Lapaz	Allied Seed Co., Inc., Ft. Wayne, Ind.	C	99.50		80.00	10.00	8-35		C None
	Common Alfalfa, Lot B299		F	99.28	0.12	87.00	3.50	9-35	549	F Dodder, 9
6842	Lapaz Grain Co., Lapaz	Allied Seed Co., Inc., Ft. Wayne, Ind.	C	99.50		80.00	10.00	7-35		C None
	Grimm Alfalfa, Lot B446		F	99.76	0.12	84.50	1.50	9-35	90	F None
7870	Raber Co-operative Co., Columbia City	Allied Seed Co., Inc., Ft. Wayne, Ind.	C	99.60		84.00	6.00	2-36		C None
	Grimm Alfalfa, Lot B484		F	99.80	0.00	88.50	8.50	5-36	810	F None
7878	Stiefel Grain Co., Avilla	Allied Seed Co., Inc., Ft. Wayne, Ind.	C	99.50		83.00	8.00	2-36		C None
	Grimm Alfalfa, Lot B510		F	99.27	0.06	83.50	7.00	5-36	1,080	F None
7598	Stiefel Grain Co., Syracuse	Allied Seed Co., Inc., Ft. Wayne, Ind.	C	99.60		84.00	6.00	2-36		C None
	Grimm Alfalfa, Lot B484		F	99.64	0.16	87.00	8.50	3-36	360	F None
7861	Walter Grain Co., Auburn	Allied Seed Co., Inc., Ft. Wayne, Ind.	C	99.50		82.00	8.00	1-36		C None
	Grimm Alfalfa, Lot B443		F	99.57	0.20	82.50	2.50	5-36	666	F Curled dock, 9; yellow trefoil, 27
7871	Walter Grain Co., Spencerville[1]	Allied Seed Co., Inc., Ft. Wayne, Ind.	C	99.60		80.00	10.00	2-36		C None
	Grimm Alfalfa, Lot B513		F	99.82	0.06	75.50	15.00	5-36	455	F Dodder, 5
7875	Walter Grain Co., Spencerville[2]	Allied Seed Co., Inc., Ft. Wayne, Ind.	C	99.60		88.00	4.00	1-35		C None
	Common Alfalfa, Lot B333		F	99.62	0.28	93.00	1.00	4-36	5	F Dodder, 5
7731	*American Field Seed Co., Chicago, Ill.[3]	American Field Seed Co., Chicago, Ill.	C	99.70		91.00		12-35		C None
	Grimm Alfalfa, Lot 10571		F	99.72	0.20	48.50	44.50	3-36	180	F None

*Not labeled with official Indiana State Labels.
†Certified by retailer.
C and F stands, respectively, for Claimed and Found.

[1] Distributed by Walter Grain Co., Auburn, Ind.

[2] Distributed by Walter Grain Co., Auburn, Ind. Not tagged. Labels furnished.

[3] Sample secured from Harry Marsh, Route 3, Hartford City, Ind.

TABLE 8—Alfalfa—Continued

Laboratory No. S.	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, Per Cent	Inert Matter, Per Cent	Germination, Per Cent	Hard Seeds, Per Cent	Date of Germination	Total Number Weed Seeds Per Lb. of Seeds	Number per Pound of Each of the Noxious Weed Seeds Specified in the Law
7830	*American Field Seed Co., Chicago, Ill.[4] ½ Grimm Alfalfa, Lot 10696	American Field Seed Co., Chicago, Ill.	C							C
			F	92.12	3.81	53.00	5.50	4–36	18,603	F Bracted plantain, 18; Canada thistle, 18; curled dock, 81; mustard, 18; red sorrel, 18
7831	*American Field Seed Co., Chicago, Ill.[5] Alfalfa, Lot 10654	American Field Seed Co., Chicago, Ill.	C							C
			F	88.74	5.19	49.00	8.00	4–36	26,919	F Bracted plantain, 18; buckhorn, 9; curled dock, 45; dodder, 603; bigseed dodder, 9; horse nettle, 45
8223	*American Field Seed Co., Chicago, Ill.[6] Alfalfa, Lot 10652	American Field Seed Co., Chicago, Ill.	C	99.60		93.00		2–36		C None
			F	99.48	0.24	77.00	13.50	5–36	360	F None
7711	Armstrong-Landon Co., The, Kokomo[7] Common Alfalfa, Lot I-105	Armstrong-Landon Co., The, Kokomo, Ind.	C	99.70		75.00	19.00	1–36		C None
			F	99.74	0.20	72.50	22.50	5–36	279	F Horse nettle, 9
7477	*Berry Seed Co., Clarinda, Iowa[8] Alfalfa, Lot 10541	Berry Seed Co., Clarinda, Iowa	C	98.50		90.00		2–36		C None
			F	99.01	0.61	85.50	5.00	3–36	2,102	F Bracted plantain, 18; curled dock, 9; dodder, 5
7719	*Berry Seed Co., Clarinda, Iowa[9] Alfalfa, Lot 10686	Berry Seed Co., Clarinda, Iowa	C	95.00						C
			F	91.89	4.85	44.50	11.50	3–36	8,658	F Bracted plantain, 9; curled dock, 9
7864	*Berry Seed Co., Clarinda, Iowa[10] Grimm Alfalfa, Lot 21989	Berry Seed Co., Clarinda, Iowa	C	99.42		90.00		12–35		C None
			F	99.45	0.47	78.50	7.50	4–36	455	F Dodder, 5
6941	*Bowman Seed Co., The, Concordia, Kans.[11] Grimm Alfalfa	Bowman Seed Co., The, Concordia, Kans.	C							C
			F	81.70	0.12	73.00	4.50	1–36	67,293	F Curled dock, 36; dodder, 27
7029	*Bowman Seed Co., The, Concordia, Kans.[12] Par Grimm Alfalfa	Bowman Seed Co., The, Concordia, Kans.	C	99.50		95.00				C None
			F	99.12	0.56	88.00	8.00	2–36	270	F None
7077	Chance Bros., Connersville[13] Alfalfa, Lot E48 Bow	Bowman Seed Co., The, Concordia, Kans.	C	99.50		82.00	10.00			C None
			F	99.60	0.40	62.50	29.50	2–36	9	F Dodder, 9
7847	Frick, Harry D., Wawaka[14] Common Alfalfa, Lot E49 Bow	Bowman Seed Co., The, Concordia, Kans.	C	99.50		82.00	10.00	1–36		C None
			F	99.82	0.17	76.50	20.00	4–36	90	F None
7779	Hazelrigg, J. S., Cambridge City[15] Kansas Alfalfa, Lot E42	Bowman Seed Co., The, Concordia, Kans.	C	99.50		85.00	10.00	8–35		C None
			F	99.76	0.24	82.50	12.50	3–36		F None
7890	Raber Co-operative Co., Columbia City[16] Common Alfalfa, Lot E59	Bowman Seed Co., The, Concordia, Kans.	C	99.80		82.00	14.00	2–36		C None
			F	99.76	0.24	75.00	19.00	4–36		F None
7776	Straughn Grain, Inc., Cambridge City[17] Grimm Alfalfa, Lot E39	Bowman Seed Co., The, Concordia, Kans.	C	99.00		85.00	5.00	8–35		C None
			F	99.66	0.16	82.00	9.00	3–36	180	F None
7777	Straughn Grain, Inc., Cambridge City[18] Alfalfa, Lot E46	Bowman Seed Co., The, Concordia, Kans.	C	99.50		85.00	10.00	8–35		C None
			F	99.92	0.08	64.00	27.50	3–36		F None

7778	*Straughn Grain, Inc., Cambridge City	Bowman Seed Co., The, Concordia, Kans.	C	99.50		85.00	10.00	8-35		C None
	Alfalfa, Lot E42		F	99.92	0.06	80.00	14.00	3-36	9	F Dodder, 9
7369	Bohnert Elevator Co., Jasper	Chambers Seed Co., Louisville, Ky.	C	99.00		80.00	10.00	1-36		C None
	Kansas Alfalfa, Lot 84		F	99.38	0.24	81.00	9.50	3-36	1,269	F Curled dock, 9
6819	†Bolles Hdwe. Co., Brownstown	Chambers Seed Co., Louisville, Ky.	C	99.00		90.00		8-35		C None
	Alfalfa, Lot 73		F	99.53	0.37	89.50	3.00	9-35	180	F None
7333	†McCarty Seed Co., J. A., Evansville	Corneli Seed Co., St. Louis, Mo.	C	99.55		80.00	10.00	1-36		C None
	Lucky Jim Alfalfa, Lot 120		F	99.43	0.28	70.50	21.50	3-36	1,710	F None
6756	Barr Grain Co., O. L., Bicknell	Crabbs Reynolds Taylor Co., Crawfordsville, Ind.	C	99.66		86.00	6.00	2-35		C None
	Kansas Alfalfa, Lot 6-FP		F	99.80	0.18	86.00	4.00	8-35	90	F None
7502	Decatur Co. Co-operative Co., Greensburg	Crabbs Reynolds Taylor Co., Crawfordsville, Ind.	C	99.66		93.00		12-35		C None
	Kansas Alfalfa, Lot 5-FQ		F	99.80	0.20	93.50	4.50	4-36		F None
7840	Hemlock Grain Co., Hemlock	Crabbs Reynolds Taylor Co., Crawfordsville, Ind.	C	99.60		86.00	7.00	7-35		C None
	Kansas Alfalfa, Lot 2-FQ		F	99.80	0.20	85.50	6.00	5-36		F None
7167	Nixon & Van Deventer, Attica	Crabbs Reynolds Taylor Co., Crawfordsville, Ind.	C	99.50		80.00	14.00	2-36		C None
	Kansas Alfalfa, Lot 8-FQ		F	99.19	0.49	70.00	21.50	3-36	1,440	F None
7169	Nixon & Van Deventer, Attica	Crabbs Reynolds Taylor Co., Crawfordsville, Ind.	C	99.53		77.00	14.50	1-36		C None
	Utah Alfalfa, Lot 8-FO		F	99.68	0.26	83.00	8.50	3-36	180	F None
6786	Farm Bureau Elevator & Supply Co., Crawfordsville	Crawfordsville Seed Co., Crawfordsville, Ind.	C	99.60		80.00	13.00	8-35		C None
	Blackfoot Grimm Alfalfa, Lot 408		F	99.66	0.14	84.00	5.50	9-35	900	F None
7173	New Ross Grain & Lumber Co., New Ross	Crawfordsville Seed Co., Crawfordsville, Ind.	C	99.50		80.00	10.00	1-36		C None
	Alfalfa, Lot 643		F	99.60	0.34	82.00	11.50	3-36	270	F None
7414	Andrews Elevator, Andrews	Davis Seed Corp., Lebanon, Ind.	C	99.50		80.00	10.00	12-35		C None
	Common Alfalfa		F	99.60	0.26	86.50	4.00	4-36	720	F None
7709	Armstrong-Landon Co., The, Kokomo	Davis Seed Corp., Lebanon, Ind.	C	99.50		80.00	10.00	1-36		C None
	Common Alfalfa, Lot Pioneer		F	99.70	0.16	90.50	2.50	4-36	540	F None
7848	Burnettsville Elevator Co., Burnettsville	Davis Seed Corp., Lebanon, Ind.	C	98.00		75.00	15.00	1-36		C None
	Grimm Alfalfa, Lot G-608		F	97.40	0.56	78.50	3.00	5-36	2,448	F Buckhorn, 9; common plantain, 9
7413	Elnora Elevator Co., Elnora	Davis Seed Corp., Lebanon, Ind.	C	99.40		80.00	10.00	1-36		C None
	Common Alfalfa, Lot F606		F	99.48	0.20	82.00	2.50	4-36	810	F None
7205	Farmers Co-operative Co., Selma	Davis Seed Corp., Lebanon, Ind.	C	99.50		80.00	10.00	1-36		C None
	Common Alfalfa, Lot Pioneer		F	99.62	0.26	85.00	9.50	3-36	360	F None
7209	Farmers Co-operative Co., Selma	Davis Seed Corp., Lebanon, Ind.	C	98.00		80.00	10.00	1-36		C None
	Grimm Alfalfa, Lot G-608		F	97.39	0.28	81.00	2.50	3-36	1,980	F None
7451	Farmers Exchange, Inc., Warren	Davis Seed Corp., Lebanon, Ind.	C	99.50		80.00	10.00	1-36		C None
	Common Alfalfa, Lot Pioneer		F	99.43	0.39	89.00	2.00	4-36	630	F None
7828	Farmers Exchange, Inc., Warren	Davis Seed Corp., Lebanon, Ind.	C	99.50		82.00	8.00	1-36		C None
	Grimm Alfalfa, Lot G-605		F	99.78	0.16	82.00	8.50	5-36	122	F Curled dock, 27; dodder, 5

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*Not labeled with official Indiana State Labels.

†Certified by retailer.

C and F stands, respectively, for Claimed and Found.

[4] Sample secured from Ivan Fields, Route 1, Jonesboro, Ind.

[5] Sample secured from Ivan Fields, agent for Frank Smith, Route 1, Jonesboro, Ind.

[6] Sample secured from Charles Sparks, Fortville, Ind.

[7] Distributed by Indiana Seed Co., Indianapolis, Ind.

[8] Sample secured from A. D. Williams, Route 5, Logansport, Ind.

[9] Sample secured from George Hodson, Route 3, Hartford City, Ind.

[10] Sample secured from Frank E. Lyon, Auburn, Ind.

[11] Sample secured from William L. Badiac, Soldiers Home, Lafayette, Ind.

[12] Sample secured from Chester Rybolt, Route 1, Jonesboro, Ind.

[13] Removed from sale. Misbranded. Relabeled.

[14] Distributed by Sam Kraus, Ft. Wayne, Ind.

[15] Not tagged. Labels furnished.

[16] Distributed by Sam Kraus, Ft. Wayne, Ind.

[17] Distributed by J. S. Hazelrigg, Cambridge City, Ind. Not tagged. Labels furnished.

[18] Removed from sale. Misbranded. Relabeled and sold.

TABLE 8—Alfalfa—Continued

Laboratory No. S.	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, Per Cent	Inert Matter, Per Cent	Germination, Per Cent	Hard Seeds, Per Cent	Date of Germination	Total Number Weed Seeds Per Lb. of Seeds	Number per Pound of Each of the Noxious Weed Seeds Specified in the Law
7827	Hemlock Grain Co., Hemlock	Davis Seed Corp., Lebanon, Ind.	C	99.50	.....	82.00	8.00	1-36	......	C None
	Grimm Alfalfa, Lot G-605		F	99.82	0.16	80.00	11.50	5-36	27	F Curled dock, 27
7094	Hillis Feed Store, Greencastle	Davis Seed Corp., Lebanon, Ind.	C	99.50	.....	80.00	10.00	12-35	......	C None
	Common Alfalfa, Lot F-606		F	99.72	0.16	88.00	3.50	3-36	630	F None
7471	Jones Hardware Co., Peru	Davis Seed Corp., Lebanon, Ind.	C	99.50	.....	80.00	10.00	1-36	......	C None
	Common Alfalfa, Lot Pioneer		F	99.56	0.28	89.50	6.00	4-36	540	F None
7194	Pritchard & Rafert, Inc., Pendleton	Davis Seed Corp., Lebanon, Ind.	C	99.50	.....	80.00	10.00	1-36	......	C None
	Common Alfalfa, Lot Pioneer		F	99.60	0.30	86.50	7.00	3-36	270	F None
7798	Pritchard & Rafert, Inc., Pendleton	Davis Seed Corp., Lebanon, Ind.	C	99.50	.....	80.00	10.00	1-36	......	C None
	Common Alfalfa, Lot F-606		F	99.58	0.18	88.00	1.50	5-36	810	F None
7024	Sanders, O. D., Newcastle	Davis Seed Corp., Lebanon, Ind.	C	99.50	.....	85.00	5.00	1-36	......	C None
	Common Alfalfa, Lot F-606		F	99.45	0.49	81.50	9.50	2-36	180	F None
7206	Woodbury-Elliott Grain Co., Muncie	Davis Seed Corp., Lebanon, Ind.	C	99.50	.....	80.00	10.00	1-35	......	C None
	Common Alfalfa, Lot Pioneer		F	99.66	0.20	84.00	7.50	3-36	180	F None
7420	†Geneva Milling & Grain Co., Geneva	Dickinson Co., The Albert, Chicago, Ill.	C	99.32	.....	85.00	10.00	1-36	......	C None
	Grimm Alfalfa, Lot 27812		F	99.60	0.14	67.00	27.00	4-36	630	F None
8406	Heinzerling, C. H., Garrett[19]	Dickinson Co., The Albert, Chicago, Ill.	C	99.62	.....	75.00	18.00	4-36	......	C None
	Alfalfa, Lot 28628		F	99.56	0.40	80.50	8.00	6-36	90	F None
6847	Knapp Seed & Feed Co., C. E., South Bend	Dickinson Co., The Albert, Chicago, Ill.	C	99.54	.....	87.00	7.00	9-35	......	C None
	Alfalfa, Lot 28542		F	99.88	0.08	88.00	5.00	9-35	90	F None
7729	Naber & Co., Chas. F., Alexandria	Dickinson Co., The Albert, Chicago, Ill.	C	99.66	.....	72.00	16.00	2-36	......	F None
	Alfalfa, Lot 25583-93		F	99.66	0.20	71.50	16.00	4-36	743	F Bracted plantain, 9; curled dock, 9; dodder, 5
7564	Seberger Seed Co., Crown Point	Dickinson Co., The Albert, Chicago, Ill.	C	99.66	.....	70.00	24.00	8-35	......	C None
	Common Alfalfa, Lot 28530		F	99.76	0.10	79.50	12.50	4-36	360	F None
7844	Steckley, George, Kendallville	Dickinson Co., The Albert, Chicago, Ill.	C	99.22	.....	73.00	17.00	2-36	......	C None
	Alfalfa, Lot 28573		F	99.46	0.20	72.00	17.50	5-36	450	F None
7267	Weed Hardware, Vincennes	Dickinson Co., The Albert, Chicago, Ill.	C	99.76	.....	60.00	31.00	11-35	......	C None
	Grimm Alfalfa, Lot 27808		F	99.76	0.20	70.50	22.50	3-36	180	F None
7268	Weed Hardware, Vincennes	Dickinson Co., The Albert, Chicago, Ill.	C	99.54	.....	62.00	30.00	11-35	......	C None
	Alfalfa, Lot 028620		F	99.26	0.54	51.00	40.50	3-36	1,080	F None
7154	Amo Milling Co., Amo	Foster-Kendall Co., Carmel, Ind.	C	99.68	.....	80.00	12.00	12-35	......	C None
	Common Alfalfa, Lot A697		F	99.76	0.12	67.50	24.50	3-36	540	F None
6844	Atlanta Grain Co., Atlanta	Foster-Kendall Co., Carmel, Ind.	C	99.68	.....	75.00	20.00	6-35	......	C None
	Common Alfalfa		F	99.66	0.20	79.50	13.00	9-35	729	F Curled dock, 9
6845	Atlanta Grain Co., Atlanta[20]	Foster-Kendall Co., Carmel, Ind.	C	98.06	.....	83.00	7.00	12-34	......	C None
	Grimm Alfalfa		F	96.67	0.08	81.00	12.50	10-35	117	F Buckhorn, 27
7222	Brownstown Feed Exchange, Brownstown	Foster-Kendall Co., Carmel, Ind.	C	99.68	.....	75.00	20.00	12-35	......	C None
	Common Alfalfa, Lot Feed Exchange		F	99.60	0.30	78.50	18.00	3-36	450	F None

7240	Byers Seed Co., Franklin	Foster-Kendall Co., Carmel, Ind.	C	99.60	......	75.00	20.00	12–35	.....	C None
	Grimm Alfalfa, Lot Byers		F	99.60	0.06	75.50	23.50	3–36	275	F Dodder, 5
7082	Chance Bros., Connersville	Foster-Kendall Co., Carmel, Ind.	C	99.60	......	70.00	25.00	12–35	......	C None
	Grimm Alfalfa, Lot Chance		F	99.58	0.00	74.50	20.00	3–36	275	F Dodder, 5
7201	Farmers Co-operative Co., Yorktown	Foster-Kendall Co., Carmel, Ind.	C	99.60	.....	75.00	20.00	12–35	......	C None
	Grimm Alfalfa, Lot G3		F	99.66	0.02	75.00	18.50	3–36	......	F None
7203	Farmers Co-operative Co., Yorktown	Foster-Kendall Co., Carmel, Ind.	C	99.60	.....	70.00	25.00	12–35	......	C None
	Common Alfalfa, Lot 3730		F	99.76	0.22	64.00	24.50	3–36	90	F None
7444	Farmers Equity Exchange, Van Buren	Foster-Kendall Co., Carmel, Ind.	C	99.60	......	80.00	11.00	12–35	....	C None
	Common Alfalfa, Lot Van Buren		F	99.64	0.14	72.50	23.00	4–36	549	F Horsenettle, 9
7459	Farmers Exchange, Inc., Warren	Foster-Kendall Co., Carmel, Ind.	C	99.28	....	75.00	17.00	12–35	......	C None
	Grimm Alfalfa, Lot Warren		F	98.95	0.30	77.50	16.50	4–36	810	F None
7474	Haldeman-Baum Co., Akron	Foster-Kendall Co., Carmel, Ind.	C	99.60	......	75.00	20.00	12–35	......	C None
	Grimm Alfalfa, Lot Akron		F	99.66	0.26	65.50	18.00	4–36	450	F None
7448	Haynes Milling Co., Portland	Foster-Kendall Co., Carmel, Ind.	C	99.60	....	71.00	20.00	12–35	.....	C None
	Common Alfalfa, Lot Portland		F	99.80	0.18	67.50	23.00	4–36	180	F None
7396	Johnson & Chenoweth, Shoals	Foster-Kendall Co., Carmel, Ind.	C	99.65	..	70.00	25.00	12–35	......	C None
	Grimm Alfalfa, Lot G3		F	99.80	0.02	73.00	18.00	4–36	180	F None
7175	Lizton Grain Co., Lizton	Foster-Kendall Co., Carmel, Ind.	C	99.60	..	75.00	20.00	12–35	.	C None
	Grimm Alfalfa, Lot G3		F	99.44	0.10	71.00	23.50	3–36	540	F None
7757	Markin, Ray, Eaton	Foster-Kendall Co., Carmel, Ind.	C	99.60	..	74.00	20.00	12–35	....	C None
	Common Alfalfa, Lot A-697		F	99.82	0.14	66.50	22.50	5–36	270	F None
7041	Morgan Co. Farm Bureau Co-op. Ass'n, Inc.,									
	Martinsville	Foster-Kendall Co., Carmel, Ind.	C	99.60	......	75.00	20.00	12–35	......	C None
	Grimm Alfalfa, Lot G3		F	99.80	0.06	69.00	26.50	2–36	270	F None
7117	Rush County Hatchery, Rushville	Foster-Kendall Co., Carmel, Ind.	C	99.50		70.00	21.00	12–35		C None
	Common Alfalfa, Lot 3722		F	99.76	0.10	59.50	39.00	3–36	630	F None
7718	Sellars Grain Co., Russiaville[21]	Foster-Kendall Co., Carmel, Ind.	C	99.60	..	75.00	20.00	12–35	.. .	C None
	Grimm Alfalfa, Lot G3		F	99.82	0.02	70.00	24.50	4–36	270	F None
7721	Sellars Grain Co., Russiaville[22]	Foster-Kendall Co., Carmel, Ind.	C	99.70	.	80.00	11.00	12–35	..	C None
	Common Alfalfa, Lot Sellars		F	99.50	0.30	71.50	20.50	5–36	720	F None
7134	Shelby Co., Farm Bureau Co-op. Ass'n, Inc.,									
	Shelbyville	Foster-Kendall Co., Carmel, Ind.	C	99.60	......	76.00	20.00	12–35	......	C None
	Grimm Alfalfa, Lot Shelbyville		F	99.88	0.00	73.50	20.00	3–36	. ..	F None
6830	Smock & Co., W. C., Burrows	Foster-Kendall Co., Carmel, Ind.	C	99.58	......	75.00	20.00	6–35	......	C None
	Grimm Alfalfa		F	99.86	0.04	89.50	5.50	9–35	90	F None
7192	Standard Elevator Co., Lapel	Foster-Kendall Co., Carmel, Ind.	C	99.50	.	75.00	20.00	6–35	....	C None
	Grimm Alfalfa		F	99.54	0.26	87.50	6.00	3–36	99	F Curled dock 9
7195	Wellington Milling Co., Anderson	Foster-Kendall Co., Carmel, Ind.	C	99.60	....	70.00	25.00	12–35	.....	C None
	Common Alfalfa, Lot Wellington		F	99.74	0.26	69.00	22.00	3–36	.....	F None
7197	Wellington Milling Co., Anderson	Foster-Kendall Co., Carmel, Ind.	C	99.28	..	75.00	18.00	12–35	.. .	C None
	Grimm Alfalfa		F	99.12	0.24	70.50	16.00	3–36	639	F Curled dock, 9
7150	Getty, R. E., Clayton[23]	Getty, R. E., Clayton, Kans.	C	99.49	.	80.00	11.00	1–36	. .	C None
	Kansas Common Alfalfa, Lot 39		F	99.80	0.18	77.50	12.50	2–36	9	F Dodder, 9
7987	Farmers Co-operative Co., Centerville	Goodrich Bros. Co., Winchester, Ind.	C	99.50		75.00	20.00	2–36	.....	C None
	Common Alfalfa, Lot Lark		F	99.66	0.20	90.50	4.00	5–36	279	F Buckhorn, 9

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*Not labeled with official Indiana State Labels.

†Certified by retailer.

C and F stands, respectively, for Claimed and Found.

[19] Sample secured from Joe Lemish & Son, Route 1, Garrett, Ind.

[20] Removed from sale. Misbranded. Relabeled.

[21] Distributed by Sellars Grain Co., Forrest, Ind.

[22] Distributed by Sellars Grain Co., Forrest, Ind.

[23] Sample secured from Agronomy Dept., Purdue University Agricultural Experiment Station, Lafayette, Ind.

TABLE 8—Alfalfa—Continued

Laboratory No. S.	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, Per Cent	Inert Matter, Per Cent	Germination, Per Cent	Hard Seeds, Per Cent	Date of Germination	Total Number Weed Seeds Per Lb. of Seeds	Number per Pound of Each of the Noxious Weed Seeds Specified in the Law
7248	Goodrich Bros. Co., Winchester	Goodrich Bros. Co., Winchester, Ind.	C	99.50	...	80.00	10.00	12-35		C None
	Alfalfa, Lot 6276		F	99.90	0.10	92.00	4.50	3-36		F None
7726	Hartford City Milling Co., Hartford City[24]	Goodrich Bros. Co., Winchester, Ind.	C	98.04	......	82.00	15.00	1-36		C None
	Grimm Alfalfa, Lot 2275		F	98.10	0.18	55.00	31.50	5-36	545	F Dodder, 5
7743	Hinshaw Grain Co., Summitville	Goodrich Bros. Co., Winchester, Ind.	C	99.50	.....	75.00	20.00	2-36		C None
	Common Alfalfa, Lot Lark		F	99.84	0.12	91.00	2.00	4-36		F None
7428	Mauller, A. M., Pleasant Mills	Goodrich Bros. Co., Winchester, Ind.	C	99.50	.....	85.00	10.00	1-36		C None
	Common Alfalfa, Lot Lark		F	99.54	0.32	90.50	1.50	4-36	90	F None
7784	Roberts Feed Store, Richmond	Goodrich Bros. Co., Winchester, Ind.	C	99.18	......	80.00	12.00	1-36	.....	C None
	Grimm Alfalfa, Lot Mich.		F	99.78	0.20	93.50	3.00	4-36	90	F None
6820	McKinley & Son, George, Borden	Hall Seed Co., Louisville, Ky.	C	99.50	......	88.00	6.00	2-35	......	C None
	Alfalfa Clover		F	99.40	0.58	84.00	7.00	9-35	90	F None
6775	†Heldt & Voelker Co., Evansville	Heldt Co., The, Evansville, Ind.	C	99.52	......	87.00	5.00	8-35	.....	C None
	Alfalfa, Lot 3271		F	99.50	0.34	89.00	2.50	8-35	819	F Horse nettle, 9
7257	Saiter-Morgan Co., Vincennes	Heldt Co., The, Evansville, Ind.	C	99.50	.....	82.00	10.00	1-36	.....	C None
	Oklahoma Alfalfa, Lot 3339		F	99.60	0.28	84.00	10.00	3-36	450	F Horse nettle, 90
7419	Berne Equity Exchange Co., The, Berne	Hirsch & Sons, Henry, Toledo, Ohio	C	99.60	......	81.00	12.00	1-36	......	C None
	Affidavit Grimm Alfalfa, Lot 6316		F	99.62	0.12	60.50	29.50	4-36	810	F None
7438	†Farmers Grain Co., Liberty Center	Hirsch & Sons, Henry, Toledo, Ohio	C	99.60	......	81.00	12.00	1-36	......	C None
	Common Alfalfa, Lot 6315		F	99.56	0.28	73.00	16.50	4-36	270	F None
7518	Holser-Palmer Co., Walkerton	Hirsch & Sons, Henry, Toledo, Ohio	C	99.60	.....	81.00	12.00	1-36	......	C None
	Affidavit Grimm Alfalfa, Lot 6316		F	99.70	0.20	61.50	32.00	4-36	360	F None
7532	Laketon Elevator, Laketon	Hirsch & Sons, Henry, Toledo, Ohio	C	99.60	......	81.00	12.00	1-36	.....	C None
	Grimm Alfalfa, Lot 6316		F	99.54	0.24	65.50	22.00	4-36	630	F None
7432	Mauller, A. M., Pleasant Mills	Hirsch & Sons, Henry, Toledo, Ohio	C	99.50	.....	81.00	11.00	1-36	......	C None
	Common Alfalfa, Lot 6309		F	99.34	0.20	86.50	11.00	4-36	720	F None
7430	Monroe Grain Co., Monroe	Hirsch & Sons, Henry, Toledo, Ohio	C	99.50	......	81.00	9.00	12-35	......	C None
	Common Alfalfa, Lot 6291		F	99.56	0.32	65.00	30.50	4-36	540	F None
7431	Monroe Grain Co., Monroe	Hirsch & Sons, Henry, Toledo, Ohio	C	99.50	.....	81.00	11.00	1-36	......	C None
	Common Alfalfa, Lot 6309		F	99.48	0.26	80.00	8.50	4-36	360	F None
7851	New Haven-Thurman Equity Exchange, New Haven	Hirsch & Sons, Henry, Toledo, Ohio	C	99.50	......	81.00	13.00	1-36	......	C None
	Affidavit Grimm Alfalfa, Lot 6314		F	99.68	0.16	71.50	22.50	4-36	639	F Dodder, 9
7863	Stump Grain & Coal Co., Garrett[25]	Hirsch & Sons, Henry, Toledo, Ohio	C	99.03	.....	81.00	11.00	12-35	......	C None
	Affidavit Grimm Alfalfa, Lot 6294		F	98.96	0.22	55.50	34.00	5-36	54	F Canada thistle, 9; red sorrel, 18; yellow trefoil, 27
7443	Warren Elevator Co., Warren	Hirsch & Sons, Henry, Toledo, Ohio	C	99.60	.....	81.00	12.00	1-36	.....	C None
	Affidavit Grimm Alfalfa, Lot 6316		F	99.50	0.32	69.00	28.00	4-36	369	F Horse nettle, 9

6771	Hillis Feed Store, Greencastle Kansas Alfalfa, Lot F511	Hooton-Davis Seed Corp., Lebanon, Ind.	C	99.50		80.00	10.00	1-35		None
			F	99.80	0.16	88.00	5.50	8-35	95	Dodder, 5
6772	Hillis Feed Store, Greencastle Grimm Alfalfa, Lot G625	Hooton-Davis Seed Corp., Lebanon, Ind.	C	97.50		64.00	26.00	3-35		None
			F	97.74	0.26	68.00	22.50	8-35	774	Buckhorn, 27; common plantain, 90; wild carrot 9; yellow trefoil, 18
6768	Woodbury-Elliott Grain Co., Muncie[26] Common Alfalfa, Lot F	Hooton-Davis Seed Corp., Lebanon, Ind.	C	99.50				1-35		None
			F	99.74	0.22	77.50	15 50	8-35	270	None
7770	Clinton Co. Farm Bureau Co-op. Ass'n, Inc. Frankfort Common Alfalfa, Lot 3192	Indiana Farm Bureau Co-op. Ass'n, Inc., Indianapolis, Indiana	C	99.50		80.00	14.00	12-35		None
			F	99.76	0.22	85.00	5.50	4-36		None
7458	Grant Co. Farm Bureau Co-op. Ass'n, Inc., Marion Common Alfalfa, Lot 2-1216	Indiana Farm Bureau Co-op. Ass'n, Inc., Indianapolis, Indiana	C	99 50		85.00	10.00	12-35		None
			F	99.66	0.34	70.50	15.00	4-36		None
6790	Indiana Farm Bureau Co-op. Ass'n, Inc., Indianapolis[27] Grimm Alfalfa, Lot 3191	Indiana Farm Bureau Co-op. Ass'n, Inc., Indianapolis, Indiana	C	99.50		75.00	20.00			None
			F	99.80	0.06	90.00	6.50	9-35	540	None
6791	Indiana Farm Bureau Co-op. Ass'n, Inc., Indianapolis[28] Grimm Alfalfa, Lot 3191	Indiana Farm Bureau Co-op. Ass'n, Inc., Indianapolis, Indiana	C	99.50		75.00	20.00			None
			F	99.78	0.10	84 50	11.00	9-35	540	None
6792	Indiana Farm Bureau Co-op. Ass'n, Inc., Indianapolis[29] Grimm Alfalfa, Lot 3191	Indiana Farm Bureau Co-op. Ass'n, Inc., Indianapolis, Indiana	C	99.50		75.00	20.00			None
			F	99.82	0.08	85.00	7.00	9-35	360	None
6793	Indiana Farm Bureau Co-op. Ass'n, Inc., Indianapolis[30] Grimm Alfalfa, Lot 3191	Indiana Farm Bureau Co-op. Ass'n, Inc., Indianapolis, Indiana	C	99.50		75.00	20.00			None
			F	99.70	0.12	89.50	4.00	9-35	900	None
6794	Indiana Farm Bureau Co-op. Ass'n, Inc., Indianapolis[31] Grimm Alfalfa, Lot 3191	Indiana Farm Bureau Co-op. Ass'n, Inc., Indianapolis, Indiana	C	99.50		75.00	20.00			None
			F	99.70	0.10	87.00	11 00	9-35	900	None
560	LaPorte Co. Farm Bureau Co-op. Ass'n, Inc., LaPorte B. T. Grimm Alfalfa, Lot 3191	Indiana Farm Bureau Co-op. Ass'n, Inc., Indianapolis, Indiana	C	99.50		78.00	15.00	12-35		None
			F	99 76	0.14	92.00	1 00	4-36	360	None
6788	Owen Co. Farm Bureau Co-op. Ass'n, Inc., Spencer Ontario Variegated Alfalfa, Lot O.B.H.	Indiana Farm Bureau Co-op. Ass'n, Inc., Indianapolis, Indiana	C	99.50		75.00	20.00	3-35		None
			F	99.92	0.06	73.50	20.00	9-35	90	None
6789	Owen Co. Farm Bureau Co-op. Ass'n, Inc., Spencer B. T. Grimm Alfalfa, Lot 3824	Indiana Farm Bureau Co-op. Ass'n, Inc., Indianapolis, Indiana	C	99.50		75.00	20.00	3-35		None
			F	99.68	0.08	88.00	6.00	9-35	1,170	None
7136	Shelby Co. Farm Bureau Co-op. Ass'n, Inc., Shelbyville Common Alfalfa, Lot 3192	Indiana Farm Bureau Co-op. Ass'n, Inc., Indianapolis, Indiana	C	99.50		80.00	14.00	12-35		None
			F	99 76	0.16	90.00	7.50	3-36		None

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*Not labeled with official Indiana State Labels.

†Certified by retailer.

C and F stands, respectively, for Claimed and Found.

[24] Removed from sale. Misbranded. All sold.

[25] Removed from sale. Misbranded. Relabeled.

[26] Tag incomplete.

[27] Tag incomplete.

[28] Tag incomplete.

[29] Tag incomplete.

[30] Tag incomplete.

[31] Tag incomplete.

TABLE 8—Alfalfa—Continued

Laboratory No. S.	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, Per Cent	Inert Matter, Per Cent	Germination, Per Cent	Hard Seeds, Per Cent	Date of Germination	Total Number Weed Seeds Per Lb. of Seeds		Number per Pound of Each of the Noxious Weed Seeds Specified in the Law
6776	Adams & Morrow, Inc., Princeton	Indiana Seed Co., Indianapolis, Ind.	C	99.59		86.00	6.00	4-35		C	None
	Common Alfalfa, Lot A539		F	99.64	0.32	84.00	8.00	8-35	180	F	None
6777	Adams & Morrow, Inc., Princeton	Indiana Seed Co., Indianapolis, Ind.	C	99.85		84.00	10.00	1-35		C	None
	Grimm Alfalfa, Lot 299		F	99.96	0.04	85.50	8.50	8-35		F	None
7941	Brewer Milling Co., Retail Store, Gosport	Indiana Seed Co., Indianapolis, Ind.	C	99.59		86.00	6.00	8-35		C	None
	Common Alfalfa, Lot A539		F	99.74	0.16	85.00	1.50	5-36	270	F	None
8011	Bundy, C. L., Spiceland	Indiana Seed Co., Indianapolis, Ind.	C	99.54		86.00	6.00	1-36		C	None
	Affidavit Grimm Alfalfa, Lot A354		F	99.72	0.10	89.00	2.00	5-36	360	F	None
7756	Frankfort Electric Hatchery, Frankfort	Indiana Seed Co., Indianapolis, Ind.	C	99.55		86.00	6.00	1-36		C	None
	Affidavit Grimm Alfalfa, Lot A-355		F	99.56	0.20	81.00	2.00	4-36	90	F	None
7476	Haldeman-Baum Co., Akron	Indiana Seed Co., Indianapolis, Ind.	C	99.55		86.00	6.00	1-36		C	None
	Affidavit Grimm Alfalfa, Lot A-355		F	99.53	0.29	89.50	3.50	4-36	270	F	None
7480	Logansport Elevator Co., Logansport	Indiana Seed Co., Indianapolis, Ind.	C	99.50		84.00	6.00	12-35		C	None
	Affidavit Grimm Alfalfa, Lot A97		F	99.62	0.16	87.00	2.50	4-36	270	F	None
7153	Martin Hardware Co., Clayton	Indiana Seed Co., Indianapolis, Ind.	C	99.55		86.00	6.00	1-36		C	None
	Affidavit Grimm Alfalfa, Lot A355		F	99.40	0.20	86.50	3.50	3-36	630	F	None
7163	Martin Hardware Co., Clayton	Indiana Seed Co., Indianapolis, Ind.	C	99.70		75.00	10.00	1-36		C	None
	Common Alfalfa, Lot I-105		F	99.78	0.16	77.00	16.00	3-36	270	F	None
7983	Newcastle Elevator Co., Newcastle	Indiana Seed Co., Indianapolis, Ind.	C	99.60		80.00	12.00	2-36		C	None
	Common Alfalfa, Lot Para		F	99.70	0.28	70.50	20.00	5-36	90	F	None
6787	Norman, G. M. & Roberts, Bedford	Indiana Seed Co., Indianapolis, Ind.	C	99.50		84.00	7.00	7-35		C	None
	Affidavit Grimm Alfalfa, Lot 497		F	99.90	0.02	88.50	2.50	9-35	95	F	Dodder, 5
6755	Pioneer Elevator Co., Worthington	Indiana Seed Co., Indianapolis, Ind.	C	99.50		86.00	6.00	4-35		C	None
	Common Alfalfa, Lot A539		F	99.62	0.34	83.50	12.00	8-35	270	F	None
6804	Pritchard & Rafert, Inc., Pendleton	Indiana Seed Co., Indianapolis, Ind.	C	99.50		84.00	7.00	7-35		C	None
	Affidavit Grimm Alfalfa, Lot A97		F	99.82	0.08	88.00	5.00	9-35	95	F	Dodder, 5
7801	Pritchard & Rafert, Inc., Pendleton	Indiana Seed Co., Indianapolis, Ind.	C	99.55		86.00	6.00	1-36		C	None
	Affidavit Grimm Alfalfa, Lot A355		F	99.45	0.14	83.00	3.50	5-36	90	F	None
7998	Risk, C. B., Knightstown	Indiana Seed Co., Indianapolis, Ind.	C	99.70		75.00	19.00	1-36		C	None
	Common Alfalfa, Lot I-105		F	99.78	0.08	73.00	24.00	5-36	360	F	None
7244	Throckmorton Seed Store, Franklin	Indiana Seed Co., Indianapolis, Ind.	C	99.55		86.00	6.00	12-35		C	None
	Grimm Alfalfa, Lot A-355		F	99.36	0.28	89.00	4.00	3-36	180	F	None
7086	Wilson, John, Roachdale	Indiana Seed Co., Indianapolis, Ind.	C	99.70		75.00	19.00	1-36		C	None
	Common Alfalfa, Lot I-105		F	99.72	0.20	70.00	21.00	3-36	270	F	None
6822	*Jacobson, J., Formoso, Kansas[32]	Jacobson, J., Formoso, Kansas	C							C	
	Alfalfa		F	97.67	1.10	78.50	9.00	9-35	4,905	F	Horse nettle, 45
6797	Jansen-Overman Co., Indianapolis	Kellogg-Kelly Seed Co., St. Joseph, Mo.	C	99.88		83.50	10.50	8-35		C	None
	North Kansas Common Alfalfa, Lot AK		F	99.88	0.06	90.00	3.50	9-35	9	F	Curled dock, 9
7186	Farmers Co-operative Co., Shideler[33]	Kraus, Sam, Ft. Wayne, Ind.	C	99.00		82.00	12.00	1-36		C	None
	Grimm Alfalfa, Lot LOW		F	98.82	0.08	78.00	10.50	3-36	1,566	F	Mustard, 18; red sorrel, 18

7916	Lima Elevator Co., Howe	Kraus, Sam, Ft. Wayne, Ind.	C	99.25	.....	87.00	6.00	2-35	.....	C None
	Common Alfalfa, Lot B-325		F	99.20	0.14	95.00	0.50	5-36	90	F None
7447	Farmers Exchange, Inc., Warren[34]	Kraus, Sam, Ft. Wayne, Ind.	C	99.00	.....	86.00	8.00	6-35	.....	C None
	Alfalfa, Lot B177		F	98.68	0.16	69.50	17.50	3-36	459	F Curled dock, 9
7839	Farmers Exchange, Inc., Warren[35]	Kraus, Sam, Ft. Wayne, Ind.	C	99.50	.....	82.00	10.00	1-36	.....	C None
	Common Alfalfa, Lot E-49 Bow		F	99.96	0.04	83.50	14.00	4-36	.....	F None
6748	Middlebury Grain Co., Middlebury[36]	Kraus, Sam, Ft. Wayne, Ind.	C	99.50	.....	82.00	10.00	3-35	.....	C None
	Common Alfalfa, Lot E-24 Bow		F	99.94	0.02	86.50	10.50	7-35	189	F Common plantain, 9
7538	Peabody Co-operative Ass'n, Columbia City, R. 2	Kraus, Sam, Ft. Wayne, Ind.	C	99.00	.....	88.00	7.00	10-35	.....	C None
	Grimm Alfalfa, Lot LOW		F	98.65	0.02	69.00	21.50	3-36	1,458	F Curled dock, 9; red sorrel, 9
7843	Steckley, George, Kendallville[37]	Kraus, Sam, Ft. Wayne, Ind.	C	99.00	.....	82.00	12.00	1-36	.....	C None
	Grimm Alfalfa, Lot RM		F	97.97	0.89	74.50	11.00	4-36	1,665	F Curled dock, 45
7229	*Lewis-Royce Co., El Reno, Oklahoma[38]	Lewis-Royce Co., El Reno, Okla.	C	.....	.....	85.00	.....	.....	.....	C
	Alfalfa		F	99.24	0.34	72.00	22.50	3-36	2,610	F None
7235	*Lewis-Royce Co., El Reno, Okla.[39]	Lewis-Royce Co., El Reno, Okla.	C	.....	.....	85.00			.....	C
	Alfalfa		F	99.22	0.22	67.50	22.50	3-36	900	F None
7525	Aurora Farmers Supply Co., Aurora	McCullough Seed Co., The J. Chas., Cincinnati, Ohio.	C	99.60	.....	87.00	6.00	1-36	.....	C None
	Growers Affidavit Grimm Alfalfa, Lot 2848		F	99.80	0.20	77.00	12.00	4-36	.....	F None
7787	Dayton Farm Supply, Richmond[40]	McCullough Seed Co., The J. Chas., Cincinnati, Ohio	C	98.70	.....	82.00	6.00	1-36	.....	C None
	Western Common Alfalfa, Lot 2999		F	98.37	1.13	65.50	7.00	4-36	1,197	F Buckhorn, 9; dodder, 9 yellow trefoil, 9
7394	Reynolds-Brooks Hardware Co., Loogootee	McCullough Seed Co., The J. Chas., Cincinnati, Ohio.	C	99.60	.....	73.00	22.00	1-36	.....	C None
	Kansas Alfalfa, Lot 2787		F	99.76	0.16	73.50	14.50	4-36	540	F None
7513	Schmocker, John, Batesville	McCullough Seed Co., The J. Chas., Cincinnati, Ohio.	C	99.40	.....	65.00	28.00	1-36		C None
	Growers Grimm Alfalfa, Lot 1853		F	99.58	0.34	84.50	3.50	4-36	180	F None
6987	Tuxedo Feed & Supply Co., Aurora	McCullough Seed Co., The J. Chas., Cincinnati, Ohio.	C	99.50	.....	88.00	6.00	5-35	.....	C None
	Kansas Common Alfalfa, Lot 2348		F	99.72	0.22	89.50	3.50	1-36	185	F Dodder, 5
7128	†Werst & Co., Peter, Brookville	McCullough Seed Co., The J. Chas., Cincinnati, Ohio.	C	99.70	.....	74.00	21.00	10-35	.....	C None
	Common Alfalfa, Lot 2663		F	99.62	0.26	80.00	14.00	2-36	270	F None
7569	McMahan Seed Co., Valparaiso	McMahan Seed Co., Valparaiso, Ind.	C	99.60	.....	90.00	3.00	4-35	.....	C None
	Grimm Alfalfa		F	99.84	0.08	80.00	14.50	3-36	90	F None
7291	Boonshot Hardware Co., Petersburg[41]	Mangelsdorf & Bro., Ed. F., St. Louis, Mo	C	99.60		90.00	4.00	1-36		C None
	Alfalfa, Lot B-4189		F	99.38	0.54	66.00	29.00	3-36	270	F None
6779	†McCarty Seed Co., J. A., Evansville	Mangelsdorf & Bro., Ed. F., St. Louis, Mo.	C	99.65		80.00	13.00	6-35		C None
	Kansas Alfalfa, Lot 1292		F	99.80	0.14	74.00	20.00	8-35	270	F None
7144	Indiana Grain Producers, Inc., Shelbyville[42]	Market Gardeners' Seed Co., Cincinnati, Ohio	C	99.60		88.00	4.00	11-35	.....	C None
	Alfalfa, Lot 5814		F	99.66	0.32	65.50	14.00	2-36	90	F None
7362	Boonville Milling Co., Boonville	National Seed Co., Louisville, Ky.	C	99.50	.....	80.00	10.00	9-35	.....	C None
	Alfalfa, Lot 433		F	99.52	0.20	78.00	3.00	3-36	1,530	F None
7780	Young & Cox, Richmond	New Paris Elevator Co., New Paris, Ohio	C	99.70	.....	86.00	10.00	1-36	.....	C None
	Grimm Alfalfa, Lot AG2257		F	99.64	0.32	66.00	26.00	5-36	90	F None
7781	Young & Cox, Richmond	New Paris Elevator Co., New Paris, Ohio	C	99.50	.....	75.00	20.00	1-36	.....	C None
	Kansas Common Alfalfa, Lot Lark		F	99.76	0.20	93.00	3.00	4-36	180	F None

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*Not labeled with official Indiana State Labels.

†Certified by retailer.

C and F stands, respectively, for Claimed and Found.

[32] Sample secured from Lafayette Savings Bank, Lafayette, Ind.

[33] Distributed by Northern Field Seed Co., Winona, Minn.

[34] Not tagged. Labels furnished.

[35] Distributed by The Bowman Seed Co., Concordia, Kans.

[36] Distributed by The Bowman Seed Co., Concordia, Kans.

[37] Distributed by Northern Field Seed Co., Winona, Minn.

[38] Sample secured from Frank Mulligan, Franklin, Ind.

[39] Sample secured from Ralph Sanders, Franklin, Ind.

[40] Removed from sale. Misbranded. Relabeled.

[41] Removed from sale. Misbranded. Relabeled.

[42] Removed from sale. Misbranded.

TABLE 8—Alfalfa—Continued

Laboratory No. S.	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, Per Cent	Inert Matter, Per Cent	Germination, Per Cent	Hard Seeds, Per Cent	Date of Germination	Total Number Weed Seeds Per Lb. of Seeds	Number per Pound of Each of the Noxious Weed Seeds Specified in the Law
7919	Home Grain Co., Lagrange	Olds Seed Co., L. L., Madison, Wis.	C	99.80		79.00	18.00	2-36		C None
	Ideal Alfalfa, Lot Ideal		F	99.90	0.04	66.00	22.50	5-36	180	F None
7906	Middlebury Grain Co., Middlebury	Olds Seed Co., L. L., Madison, Wis.	C	99.50		80.00	14.00	2-36		C None
	Common Alfalfa, Lot 480		F	99.40	0.46	74.50	13.50	5-36	725	F Dodder, 5
7907	Troyer Seed Co., Goshen	Olds Seed Co., L. L., Madison, Wis.	C	99.80		85.00	10.00	2-36		C None
	Idaho Affidavit Grimm Alfalfa, Lot Alley		F	99.82	0.08	78.00	18.00	5-36		F None
7312	Purcell Seed Co., Evansville	Purcell Seed Co., Evansville, Ind.	C	99.49		86.00	12.00	1-36		C None
	Oklahoma Alfalfa, Lot 4868		F	99.56	0.34	79.00	13.00	3-36	315	F Horse nettle, 45
7325	Purcell Seed Co., Evansville	Purcell Seed Co., Evansville, Ind.	C	99.52		60.00	33.00	1-36		C None
	"Tru Val" Kansas Alfalfa, Lot 4721		F	99.34	0.48	56.50	34.50	3-36	828	F Bracted plantain, 18
7398	Scott, Ed., Newberry	Purcell Seed Co., Evansville, Ind.	C	99.62		70.00	4.00	8-35		C None
	"Tru Val" Oklahoma Alfalfa, Lot 3094		F	99.46	0.52	81.50	1.50	4-36	5	F Dodder, 5
6809	Brownstown Feed Exchange, Brownstown	Ross Seed Co., Louisville, Ky.	C	99.50		74.00	10.00	8-35		C None
	Alfalfa		F	99.88	0.06	67.50	22.50	9-35	270	F None
7357	McCampbell, Ralph, French Lick	Ross Seed Co., Louisville, Ky.	C	99.50		77.00	12.00	10-35		C Horse nettle, 16
	Grimm Alfalfa		F	99.98	0.02	77.50	18.50	4-36		F None
7374	McCampbell, Ralph, French Lick	Ross Seed Co., Louisville, Ky.	C	99.50		80.00	10.00	12-35		C None
	Alfalfa		F	99.90	0.07	70.00	19.50	4-36	270	F None
6865	Couch & Sons, George, New Harmony	Schultz Seed Co., J. M., Dieterich, Ill.	C	99.50		90.00		8-35		C None
	Oklahoma Alfalfa		F	99.84	0.16	89.00	4.50	10-35		F None
6806	Lucas Cash Store, Brownstown	Scott Seed Co., New Albany, Ind.	C	99.25		82.00	10.00	1-35		C None
	Alfalfa, Lot 1511		F	99.92	0.04	88.00	5.00	9-35	270	F None
7517	Tuxedo Feed & Supply Co., Aurora[43]	Scott Seed Co., New Albany, Ind.	C	99.20		80.00	10.00	12-35		C None
	Grimm Alfalfa, Lot 1537		F	98.38	0.20	75.00	21.50	3-36	1,530	F None
7534	Tuxedo Feed & Supply Co., Aurora	Scott Seed Co., New Albany, Ind.	C	99.50		78.00	14.00	1-36		C None
	Alfalfa Clover, Lot 1541		F	99.60	0.16	76.00	13.50	3-36	905	F Dodder, 5
7537	Tuxedo Feed & Supply Co., Aurora	Scott Seed Co., New Albany, Ind.	C	99.60		84.00	11.00	10-34		C None
	Grimm Alfalfa, Lot 1520		F	99.84	0.12	85.50	5.50	3-36		F None
8020	Keilman Co., The L., Dyer	Standard Seed Co., Chicago, Ill.	C	99.70		78.00	14.00	2-36		C None
	Grimm Alfalfa, Lot 10550		F	99.40	0.40	79.50	8.50	4-36	180	F None
8025	Keilman Co., The L., Dyer[44]	Standard Seed Co., Chicago, Ill.	C	99.50		82.00	10.00	2-36		C None
	Alfalfa, Lot 10572		F	99.60	0.06	82.00	8.00	4-36	441	F Dodder, 63; yellow trefoil, 18
7609	Merkert, John, Leiters Ford	Standard Seed Co., Chicago, Ill.	C	99.70		82.00	13.00	1-36		C None
	Grimm Alfalfa, Lot 10633		F	99.16	0.46	86.50	4.50	3-36	90	F None
7610	Merkert, John, Leiters Ford	Standard Seed Co., Chicago, Ill.	C	99.20		78.00	14.00	2-36		C None
	Grimm Alfalfa, Lot 10698		F	98.57	0.14	71.50	25.50	3-36	306	F Curled dock, 36
7611	Merkert, John, Leiters Ford	Standard Seed Co., Chicago, Ill.	C	99.60		82.00	13.00	2-36		C None
	Alfalfa, Lot 10553		F	99.66	0.28	64.00	21.50	3-36	270	F None

8015	Peck, Myron M., Hobart Grimm Alfalfa, Lot 10550	Standard Seed Co., Chicago, Ill.	C	99.70	......	78.00	14.00	2-36	......	C None
			F	99.54	0.20	76.00	11.00	4-36	288	F Curled dock, 9; mustard 9
8017	Peck, Myron M., Hobart[45] Alfalfa, Lot 10572	Standard Seed Co., Chicago, Ill.	C	99.50	......	82.00	10.00	2-36	......	C None
			F	99.20	0.30	84.00	12.00	4-36	612	F Dodder, 45; yellow trefoil, 27
7979	Roper & Brown, Inc., Hobart[46] Alfalfa, Lot 10572	Standard Seed Co., Chicago, Ill.	C	99.50	...	78.00	14.00	2-36	.....	C None
			F	99.22	0.28	78.50	9.50	4-36	612	F Dodder, 54; yellow trefoil, 18
7565	Seberger Seed Co., Crown Point Grimm Alfalfa, Lot 10550	Standard Seed Co., Chicago, Ill.	C	99.70	......	78.00	14.00	2-36	.....	C None
			F	99.52	0.20	80.50	10.00	3-36	185	F Dodder, 5
8185	Standard Seed Co., Chicago, Ill.[47] Grimm Alfalfa, Lot 10700	Standard Seed Co., Chicago, Ill.	C	98.70	..	80.00	11.00	3-36	.....	C None
			F	98.68	0.32	73.00	8.50	4-36	1,368	F Curled dock, 9; dodder, 9
7795	Sun-Field Seed Service, Chicago, Ill.[48] Alfalfa, Lot 10572	Sun-Field Seed Service, Chicago, Ill.	C	99.50	....	82.00	10.00	1-36	......	C None
			F	99.32	0.14	81.00	11.00	3-36	630	F Dodder, 45; yellow trefoil, 135
7985	Sun-Field Seed Service, Chicago, Ill.[49] Dakota No. 12 Alfalfa, Lot 10577	Sun-Field Seed Service, Chicago, Ill.	C	98.60	.....	80.00	12.00	1-36	......	C None
			F	99.76	0.12	66.00	29.00	4-36	900	F None
7416	Andrews Elevator, Andrews Common Alfalfa	Syler & Syler, Nappanee, Ind.	C	99.25	......	86.00	5.00	1-36	.....	C None
			F	99.54	0.36	77.50	15.00	3-36	180	F None
7613	†Annis Feed & Seed Store, Bremen Grimm Alfalfa	Syler & Syler, Nappanee, Ind.	C	99.25	......	85.00	4.00	1-36	......	C None
			F	99.20	0.18	76.00	15.50	3-36	855	F Buckhorn, 27; common plantain, 63; curled dock, 36; dodder, 351; red sorrel, 18
7614	†Annis Feed & Seed Store, Bremen Grimm Alfalfa	Syler & Syler, Nappanee, Ind.	C	99.50	......	86.00	4.00	1-36	......	C None
			F	99.90	0.06	86.50	4.00	3-36	185	F Dodder, 5
7583	Bashore Feed Store & Hatchery, Warsaw Grimm Alfalfa	Syler & Syler, Nappanee, Ind.	C	99.50	......	88.00	4.00	1-36	......	C None
			F	99.52	0.32	85.00	8.00	3-36	360	F None
7842	Frick, Harry, Wawaka Grimm Alfalfa	Syler & Syler, Nappanee, Ind.	C	99.30	.....	88.00	4.00	1-36	.....	C None
			F	99.35	0.30	84.50	8.00	4-36	1,274	F Dodder, 14
7469	King Elevator Co., Wabash Common Alfalfa	Syler & Syler, Nappanee, Ind.	C	99.25	.....	88.00	4.00	1-36	......	C None
			F	99.52	0.30	80.00	15.00	3-36	450	F None
7482	Morrow Grain Co., Wabash Grimm Alfalfa	Syler & Syler, Nappanee, Ind.	C	99.50	......	78.00	11.00	1-36	......	C None
			F	99.84	0.04	85.50	3.50	3-36	365	F Dodder, 5
7884	Stiefel Grain Co., Albion Common Alfalfa	Syler & Syler, Nappanee, Ind.	C	99.25	....	88.00	4.00	1-36	.....	C None
			F	99.70	0.22	80.00	15.00	4-36	360	F None
7862	Stump Grain & Coal Co., Garrett Grimm Alfalfa	Syler & Syler, Nappanee, Ind.	C	99.50	.....	88.00	4.00	1-36	.....	C None
			F	99.56	0.36	81.50	7.00	5-36	270	F None
6746	Syler & Syler, Nappanee Grimm Alfalfa, Lot G2	Syler & Syler, Nappanee, Ind.	C	99.25	......	86.00	7.00	3-35	......	C None
			F	98.84	0.58	79.00	16.50	8-35	1,620	F None
7924	Syler & Syler, Nappanee[50] Grimm Alfalfa, Lot MW	Syler & Syler, Nappanee, Ind.	C	99.25	......	81.00	10.00	2-36	......	C None
			F	99.52	0.16	85.50	11.50	4-36	441	F Dodder, 81
7926	Syler & Syler, Nappanee Grimm Alfalfa, Lot B491	Syler & Syler, Nappanee, Ind.	C	99.50	.....	82.00	8.00	2-36	......	C None
			F	99.46	0.20	84.00	6.00	4-36	545	F Dodder, 5

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*Not labeled with official Indiana State Labels.
†Certified by retailer.
C and F stands, respectively, for Claimed and Found.
[43] Removed from sale. Misbranded. Relabeled.
[44] Removed from sale. Misbranded. Relabeled.
[45] Removed from sale. Misbranded. Relabeled.
[46] Removed from sale. Misbranded. Relabeled.
[47] Sample secured from St. Joseph Farm, Notre Dame, Ind.
[48] Sample secured from J. S. Jones, Newcastle, Ind.
[49] Sample secured from I. N. Milikan, Newcastle, Ind.
[50] Removed from sale. Misbranded.

TABLE 8—Alfalfa—Continued

Laboratory No. S.	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, Per Cent	Inert Matter, Per Cent	Germination, Per Cent	Hard Seeds, Per Cent	Date of Germination	Total Number Weed Seeds Per Lb. of Seeds	Number per Pound of Each of the Noxious Weed Seeds Specified in the Law
7927	Syler & Syler, Nappanee	Syler & Syler, Nappanee, Ind.	C	99.40	......	78.00	11.00	2-36	......	C None
	Grimm Alfalfa, Lot 11		F	99.78	0.12	79.50	8.00	4-36	99	F Red sorrel, 9
7860	Walter Grain Co., Auburn	Syler & Syler, Nappanee, Ind.	C	99.50	....	87.00	3.00	1-36	......	C None
	Common Alfalfa		F	99.58	0.30	87.00	3.50	5-36	306	F Horse nettle, 36
7874	Walter Grain Co., Spencerville[51]	Syler & Syler, Nappanee, Ind.	C	99.50	......	88.00	4.00	1-36	......	C None
	Grimm Alfalfa		F	99.68	0.18	87.00	7.50	5-36	378	F Common plantain, 9; curled dock, 9
6837	Culver City Grain & Coal Co., Culver	Syler & Syler, Plymouth, Ind.	C	99.20	......	78.00	12.00	8-35	......	C None
	Grimm Alfalfa		F	99.50	0.32	81.00	14.00	9-35	306	F Buckhorn, 18; dodder, 9; horse nettle, 9
6841	Lakeville Elevator, Lakeville	Syler & Syler, Plymouth, Ind.	C	99.50	......	90.00	3.00	8-35	....	C None
	Common Alfalfa, Lot 74		F	99.48	0.42	86.50	3.00	9-35	630	F None
7834	Loughry Bros. Milling & Grain Co., Monticello	Syler & Syler, Plymouth, Ind.	C	99.50	......	85.00	7.00	2-36	......	C None
	Grimm Alfalfa		F	99.33	0.47	80.00	4.00	5-36	455	F Dodder, 5
8263	Standard Elevator Co., Kewanna	Syler & Syler, Plymouth, Ind.	C	99.55	......	85.00	5.00	3-36	......	C None
	Grimm Alfalfa, Lot 1070		F	99.50	0.40	87.50	6.50	5-36	104	F Curled dock, 9; dodder, 5
7505	Standard Elevator Co., Monon	Syler & Syler, Plymouth, Ind.	C	99.25	......	76.00	16.00	7-35	.....	C None
	Affidavit Grimm Alfalfa		F	99.12	0.80	86.50	3.00	4-36	113	F Buckhorn, 9; dodder, 14
6760	Benes, H. S., LaCrosse[52]	Teweles Seed Co., L., Milwaukee, Wis.	C	99.64	......	88.00	8.00	2-35	......	C None
	Kansas Alfalfa, Lot Badger Brand		F	99.80	0.16	92.00	2.00	8-35	90	F None
7607	Bremen Elevator, Bremen	Teweles Seed Co., L., Milwaukee, Wis.	C	99.60	......	87.00	8.00	1-36	......	C None
	Nebraska Grimm Alfalfa, Lot Badger Brand		F	99.60	0.20	81.00	13.00	4-36	900	F None
7887	Campbell & Co., Angola	Teweles Seed Co., L., Milwaukee, Wis.	C	99.60	......	80.00	18.00	2-36	......	C None
	Nebraska Grimm Alfalfa, Lot Badger Brand		F	99.66	0.28	77.00	13.50	5-36	270	F None
7888	Campbell & Co., Angola	Teweles Seed Co., L., Milwaukee, Wis.	C	99.50	......	87.00	8.00	3-36	......	C None
	Northwestern Alfalfa, Lot Badger Brand		F	99.66	0.24	79.00	13.00	5-36	450	F None
7910	Dembufsky Seed Co., Goshen	Teweles Seed Co., L., Milwaukee, Wis.	C	99.65	......	84.00	12.00	2-36	......	C None
	Kansas Alfalfa, Lot Badger Brand		F	99.40	0.48	75.00	17.00	5-36	360	F None
7913	Etna Lumber & Elevator Co., Etna Green	Teweles Seed Co., L., Milwaukee, Wis.	C	99.65	......	84.00	12.00	2-36	......	C None
	Kansas Alfalfa, Lot Badger Brand		F	99.36	0.58	73.00	21.00	5-36	180	F None
7914	Etna Lumber & Elevator Co., Etna Green	Teweles Seed Co., L., Milwaukee, Wis.	C	99.50	......	81.00	8.00	2-36	......	C None
	Northwestern Alfalfa, Lot Badger Brand		F	99.64	0.20	79.50	11.00	5-36	455	F Littleseed dodder, 5
7854	New Haven-Thurman Equity Exchange, New Haven	Teweles Seed Co., L., Milwaukee, Wis.	C	99.65	......	84.00	12.00	2-36	......	C None
	Kansas Alfalfa, Lot Badger Brand		F	99.42	0.56	72.50	15.50	5-36	99	F Curled dock, 9
6744	Troyer Seed Co., Goshen	Troyer Seed Co., Goshen, Ind.	C	99.43	......	84.00	9.00	3-35	......	C None
	Common Alfalfa, Lot D		F	99.18	0.74	83.50	9.50	7-35	270	F None
6745	Troyer Seed Co., Goshen	Troyer Seed Co., Goshen, Ind.	C	99.48	......	82.00	11.00	3-35	.....	C None
	Grimm Alfalfa, Lot G		F	99.28	0.54	77.50	15.50	7-35	284	F Dodder, 14

7555	Kunberger, John, Columbia City. Kansas Common Alfalfa, Lot 6291	Wolf Seed Co., Ft. Wayne, Ind.	C	99 50	. .	81.00	9.00	1-36	. . .	C None
			F	99.62	0.24	69.50	23.00	3-36	720	F None
7601	Stauffer Grain Co., Nappanee Hy-Test Common Alfalfa, Lot 6291	Wolf Seed Co., Ft. Wayne, Ind.	C	99.50	.	81.00	9.00	1-36		C None
			F	99.67	0.20	72.50	18 00	3-36	900	F None
7608	Stauffer Grain Co., Nappanee Affidavit Grimm Alfalfa, Lot 6349	Wolf Seed Co., Ft. Wayne, Ind.	C	99.60	. . .	81.00	12 00	2-36	. . . . . .	C None
			F	99 92	0 04	78 50	11.50	3-36	270	F None
7889	Steuben Co. Farm Bureau Co-op. Ass'n, Inc., Angola Common Alfalfa, Lot 6169	Wolf Seed Co., Ft. Wayne, Ind.	C	99.00	. .	81 00	10.00	7-35	. .	C None
			F	98.91	0.22	69.50	14.50	5 36	621	F Yellow trefoil, 81
6742	Stiefel Grain Co., Syracuse Alfalfa, Lot 6892	Wolf Seed Co., Ft. Wayne, Ind.	C	99.00	.	72.00	21.00	11-34	. . . . .	C None
			F	98.87	0 18	56.50	29.50	8-35	1,296	F Buckhorn, 27; common plantain, 9

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*Not labeled with official Indiana State Labels.
†Certified by retailer.
C and F stands, respectively, for Claimed and Found.

[51] Distributed by Walter Grain Co., Auburn, Ind.
[52] Distributed by Syle 1& Syler, Plymouth, Ind.

TABLE 8—Blue Grass

Laboratory No. S.	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, Per Cent	Inert Matter, Per Cent	Germination, Per Cent	Date of Germination	Total Number Weed Seeds Per Lb. of Seeds	Number per Pound of Each of the Noxious Weed Seeds Specified in the Law
7429	Mauller, A. M., Pleasant Mills	Ackerman Co., The, Lima, Ohio	C	86.56	.....	85.00	1-36	.....	C None
	Kentucky Blue Grass		F	89.47	10.33	80.00	6-36	5,895	F Red sorrel, 45
6887	Armstrong-Landon Co., The, Kokomo[53]	Brent Seed Co., C. S., Lexington, Ky.	C	85.80	...	80.00	9-35	.....	C None
	21# Kentucky Blue Grass, Lot 9201		F	85.87	13.93	77.00	12-35	6,345	F Buckhorn, 45; red sorrel, 1,350
7215	†Cordes Hardware Co., Seymour[51]	Brent Seed Co., C. S., Lexington, Ky.	C	.....	....	.....	.....	.....	C
	Blue Grass		F	80.90	18.31	75.50	3-36	12,510	F Red sorrel, 1,710
7701	Eberts Grain Co., Scottsburg	Chambers Seed Co., Louisville, Ky.	C	80.00		80.00	1-36	.....	C Buckhorn, 90; red sorrel, 225
	Blue Grass, Lot 191		F	79.20	20.10	77.50	5-36	5,940	F Buckhorn, 90; red sorrel, 900
7324	Brizius Co., Inc., The Chas. W., Evansville	Corneli Seed Co., St. Louis, Mo.	C	84.30	.....	78.00	2-36	.....	C None
	Kentucky Blue Grass, Lot A		F	89.40	10.20	68.00	6-36	8,730	F Curled dock, 90; red sorrel, 90
7327	Brizius Co., Inc., The Chas. W., Evansville	Corneli Seed Co., St. Louis, Mo.	C	86.35	...	85.00	8-35	.....	C None
	Kentucky Blue Grass, Lot 300		F	91.15	8.65	74.50	4-36	3,780	F Red sorrel, 630
7254	Riggs & Son, W. G., Sullivan	Crabbs Reynolds Taylor Co., Crawfordsville, Ind.	C	85.80		82.00	1-36	.....	C None
	21# Kentucky Blue Grass, Lot 1-GW		F	93.48	6.22	74.50	4-36	3,015	F Red sorrel, 315
7790	Hagerstown Grain Co., Hagerstown	Davis Seed Corp., Lebanon, Ind.	C	86.50	..	70.00	1-36	.....	C None
	Blue Grass, Lot B584		F	86.37	13.33	76.50	5-36	8,550	F Buckhorn, 45; red sorrel, 405
7825	Hemlock Grain Co., Hemlock	Davis Seed Corp., Lebanon, Ind.	C	86.50	.....	70.00	1-36	.....	C red sorrel, 720
	Blue Grass, Lot B584		F	86.92	12.78	76.50	5-36	5,940	F Red sorrel, 90
7092	Hillis Feed Store, Greencastle	Davis Seed Corp., Lebanon, Ind.	C	86.50	.....	70.00	12-35	.....	C None
	Blue Grass, Lot B-587		F	90.18	9.22	68.50	3-36	12,060	F Buckhorn, 90; common plantain, 45; curled dock, 45; red sorrel, 180
7270	Emison Hardware Store, Vincennes	Dickinson Co., The Albert, Chicago, Ill.	C	91.20	.....	82.00	1-36	.....	C None
	Kentucky Blue Grass, Lot 32873		F	90.38	9.43	81.50	5-36	3,150	F None
8039	Gotto-Mathias Co., Michigan City	Dickinson Co., The Albert, Chicago, Ill.	C	87.00	.....	81.00	9-35	.....	C Buckhorn, 320; red sorrel, 1,324
	Kentucky Blue Grass, Lot 032601		F	94.82	4.50	81.00	6-36	9,990	F Buckhorn, 450; red sorrel, 990
8349	Paxson, C. E., Elkhart	Dickinson Co., The Albert, Chicago, Ill.	C	83.20	.....	85.00	4-36	.....	C None
	Kentucky Blue Grass, Lot 032624		F	83.03	16.77	82.20	7-36	2,700	F None
7568	Seberger Seed Co., Crown Point	Dickinson Co., The Albert, Chicago, Ill.	C	86.20	.....	80.00	8-35	.....	C None
	Kentucky Blue Grass, Lot 32857		F	89.73	10.08	82.00	5-36	1,305	F Buckhorn, 180; oxeye daisy, 45; red sorrel, 180
7531	Steeb, William, Crown Point	Dickinson Co., The Albert, Chicago, Ill.	C	85.60	.....	80.00	2-36	.....	C None
	Kentucky Blue Grass, Lot 032510		F	83.91	15.59	81.00	5-36	8,550	F Red sorrel, 900
6743	Stiefel Grain Co., Syracuse	Dickinson Co., The Albert, Chicago, Ill.	C	83.30	...	70.00	3-35	.....	C Buckhorn, 160
	Kentucky Blue Grass, Lot 032585		F	81.67	17.93	63.50	8-35	5,850	F Buckhorn, 450; red sorrel, 450
7402	Pioneer Elevator Co., Worthington	Foster-Kendall Co., Carmel, Ind.	C	86.00	....	77.00	11-35	...	C None
	Blue Grass		F	88.90	10.90	67.00	5-36	9,000	F Buckhorn, 90; red sorrel, 360
7349	Kinderman & Sons, William, Boonville	Heldt Co., The, Evansville, Ind.	C	85.12	..	80.00	11-35	.	C Red sorrel, 84
	21# Blue Grass, Lot 3320		F	88.65	10.65	72.50	7-36	10,665	F Buckhorn, 225; red sorrel, 540
7301	McCarty Hardware Co., Ft. Branch	Heldt Co., The, Evansville, Ind.	C	80.27	....	80.00	1-36		C Red sorrel, 32
	19# Comet Blue Grass, Lot 3337		F	80.67	18.44	67.00	4-36	3,915	F Bracted plantain 45; buckhorn ,90; red sorrel, 630

7385	Daviess Co. Farm Bureau Co-op. Ass'n, Inc., Washington	Indiana Farm Bureau Co-op. Ass'n, Inc., Indianapolis, Ind.	C	85.00	......	80.00	12-35	.....	C None
	Kentucky Blue Grass, Lot 4079		F	91.23	8.47	77.50	5-36	2,745	F Red sorrel, 45
7042	Greene Co. Farm Bureau Co-op. Ass'n, Inc., Linton	Indiana Farm Bureau Co-op. Ass'n, Inc., Indianapolis, Ind.	C	85.00	......	80.00	12-35	.....	C None
	Kentucky Blue Grass, Lot 4079		F	86.46	13.24	72.50	3-36	4,095	F Red sorrel, 45
7656	Jennings Co. Farm Bureau Co-op. Ass'n, Inc., North Vernon[55]	Indiana Farm Bureau Co-op. Ass'n, Inc., Indianapolis, Ind.	C	85.00	......	80.00	8-35	...	C None
	Kentucky Blue Grass, Lot 3956		F	84.84	13.54	76.50	5-36	23,035	F Buckhorn, 90; oxeye daisy, 45; red sorrel, 9,900
7558	LaPorte Co. Farm Bureau Co-op. Ass'n, Inc., LaPorte	Indiana Farm Bureau Co-op. Ass'n, Inc., Indianapolis, Ind.	C	85.00	.....	80.00	12-35	.....	C None
	Kentucky Blue Grass, Lot 4079		F	88.80	10.90	74.00	6-36	1,395	F Bracted plantain, 45
7336	Posey Co. Farm Bureau Co-op. Ass'n, Inc., Mt. Vernon	Indiana Farm Bureau Co-op. Ass'n, Inc., Indianapolis, Ind.	C	85.00	......	80.00	12-35	......	C None
	Kentucky Blue Grass, Lot 4079		F	90.57	9.33	67.50	5-36	495	F Red sorrel, 45
7306	Adams & Morrow, Inc., Princeton	Indiana Seed Co., Indianapolis, Ind.	C	85.00	.....	80.00	10-35	.....	C Red sorrel, 2,700
	Kentucky Blue Grass, Lot 38		F	88.29	11.41	77.50	4-36	8,010	F Red sorrel, 360
6811	Farm Bureau Service, Columbus	Indiana Seed Co., Indianapolis, Ind.	C	83.00	.....	80.00	8-35	....	C None
	Kentucky Blue Grass, Lot 2-1106		F	86.33	13.47	75.00	11-35	5,040	F Red sorrel, 90
6812	Farm Bureau Service, Columbus[56]	Indiana Seed Co., Indianapolis, Ind.	C	85.00	....	80.00	8-35	.	C None
	Kentucky Blue Grass, Lot 33		F	81.90	17.51	50.00	11-35	10,800	F Curled dock, 270; red sorrel, 180
7762	Frankfort Electric Hatchery, Frankfort	Indiana Seed Co., Indianapolis, Ind.	C	85.00	...	85.00	1-36	....	C None
	Kentucky Blue Grass, Lot 6041		F	86.48	13.13	74.50	6-36	8,100	F None
7400	Worthington Grain Co., Worthington	Indiana Seed Co., Indianapolis, Ind.	C	85.00	.....	80.00	10-35	....	C Red sorrel, 2,700
	Kentucky Blue Grass, Lot 38		F	84.32	15.28	77.50	4-36	10,230	F Buckhorn, 90; red sorrel, 270
7786	Brehm Co., George, Richmond	Kellogg-Kelly Seed Co., St. Joseph, Mo.	C	90.10	.....	87.00	8-35	.....	C None
	Kentucky Blue Grass, Lot K 2		F	89.83	9.87	80.00	5-36	3,150	F None
6825	Fagan Seed Store, Indianapolis	Kellogg-Kelly Seed Co., St. Joseph, Mo.	C	85.20	...	85.00	8-35	.	C None
	Kentucky Blue Grass, Lot H 1		F	85.84	14.06	83.00	10-35	1,800	F None
7758	Kiefer Feed & Supply Co., Elwood	Kellogg-Kelly Seed Co., St. Joseph, Mo.	C	92.53	.....	86.00	2-36	....	C None
	21 # New Crop Fancy Kentucky Blue Grass, Lot KE		F	93.69	6.21	84.00	5-36	......	F None
6920	Moore & Kemple Hardware Co., Lafayette[57]	Kellogg-Kelly Seed Co., St. Joseph, Mo.	C	91.20	..	87.00	8-35	.	C None
	24 # New Crop Kentucky Blue Grass, Lot K 4		F	93.27	6.63	72.50	12-35	900	F None
7819	Moore & Kemple Hardware Co., Lafayette	Kellogg-Kelly Seed Co., St. Joseph, Mo.	C	92.53	...	85.00	2-36	..	C None
	24 # Fancy Kentucky Blue Grass, Lot KE		F	93.60	6.30	84.00	4-36	..	F None
7934	Quinlan Seed Store, Terre Haute[58]	Kellogg-Kelly Seed Co., St. Joseph, Mo.	C	95.71	..	87.00	10-35	...	C None
	24 # Fancy Kentucky Blue Grass, Lot K 4		F	92.56	7.34	69.75	6-36	900	F None
7909	Troyer Seed Co., Goshen[59]	Kellogg-Kelly Seed Co., St. Joseph, Mo.	C	89.40	...	83.00	2-36	..	C None
	21 # Fancy Kentucky Blue Grass, Lot H 11		F	87.29	12.71	62.00	5-36	..	F None
7048	Bloomfield Mill & Elevator Co., Bloomfield	Lewis Implement & Seed Co., Louisville, Ky.	C	80.00	....	75.00	12-35	..	C Red sorrel, 64
	19 # Kentucky Blue Grass, Lot 115		F	78.25	21.55	77.00	3-36	2,835	F Oxeye daisy, 45; red sorrel, 90
7668	Jefferson Co. Farm Bureau Co-op. Ass'n, Inc., Madison	Lewis Implement & Seed Co., Louisville, Ky.	C	80.00	.....	70.00	11-35	.....	C Buckhorn, 448; red sorrel, 224
	Red Bird Kentucky Blue Grass, Lot 114		F	86.30	13.20	85.00	5-36	8,235	F Buckhorn, 45; red sorrel, 540

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*Not labeled with official Indiana State Labels.

†Certified by retailer.

C and F stands, respectively, for Claimed and Found.

[53] Not tagged. Labels furnished.

[54] Not tagged. Labels furnished.

[55] Removed from sale. Misbranded. Relabeled.

[56] Removed from sale. Misbranded. All sold.

[57] Removed from sale. Misbranded. Relabeled.

[58] Removed from sale. Misbranded. All sold.

[59] Removed from sale. Misbranded. All sold.

TABLE 8—Blue Grass—Continued

Laboratory No. S.	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, Per Cent	Inert Matter, Per Cent	Germination, Per Cent	Date of Germination	Total Number Weed Seeds Per Lb. of Seeds	Number per Pound of Each of the Noxious Weed Seeds Specified in the Law
7772	Hazelrigg, J. S., Cambridge City	McCullough Seed Co., The J. Chas., Cincinnati, Ohio	C	84.00	......	80.00	8–35	......	C Curled dock, 18; red sorrel, 18
	Fancy Kentucky Blue Grass, Lot 2568		F	85.31	14.68	71.50	6–36	2,250	F None
7507	Schmocker, John, Batesville[60]	McCullough Seed Co., The J. Chas., Cincinnati, Ohio	C	80.10	......	80.00	1–36	......	C None
	Fancy Kentucky Blue Grass, Lot 2734		F	79.67	19.94	75.50	4–36	10,440	F Buckhorn, 135; curled dock, 495; red sorrel, 1,710
6803	Jansen-Overman Co., Indianapolis[61]	Mangelsdorf & Bro., Ed. F., St. Louis, Mo.	C	86.00	......	83.00	8–34	......	C None
	"Dumat" Kentucky Blue Grass		F	80.17	19.47	65.00	10–35	4,635	F Buckhorn 90; common plantain 45; red sorrel, 450.
8047	McMahan Seed Co., Valparaiso	Mangelsdorf & Bro., Ed. F., St. Louis, Mo.	C	85.00	......	80.00	2–36	......	C None
	Blue Grass, Lot B6489		F	84.25	15.06	68.50	6–36	12,285	F Curled dock, 45; red sorrel, 90
7647	Eckert-Palmer Hardware, Osgood[62]	Market Gardeners' Seed Co., The, Cincinnati, Ohio	C	83.50	......	80.00	12–35	......	C Red sorrel, 85
	Blue Grass, Lot 1700		F	80.73	18.87	68.00	5–36	9,225	F Bracted plantain, 45; buckhorn, 1,080; oxeye daisy, 90; red sorrel, 810
6919	Moore & Kemple Hardware Co., Lafayette[63]	Moore & Kemple Hardware Co., Lafayette, Ind.	C	......	......	......	......	......	C
	Blue Grass		F	93.98	5.92	65.50	12–35	900	F None
7354	Boonville Milling Co., Boonville[64]	National Seed Co., Louisville, Ky.	C	80.00	......	75.00	1–35	......	C Red sorrel, 540
	Kentucky Blue Grass, Lot 1432		F	75.72	22.88	40.50	5–36	25,380	F Buckhorn, 135; curled dock, 45; red sorrel, 4,950
6763	McMahan Seed Co., Valparaiso	Nebraska Seed Co., Omaha, Neb.	C	53.99	......	80.50	2–35	......	C None
	Blue Grass		F	46.45	53.25	69.00	10–35	5,625	F Bracted plantain, 45; buckhorn, 45; curled dock, 135
7322	Marvel, B. O., Owensville[65]	Purcell Seed Co., Evansville, Ind.	C	87.25	......	80.00	9–35	......	C Buckhorn, 450
	Tru Val Kentucky Blue Grass, Lot 4571		F	85.66	13.90	48.00	5–36	1,800	F None
7313	Purcell Seed Co., Evansville	Purcell Seed Co., Evansville, Ind.	C	89.22	......	81.00	1–36	......	C Buckhorn, 900; red sorrel, 450
	21# Kentucky Blue Grass, Lot 4824		F	92.51	7.40	77.50	5–36	4,185	F Buckhorn, 45; red sorrel, 540
6903	Johnston & Sons Milling Co., Prairieton	Quinlan Seed Store, Terre Haute, Ind.	C	80.00	......	80.00	10–35	......	C None
	Blue Grass, Lot 146M		F	79.15	20.75	68.00	11–35	2,880	F Buckhorn, 45; red sorrel, 135
7376	Dilly & Son, Phil, Huntingburg	Ross Seed Co., Louisville, Ky.	C	84.20	......	80.00	12–35	......	C Red sorrel, 450
	Kentucky Blue Grass		F	88.00	11.50	69.00	6–36	6,525	F Buckhorn, 270; red sorrel, 405
7381	Greenwood & Co., Washington	Ross Seed Co., Louisville, Ky.	C	81.35	......	75.00	10–35	......	C Common plantain, 16
	Blue Grass		F	89.99	9.81	65.50	5–36	450	F None
6912	*Kiefer Feed & Supply Co., Elwood	Ross Seed Co., Louisville, Ky.	C	......	......	......	......	......	C
	Blue Grass		F	90.37	9.33	72.50	12–35	2,250	F None
7378	Dubois Co. Farm Bureau Co-op. Ass'n, Inc., Huntingburg	Scott Seed Co., New Albany, Ind.	C	85.00	......	80.00	9–35	......	C Buckhorn, 180; curled dock, 270; red sorrel, 450
	A. B. Blue Grass, Lot 71		F	85.88	13.82	89.50	5–36	11,385	F Buckhorn, 45; red sorrel, 990

7585	Johnson Hardware Co., Lafayette[66]	Teweles Seed Co., L., Milwaukee, Wis.	C	86.98	......	80.00	2-36	...	C None
	Kentucky Blue Grass, Lot Badger Brand		F	84.62	15.28	53.00	6-36	900	F None
7096	†Vonnegut Hardware Co., Indianapolis	Whitney-Eckstein Seed Co., Buffalo, N. Y.	C	89.30	......	85.00	2-36	......	C None
	Kentucky Blue Grass, Lot 3603		F	91.07	8.63	88.00	3-36	2,790	F Curled dock, 90
7586	Needham Market, Lafayette[67]	Woodruff & Sons, F. H., Milford, Conn.	C	85.72	......	84.00	9-35	..	C Curled dock, 224; red sorrel, 448
	21 # Kentucky Blue Grass, Lot 50-3		F	90.15	9.05	40.50	6-36	15,750	F None

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†Certified by retailer.

C and F stands, respectively, for Claimed and Found.

[60] Not tagged. Labels furnished. Removed from sale. Misbranded. Relabeled.

[61] Removed from sale. Misbranded. Relabeled.

[62] Removed from sale. Misbranded. Relabeled.

[63] Sample secured from Miss Lela Powers, West Lafayette, Ind. Tag incomplete.

[64] Removed from sale. Misbranded. All sold.

[65] Removed from sale. Misbranded. Relabeled.

[66] Removed from sale. Misbranded. Returned to distributor.

[67] Removed from sale. Misbranded. Discarded.

TABLE 8—Alsike Clover

Laboratory No. S.	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, Per Cent	Inert Matter, Per Cent	Germination, Per Cent	Hard Seeds, Per Cent	Date of Germination	Total Number Weed Seeds Per Lb. of Seeds	Number per Pound of Each of the Noxious Weed Seeds Specified in the Law
7307	Adams & Morrow, Inc., Princeton Alsike Clover, Lot P225	Adams & Morrow, Inc., Princeton, Ind	C	99.10	....	88.50	7.00	1-36	....	C None
			F	99.46	0.39	82.50	8.50	3-36	711	F Buckhorn, 18; yellow trefoil, 18
7850	Columbia Feed & Dairy Supply Co., Ft. Wayne Alsike Clover, Lot B574	Allied Seed Co., Inc., Ft. Wayne, Ind	C	98.75	....	84.00	6.00	2-36	....	C None
			F	99.16	0.30	88.50	9.50	5-36	567	F Curled dock, 18; wild carrot, 18; yellow trefoil, 306
7895	Fretz, R. C., Waterloo Alsike Clover, Lot B-574	Allied Seed Co., Inc., Ft. Wayne, Ind	C	98.75	....	84.00	6.00	2-36	....	C None
			F	99.16	0.29	88.75	7.50	5-36	369	F Curled dock, 18; yellow trefoil, 126
8007	Pierce Elevator Co., The, Union City Alsike Clover, Lot B574	Allied Seed Co., Inc., Ft. Wayne, Ind	C	98.75	....	84.00	6.00	1-36	....	C None
			F	99.17	0.34	83.25	11.50	5-36	531	F Buckhorn, 18; curled dock, 36; yellow trefoil, 252
7891	Stiefel Grain Co., Avilla Alsike Clover, Lot B574	Allied Seed Co., Inc., Ft. Wayne, Ind	C	97.00	....	84.00	6.00	1-36	....	C None
			F	99.36	0.44	84.50	9.25	5-36	162	F Buckhorn, 18; yellow trefoil, 144
7406	*Lafayette Life Insurance Co., Lafayette Alsike Clover, Lot 11249	American Field Seed Co., Chicago, Ill	C	98.80	....	92.00	....	2-36	....	C None
			F	97.26	0.15	89.00	8.00	3-36	6,777	F Red sorrel, 252
8148	Crabbs Reynolds Taylor Co., Lafayette Alsike Clover, Lot 3AS	Crabbs Reynolds Taylor Co., Crawfordsville, Ind	C	98.25	....	85.00	5.00	3-36	....	C None
			F	97.15	0.97	75.25	12.25	4-36	5,328	F Buckhorn, 72; curled dock, 198; yellow trefoil, 108
7190	Standard Elevator Co., Lapel Alsike Clover, Lot 8-AQ	Crabbs Reynolds Taylor Co., Crawfordsville, Ind	C	98.05	....	86.00	9.00	1-36	....	C None
			F	97.57	0.50	94.75	3.00	3-36	3,681	F Buckhorn, 54; curled dock 270; yellow trefoil, 882
7004	Crawfordsville Seed Co., Crawfordsville Alsike Clover, Lot 397	Crawfordsville Seed Co., Crawfordsville, Ind	C	99.00	....	83.00	12.00	1-36	....	C None
			F	98.96	0.35	90.50	7.50	1-36	1,656	F Buckhorn, 18; common plantain, 18; red sorrel, 18; yellow trefoil, 252
7908	Troyer Seed Co., Goshen Alsike Clover, Lot 397	Crawfordsville Seed Co., Crawfordsville, Ind	C	99.00	....	83.00	12.00	1-36	....	C None
			F	98.90	0.45	89.00	9.00	5-36	1,062	F Buckhorn, 72; yellow trefoil, 90
7019	Markleville Elevator Co., Markleville Alsike Clover, Lot A585	Davis Seed Corp., Lebanon, Ind	C	98.75	....	78.00	18.00	12-35	....	C None
			F	98.42	0.79	79.00	16.25	2-36	1,773	F Canada thistle, 18; common plantain, 36; curled dock, 54; yellow trefoil, 90
7025	Sanders, O. D., Newcastle Alsike Clover, Lot A585	Davis Seed Corp., Lebanon, Ind	C	98.75	....	77.00	18.00	1-36	....	C None
			F	98.66	0.99	86.75	10.50	2-36	729	F Common plantain, 18; curled dock, 18; yellow trefoil, 18
7949	Springer & Sons, W. O., Greenwood Alsike Clover, Lot A585	Davis Seed Corp., Lebanon, Ind	C	98.75	....	75.00	15.00	2-36	....	C None
			F	99.02	0.64	78.25	17.25	5-36	990	F Curled dock, 54; red sorrel, 18; yellow trefoil, 18
7353	Allan, J. P., Farmersburg Alsike Clover, Lot 2115	Dickinson Co., The Albert, Chicago, Ill	C	98.35	....	91.00	6.00	12-35	....	C None
			F	98.42	0.30	90.50	7.00	3-36	1,242	F Red sorrel, 72; yellow trefoil, 270

7519	Holser-Palmer Co., Walkerton Alsike Clover, Lot 2117	Dickinson Co., The Albert, Chicago, Ill.	C	95.40	......	84.00	10.00	2-36	.....	C Curled dock, 64; red sorrel, 160; yellow trefoil, 480
			F	95.95	1.09	87.75	11.25	4-36	2,646	F Curled dock, 18; red sorrel, 90; yellow trefoil, 288
6850	Knapp Seed & Feed Co., C. E., South Bend Alsike Clover, Lot 21624	Dickinson Co., The Albert, Chicago, Ill.	C	99.25	......	82.00	12.00	8-35	.....	C Red sorrel, 64; yellow trefoil, 176
			F	99.00	0.50	82.75	9.75	9-35	945	F Curled dock, 18; red sorrel, 108; yellow trefoil, 144
7923	Yoder Bros , Wakarusa Alsike Clover, Lot 021965	Dickinson Co., The Albert, Chicago, Ill.	C	97.60	......	95.00	2.00	1-36	......	C None
			F	96.77	0.45	94.00	4.75	5-36	1,125	F None
7976	Carney Hatcheries, Shelbyville Alsike Clover	Foster-Kendall Co., Carmel, Ind.	C	97.18	......	75.00	15.00	1-36	......	C None
			F	98.06	1.39	69.75	18.00	5-36	1,044	F Common plantain, 18; curled dock, 18: red sorrel, 18; yellow trefoil, 90
7080	Fayette Co. Farm Bureau Co-op. Ass'n, Inc., Connersville Alsike Clover, Lot Fayette Co. Farm Bureau	Foster-Kendall Co., Carmel, Ind.	C	98.50	......	84.00	11.00	12-35	......	C Curled dock, 90
			F	98.81	0.30	78.75	19.25	3-36	1,521	F Common plantain, 18; curled dock, 54; yellow trefoil, 1,224
7639	Indiana Grain Producers, Inc., Shelbyville Alsike Clover	Foster-Kendall Co., Carmel, Ind.	C	98.50	......	78.00	16.00	12-35	......	C None
			F	98.42	0.30	76.25	17.25	3-36	1,998	F Buckhorn, 18; Canada thistle, 18; common plantain, 18; curled dock, 18; yellow trefoil, 126
7553	Kunberger, John, Columbia City[68] Alsike Clover	Foster-Kendall Co., Carmel, Ind.	C	98.50	.....	80.00	14.00	12-35	.....	C None
			F	98.02	0.77	77.25	20.00	4-36	4,968	F Curled dock, 18: yellow trefoil, 4,500
7749	Markin, Roy, Eaton Alsike Clover, Lot Eaton	Foster-Kendall Co., Carmel, Ind.	C	98.50	......	84.00	12.00	12-35	...	C None
			F	98.20	0.73	75.25	22.00	5-36	5,454	F Buckhorn, 18; common plantain, 36; yellow trefoil, 5,175
8052	Mulberry Grain Co., Mulberry[69] Alsike Clover	Foster-Kendall Co., Carmel, Ind.	C	98.50	......	80.00	5.00	12-35	...	C None
			F	99.00	0.57	78.00	20.25	4-36	2,160	F Common plantain, 54; curled dock, 18; yellow trefoil, 1,638
7975	Shelby Co. Farm Bureau Co-op. Ass'n, Inc., Retail Store, Shelbyville Alsike Clover	Foster-Kendall Co., Carmel, Ind.	C	98.50	......	84.00	10.00	1-36	....	C None
			F	99.16	0.49	78.75	18.00	5-36	1,179	F Curled dock, 54
7455	Swayzee Grain Co., Swayzee Alsike Clover, Lot Swayzee	Foster-Kendall Co., Carmel, Ind.	C	98.70	......	84.00	10.00	12-35	......	C Curled dock, 90
			F	98.55	0.89	84.00	11.50	4-36	1,017	F Curled dock, 36; yellow trefoil, 756
7797	Goodrich Bros. Co., Westfield[70] Alsike Clover, Lot Lark 2	Goodrich Bros. Co., Westfield, Ind.	C	99.50	......	80.00	8.00	1-36	......	C None
			F	99.16	0.20	56.50	7.00	5-36	504	F Buckhorn, 54
7741	Hinshaw Grain Co., Summitville Alsike Clover, Lot Lark	Goodrich Bros. Co., Winchester, Ind.	C	98.50	......	85.00	10.00	1-36		C None
			F	98.85	0.45	74.50	14.50	4-36	3,825	F None
7318	Heldt & Volker Co., Evansville Thelco Alsike Clover, Lot 3343	Heldt Co., The, Evansville, Ind.	C	98.55	.....	83.00	10.00	1-36	.	C Buckhorn, 180; red sorrel, 900
			F	98.91	0.10	85.50	10.25	3-36	5,661	F Buckhorn, 108; red sorrel, 720; yellow trefoil, 108
7329	Poseyville Grain & Feed Co., Poseyville Comet Alsike Clover, Lot 3293	Heldt Co., The, Evansville, Ind.	C	97.01	......	80.00	14.00	9-35	......	C Bracted plantain, 450; curled dock, 900; red sorrel, 450
			F	96.51	2.19	69.00	21.50	4-36	1,611	F Bracted plantain, 396; buckhorn, 198; curled dock, 630; red sorrel, 144; yellow trefoil, 18
7238	Johnson Co. Farm Bureau Co-op. Ass'n, Inc., Franklin Alsike Clover, Lot 2-1305	Indiana Farm Bureau Co-op. Ass'n, Inc., Indianapolis, Ind.	C	99.00	......	83.00	12.00	12-35	......	C None
			F	98.67	0.84	80.00	13.75	3-36	297	F Buckhorn, 18; red sorrel, 54

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*Not labeled with official Indiana State Labels.
†Certified by retailer.
C and F stands, respectively, for Claimed and Found.

[68] Removed from sale. Misbranded. All sold.

[69] Sample secured from A. F. Kluth, Lafayette, Ind.

[70] Removed from sale. Misbranded. Relabeled.

TABLE 8—Alsike Clover—Continued

Laboratory No. S.	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, Per Cent	Inert Matter, Per Cent	Germination, Per Cent	Hard Seeds, Per Cent	Date of Germination	Total Number Weed Seeds Per Lb. of Seeds		Number per Pound of Each of the Noxious Weed Seeds Specified in the Law
7655	Ripley Co. Farm Bureau Co-op. Ass'n, Inc., Osgood	Indiana Farm Bureau Co-op. Ass'n, Inc., Indianapolis, Ind.	C	99.00	.....	83.00	12.00	12-35	...	C	None
	Alsike Clover, Lot 2-1305		F	98.81	0.69	86.25	13.00	4-36	477	F	Curled dock, 54; mustard, 18; red sorrel, 54; yellow trefoil, 126
7937	†Dana Elevator Co., Dana	Indiana Seed Co., Indianapolis, Ind.	C	98.10	.....	85.00	10.00	12-35	.....	C	None
	Alsike Clover, Lot I-311		F	97.68	0.59	89.00	9.75	5-36	3,411	F	Red sorrel, 36
6800	Pritchard & Rafert, Inc., Pendleton	Indiana Seed Co., Indianapolis, Ind.	C	98.75	.....	80.00	13.00	12-34	...	C	None
	Alsike Clover, Lot B400		F	99.30	0.30	82.00	11.75	9-35	2,160	F	Buckhorn, 18; common plantain, 36; yellow trefoil, 306
7511	Nedderman, Roy, Sunman	McCullough Seed Co., The J. Chas., Cincinnati, Ohio	C	98.60	.....	74.00	17.00	1-36	.....	C	None
	Alsike Clover, Lot 2855		F	98.71	0.59	77.00	14.50	4-36	1,602	F	Red sorrel, 18; yellow trefoil, 234
7512	Schmocker, John, Batesville	McCullough Seed Co., The J. Chas., Cincinnati, Ohio	C	98.60	.....	76.00	14.00	1-36	.....	C	Common plantain, 36; yellow trefoil, 72
	Alsike Clover, Lot 2853		F	98.63	0.59	79.25	7.25	4-36	1,440	F	Curled dock, 90
7132	†Indiana Grain Producers, Inc., Shelbyville[71]	Miers, S. G., Greensburg, Ind.	C	95.89	.....	.....	.....	.....	.....	C	None
	Alsike Clover, Lot 1		F	92.98	6.82	79.25	14.25	2-36	2,394	F	Bracted plantain, 18; buckhorn, 90; curled dock, 36
7638	Indiana Grain Producers, Inc., Morristown[72]	Miers, S. G., Greensburg, Ind.	C	92.98	.....	79.25	14.25	2-36	.....	C	Bracted plantain, 18; buckhorn, 90; curled dock, 36
	Alsike Clover, Lot 7132		F	96.35	3.64	83.25	14.00	3-36	54	F	Bracted plantain, 18; buckhorn, 18; common plantain, 18
7089	Miller Grain Co., Bainbridge	Miller Grain Co., Bainbridge, Ind.	C	98.50	.....	84.00	5.00	1-36	.....	C	Buckhorn, 225; red sorrel, 225
	Alsike Clover, Lot A		F	98.10	1.25	81.25	11.75	3-36	639	F	Buckhorn, 252; common plantain, 54; curled dock, 90; red sorrel, 18
8040	*Tubolski, A. A., Michigan City[73]	Olds Seed Co., L. L., Madison, Wis.	C	86.50	.....	90.00	6.00	2-36	.....	C	None
	Alsike Clover, Lot Special No. 1		F	87.17	0.09	89.25	8.00	4-36	6,903	F	Common plantain, 18; curled dock, 36; red sorrel, 324; yellow trefoil, 5,400
7397	Scott, Ed., Newberry	Purcell Seed Co., Evansville, Ind.	C	97.75	.....	90.00	.....	2-36	.....	C	Buckhorn, 450; curled dock, 900; yellow trefoil, 450
	Tru Val Alsike Clover, Lot 4855		F	98.02	0.53	90.00	3.75	4-36	3,609	F	Buckhorn, 342; curled dock, 288; yellow trefoil, 954
7395	Johnson & Chenoweth, Shoals	Scott Seed Co., New Albany, Ind.	C	96.00	.....	80.00	10.00	1-36	.....	C	Curled dock, 90; red sorrel, 540
	Alsike Clover, Lot 210		F	95.15	0.15	83.25	6.75	4-36	20,934	F	Red sorrel, 72; yellow trefoil, 162
7535	Tuxedo Feed & Supply Co., Aurora	Scott Seed Co., New Albany, Ind.	C	94.00	.....	80.00	10.00	1-35	.....	C	Red sorrel, 1,350
	Alsike Clover, Lot 209		F	93.80	0.20	86.25	7.50	4-36	17,622	F	Bracted plantain, 54; buckhorn, 18; red sorrel, 2,475
8024	Keilman Co., L., Dyer[74]	Standard Seed Co., Chicago, Ill.	C	99.00	.....	79.00	12.00	1-36	.....	C	Red sorrel, 170
	Alsike Clover, Lot 11238		F	97.33	0.10	91.25	5.25	4-36	4,995	F	Buckhorn, 18; curled dock, 18; red sorrel, 216; yellow trefoil, 18

8023	Roper & Brown, Hobart	Standard Seed Co., Chicago, Ill.	C	88.50	......	77 00	7.00	2-36	......	None
	Alsike Clover, Lot 11248		F	90.94	0.30	83.50	6.00	4-36	7,137	Buckhorn, 36; common plantain 126; curled dock, 18; red sorrel, 36; yellow trefoil, 396
7563	Seberger Seed Co., Crown Point[75]	Standard Seed Co., Chicago, Ill.	C	99.00	.....	79 00	12.00	1-36	......	Red sorrel, 60
	Alsike Clover, Lot 11238		F	97.61	0.15	82.50	13.25	3-36	5,670	Canada thistle, 18; common plantain, 18 red sorrel, 180; yellow trefoil, 54
7625	Whybrew, C. E., Kewanna[76]	Standard Seed Co., Chicago, Ill.	C	99.00	......	72.00	12.00	1 36	......	None
	Alsike Clover, Lot 11238		F	97.84	0.01	89.00	8.25	3-36	6,192	Curled dock, 18; red sorrel, 252; yellow trefoil, 72
7980	Payne, Golden, Newcastle[77]	Sun-Field Seed Service, Chicago, Ill.	C	98.10	......	80.00	12 00	2-36	......	None
	Alsike Clover, Lot 11240		F	96.55	0.19	84.50	12.25	4-36	3,447	Common plantain, 54; curled dock, 18; yellow trefoil, 2,925
7893	Noragon & Son, Butler	Wolf Seed Co., Ft. Wayne, Ind.	C	98.50	......	83 00	11.00	2-36	.....	None
	Alsike Clover, Lot 4038		F	98.42	1.09	80.50	11.00	5-36	540	Yellow trefoil, 90

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*Not labeled with official Indiana State Labels.

†Certified by retailer.

C and F stands, respectively, for Claimed and Found.

[71] Tag incomplete. Removed from sale. Misbranded. Relabeled.

[72] Distributed by Indiana Grain Producers, Inc., Shelbyville, Ind.

[73] Contains 13% white clover with a germination of 76.00% and 22.50% hard seeds.

[74] Removed from sale. Misbranded. Relabeled.

[75] Removed from sale. Misbranded. Relabeled.

[76] Removed from sale. Misbranded. Returned to distributor.

[77] Sample secured from J. S. Jones, Newcastle, Ind., Rural Route.

TABLE 8—Red Clover

Laboratory No. S.	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor	Purity, Per Cent	Inert Matter, Per Cent	Germination, Per Cent	Hard Seeds, Per Cent	Date of Germination	Total Number Weed Seeds Per Lb. of Seeds	Number per Pound of Each of the Noxious Weed Seeds Specified in the Law
7754	Farmers Supply Co., Boston	Allied Seed Co., Inc., Ft. Wayne, Ind. C	99.50	......	88.00	4.00	2-36	....	C None
	Medium Red Clover, Lot B1838	F	99.74	0.16	89.00	3.50	4-36	99	F Buckhorn, 9
7897	Fretz, R. C., Waterloo	Allied Seed Co., Inc., Ft. Wayne, Ind. C	99.50	......	88.00	4.00	2-36	.....	C None
	Medium Red Clover, Lot B-1838.	F	99.86	0.06	91.50	3.00	5-36	90	F None
7727	Hartford City Milling Co., Hartford City	Allied Seed Co., Inc., Ft. Wayne, Ind. C	99.50	......	88.00	4.00	2-36	......	C None
	Medium Red Clover, Lot B-1838	F	99.70	0.10	94.00	2.00	4-36	369	F Curled dock, 9
7804	*Berry Seed Co., Clarinda, Iowa[78]	Berry Seed Co., Clarinda, Iowa C	98.20	......	90.00	......	12-35	...	C None
	Medium Red Clover, Lot 12379	F	98.20	0.04	86.00	9.50	3-36	1,026	F Bracted plantain, 9; buckhorn, 18; curled dock, 9; dodder, 27; red sorrel, 36; wild carrot, 9; yellow trefoil, 18
7045	Bloomfield Mill & Elevator Co., Bloomfield	Bloomfield Mill & Elevator Co., Bloomfield, Ind. C	95.52	..	82.50	7.00	1-36	...	C Dodder, 16,650
	Red Clover, Lot 72988	F	95.87	1.76	84.50	7.00	2-36	14,580	F Dodder, 14,490
7942	Beeman Feed Store, Paragon	Branch Grain & Seed Co., Martinsville, Ind. C	99.40	......	85.00	......	11-35	....	C Buckhorn, 72; common plantain, 290
	Big English Clover, Lot H	F	99.60	0.18	91.50	3.00	5-36	405	F Buckhorn, 297; common plantain, 99; curled dock, 9
7603	Bremen Elevator, Bremen	Bremen Elevator, Bremen, Ind. C	99.54	......	84.00	8.00	3-36	......	C None
	Medium Clover, Lot 1	F	99.72	0.02	83.50	5.50	4-36	689	F Buckhorn, 27; dodder, 5; red sorrel, 27
7181	Bloomington Feed Store & Hatchery, Bloomington	Byers Seed Co., Franklin, Ind. C	99.00	...	90.00	.	1-35		C None
	Red Clover, Lot R	F	99.18	0.48	88.00	8.00	3-36	963	F Buckhorn, 225; wild carrot, 18
7245	Byers Seed Co., Franklin	Byers Seed Co., Franklin, Ind. C	99.30	......	88.00	......	1-36	......	C Buckhorn, 100
	Red Clover, Lot R	F	99.34	0.44	94.00	3.50	3-36	657	F Buckhorn, 153; common plantain, 45; curled dock, 9
7140	Cox Sales, C. C., Shelbyville	Byers Seed Co., Franklin, Ind. C	99.30	......	92.00	......	1-36	......	C None
	English Clover, Lot E	F	99.52	0.26	84.50	11.00	2-36	126	F Buckhorn, 63; curled dock, 63
7141	Cox Sales, C. C., Shelbyville	Byers Seed Co., Franklin, Ind. C	99.25	......	90.00	......	1-36	......	C Buckhorn, 45; common plantain, 90
	Red Clover, Lot R	F	99.66	0.18	85.50	11.00	2-36	306	F Buckhorn, 162; common plantain, 54
7411	Callahan, Roy, Odon[79]	Callahan, Roy, Odon, Ind. C	98.76	.	84.50	9.00	1-36	....	C Buckhorn, 3,870; common plantain, 1,350
	Red Clover, Lot 73384	F	96.74	1.01	87.00	5.00	3-36	9,846	F Buckhorn, 8,460; common plantain, 1,350; curled dock, 36
7702	Eberts Grain Co., Scottsburg	Chambers Seed Co., Louisville, Ky. C	99.00	......	85.00	5.00	1-36	......	C Buckhorn, 225
	Red Clover	F	98.64	0.20	91.50	7.00	4-36	1,440	F Buckhorn, 774; wild carrot, 9; yellow trefoil, 117
8117	Hoosier Hardware Co., Paoli	Chambers Seed Co., Louisville, Ky. C	97.00	..	90.00	......	2-36	.....	C Bracted plantain, 300; buckhorn, 300; curled dock, 225; dodder, 90; red sorrel, 225
	Sapling Clover, Lot 326	F	98.66	0.24	84.00	4.00	5-36	3,006	F Buckhorn, 378; curled dock, 369; dodder, 63; red sorrel, 36

8118	Hoosier Hardware Co., Paoli	Chambers Seed Co., Louisville, Ky.	C	98.00	......	90.00	......	2-36	......	C Buckhorn, 225; curled dock, 100; dodder, 26; red sorrel, 225
	Red Clover, Lot 209		F	97.63	1.07	88.50	3.00	5-36	3,429	F Buckhorn, 198; curled dock, 225; dodder, 171; red sorrel, 405
7179	Cloverdale Hdwe. & Lumber Co., Cloverdale	Crabbs Reynolds Taylor Co., Crawfordsville, Ind.	C	99.64	......	90.00	4.00	11-35	......	C None
	Medium Clover, Lot 1-RR		F	99.84	0.12	95.00	3.00	3-36	108	F Buckhorn, 18
8115	Corn Belt Feed Co., Boswell	Crabbs Reynolds Taylor Co., Crawfordsville, Ind.	C	99.60	......	92.00	3.00	3-36	......	C None
	Medium Clover, Lot 9-RX		F	99.76	0.04	91.50	3.00	5-36	369	F Buckhorn, 36; curled dock, 18; red sorrel, 27; yellow trefoil, 18
8153	Crabbs Reynolds Taylor Co., Lafayette	Crabbs Reynolds Taylor Co., Crawfordsville, Ind.	C	98.84	......	90.00	......	3-36	......	C Buckhorn, 90; common plantain, 90; curled dock, 45
	Medium Clover, Lot 8-RY		F	98.37	0.36	90.00	2.50	4-36	2,088	F Buckhorn, 72; curled dock, 27; red sorrel, 9
8155	Crabbs Reynolds Taylor Co., Lafayette	Crabbs Reynolds Taylor Co., Crawfordsville, Ind.	C	99.65	......	92.00	3.00	3-36	......	C None
	Medium Clover, Lot 1-RZ		F	99.13	0.26	87.50	5.00	4-36	1,134	F Buckhorn, 18; common plantain, 99; red sorrel, 27
7993	Farmers Grain Co., Pershing	Crabbs Reynolds Taylor Co., Crawfordsville, Ind.	C	99.64	......	90.00	3.00	11-35	......	C None
	Medium Clover, Lot 2 RR		F	99.66	0.08	97.50	2.00	5-36	684	F Buckhorn, 36; curled dock, 18
7579	Gleaners & Farmers Co-op. Elev. Co., North Hayden	Crabbs Reynolds Taylor Co., Crawfordsville, Ind.	C	99.60	......	92.00	4.00	3-36	......	C None
	Medium Clover, Lot 1-RW		F	99.56	0.40	94.00	2.50	4-36	216	F Buckhorn, 36
7725	Hartford City Mlg. Co., Hartford City	Crabbs Reynolds Taylor Co., Crawfordsville, Ind.	C	97.98	......	90.00	2.00	1-36	......	C None
	Medium Clover, Lot 1-RV		F	97.71	0.53	84.50	7.50	4-36	2,934	F Common plantain, 36; red sorrel, 18
7791	Newcastle Elevator Co., Newcastle	Crabbs Reynolds Taylor Co., Crawfordsville, Ind.	C	99.56	......	93.50	6.00	12-35	......	C None
	Medium Clover, Lot 5 RT		F	99.36	0.08	97.00	1.50	5-36	477	F Buckhorn, 18; yellow trefoil, 9
7792	Wisehart, W. S., Millville	Crabbs Reynolds Taylor Co., Crawfordsville, Ind.	C	99.50	......	90.00	3.00	2-36	......	C None
	Medium Clover, Lot 9 RV		F	99.42	0.26	95.00	1.00	5-36	99	F Buckhorn, 63; curled dock, 18; dodder, 9; yellow trefoil, 9
7125	Kitchel Grain Co., Kitchel	Crawfordsville Seed Co., Crawfordsville, Ind.	C	99.75	......	90.00	5.00	12-35	......	C None
	Medium Clover, Lot 186		F	99.88	0.04	92.50	2.00	3-36	180	F None
7174	New Ross Grain & Lumber Co., New Ross	Crawfordsville Seed Co., Crawfordsville, Ind.	C	99.75	......	90.00	5.00	1-36	......	C None
	Medium Clover, Lot 186		F	99.98	0.00	93.50	3.00	3-36	......	F None
7005	Sample, John L., Madison	Crawfordsville Seed Co., Crawfordsville, Ind.	C	99.75	......	90.00	5.00	1-36	......	C None
	Medium Clover, Lot 193		F	99.84	0.08	96.00	1.00	1-36	270	F None
7006	Sample, John L., Madison	Crawfordsville Seed Co., Crawfordsville, Ind.	C	99.75	......	90.00	5.00	1-36	......	C None
	Mammoth Clover, Lot 227		F	99.94	0.02	93.00	1.50	1-36	54	F Curled dock, 9; red sorrel, 45
6953	Armstrong-Landon Co., The, Kokomo	Davis Seed Corp., Lebanon, Ind	C	99.50	......	88.00	3.00	11-35	......	C None
	Medium Clover, Lot 682-B		F	99.38	0.04	94.00	4.50	1-36	2,556	F Buckhorn, 108; curled dock, 18
7710	Armstrong-Landon Co., The, Kokomo	Davis Seed Corp., Lebanon, Ind.	C	98.00	......	80.00	10.00	2-36	......	C None
	Medium Clover, M-612		F	97.22	0.48	83.00	0.50	4-36	6,507	F Bracted plantain, 27; buckhorn, 162; common plantain, 63; curled dock, 45

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*Not labeled with official Indiana State Labels.
†Certified by retailer.
C and F stands, respectively, for Claimed and Found.

[78] Sample secured from George O. Keller, Route 1, Markleville, Ind.
[79] Removed from sale. Misbranded. Relabeled.

TABLE 8—Red Clover—Continued

Laboratory No. S.	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, Per Cent	Inert Matter, Per Cent	Germination, Per Cent	Hard Seeds, Per Cent	Date of Germination	Total Number Weed Seeds Per Lb. of Seeds	Number per Pound of Each of the Noxious Weed Seeds Specified in the Law
7122	Beck Grain Co., Shelbyville	Davis Seed Corp., Lebanon, Ind.	C	99.50	......	90.00	2.00	12-35	......	None
	Medium Clover, M575		F	99.76	0.16	94.00	1.00	3-36	144	Buckhorn, 108; common plantain, 9; curled dock, 27
7123	Beck Grain Co., Shelbyville	Davis Seed Corp., Lebanon, Ind.	C	99.50	......	90.00	2.00	12-35	......	None
	Mammoth Clover, Lot E589		F	99.54	0.24	92.00	1.00	3-36	45	Buckhorn, 9; curled dock, 27; red sorrel, 9
7178	Cloverdale Hdwe. & Lumber Co., Cloverdale	Davis Seed Corp., Lebanon, Ind.	C	99.50	......	90.00	2.00	12-35	......	None
	Mammoth Clover, Lot E589		F	99.72	0.04	87.50	0.50	3-36	54	Curled dock, 54
7765	Cohee & Clark, Kempton[80]	Davis Seed Corp., Lebanon, Ind.	C	99.50	......	90.00	2.00	1-36	......	None
	Medium Red Clover		F	99.28	0.06	70.00	2.00	4-36	828	Buckhorn, 36; curled dock, 54; dodder, 9; yellow trefoil, 9
7769	Davis Grain Co., Michigantown	Davis Seed Corp., Lebanon, Ind.	C	99.50	......	90.00	2.00	12-35	......	None
	Medium Red Clover, Lot M-595		F	99.76	0.08	90.00	0.50	4-36	536	Buckhorn, 27; common plantain, 27; curled dock, 18; dodder, 5; red sorrel, 9
7208	Farmers Co-op. Co., Selma	Davis Seed Corp., Lebanon, Ind.	C	99.60	......	90.00	3.00	12-35	......	None
	Medium Clover, Lot M597		F	99.74	0.10	95.00	1.00	3-36	396	Buckhorn, 27; curled dock, 9
7185	Farmers Co-op. Co., Shideler	Davis Seed Corp., Lebanon, Ind.	C	99.12	......	90.00	2.00	1-36	......	None
	Medium Clover, Lot M616		F	99.64	0.12	92.50	6.50	3-36	189	Yellow trefoil, 9
7938	Farmers Supply Co., Danville	Davis Seed Corp., Lebanon, Ind.	C	99.50	......	90.00	2.00	1-36	......	None
	Mammoth Clover, Lot K621		F	99.90	0.06	86.00	1.00	5-36	27	Curled dock, 27
7789	Hagerstown Grain Co., Hagerstown	Davis Seed Corp., Lebanon, Ind.	C	98.00	......	80.00	10.00	2-36	......	None
	Medium Clover, Lot M579		F	97.42	0.54	76.00	0.50	4-36	2,142	Buckhorn, 162; curled dock, 270
7472	Marburger Bros., Peru	Davis Seed Corp., Lebanon, Ind.	C	99.50	......	90.00	2.00	1-36	......	None
	Medium Red Clover, Lot M590		F	99.54	0.10	90.00	0.50	4-36	747	Buckhorn, 81; curled dock, 18; red sorrel, 18
7018	Markleville Elevator Co., Markleville	Davis Seed Corp., Lebanon, Ind.	C	99.50	......	90.20	......	12-35	......	None
	Medium Clover, Lot M-597		F	99.56	0.12	92.00	2.00	2-36	774	Buckhorn, 36; curled dock, 18
7773	Mays Elevator, Mays	Davis Seed Corp., Lebanon, Ind.	C	99.50	......	90.00	3.00	12-35	......	None
	Medium Clover, Lot M537		F	99.52	0.24	94.00	0.00	4-36	306	Buckhorn, 9; curled dock, 27
7234	Records, James L., Edinburg	Davis Seed Corp., Lebanon, Ind.	C	99.60	......	90.00	3.00	12-35	......	None
	Medium Clover, Lot M590		F	99.60	0.14	92.50	1.50	3-36	801	Buckhorn, 99; curled dock, 36; dodder, 9; red sorrel, 27
7543	Rich Valley Co-op. Elevator Co., Rich Valley	Davis Seed Corp., Lebanon, Ind.	C	99.50	......	90.00	2.00	1-36	......	None
	Medium Red Clover		F	99.32	0.08	91.00	0.00	4-36	567	Buckhorn, 18; curled dock, 9
7716	Sedalia Elevator, Sedalia	Davis Seed Corp., Lebanon, Ind.	C	99.50	......	90.00	......	12-35	......	None
	Mammoth Clover, Lot E-615		F	99.60	0.20	92.00	0.50	4-36	9	Buckhorn, 9
7774	Shirley, O. C., Knightstown	Davis Seed Corp., Lebanon, Ind.	C	99.50	......	90.00	2.00	1-35	......	None
	Medium Red Clover		F	99.36	0.20	86.50	1.00	4-36	414	Buckhorn, 54
7775	Shirley, O. C., Knightstown[81]	Davis Seed Corp., Lebanon, Ind.	C	99.25	......	80.00	10.00	2-36	......	None
	Medium Clover, Lot M612		F	97.34	0.44	81.50	2.50	4-36	5,148	Bracted plantain, 36; buckhorn, 162; common plantain, 108; curled dock, 117; horse nettle, 9; red sorrel, 9; wild carrot, 9; yellow trefoil, 18

7950	Springer & Sons, W. O., Greenwood[82]	Davis Seed Corp., Lebanon, Ind.	C	99.50		90.00	3.00	12-35		C None
	Mammoth Clover, Lot E596		F	99.50	0.22	58.00	0.50	5-36	162	F Buckhorn, 45; curled dock, 27
7249	Allan, J. P., Farmersburg	Dickinson Co., The Albert, Chicago, Ill.	C	99.48	. . .	84.00	14.00	1-36	. . . .	C None
	Pine Tree Red Clover, Lot 24230		F	99.32	0.20	89.50	4.50	3-36	509	F Buckhorn, 18; curled dock, 18; dodder, 5; yellow trefoil, 18
6961	†Armstrong-Landon Co., The, Kokomo	Dickinson Co., The Albert, Chicago, Ill.	C	99.06	. . .	74.00	22.00	11-35	. .	C None
	Medium Red Clover, Lot 1387		F	98.76	0.14	85.00	10.50	1-36	2,313	F Curled dock, 18; dodder, 9; yellow trefoil, 36
7285	Boonshot Hardware Co., Petersburg	Dickinson Co., The Albert, Chicago, Ill.	C	98.22	. . .	82.00	10.00	2-35	.	C Buckhorn, 64; curled dock, 16; dodder, 16; mustard, 32; red sorrel, 80
	Mammoth Clover, Lot 23155 #6		F	98.10	0.41	90.50	4.00	3-36	1,638	F Buckhorn, 126; Canada thistle, 9; dodder, 54; mustard, 90; red sorrel, 135; yellow trefoil, 54
7054	Clay Co. Farm Bureau Co-op. Ass'n, Inc., Clay City	Dickinson Co., The Albert, Chicago, Ill.	C	99.02	. . . . .	80.00	13.00	1-36	. .	C None
	Red Clover, Lot 24215		F	99.10	0.02	85.00	8.00	2-36	1,350	F None
7275	Griffin Hardware, Carlisle	Dickinson Co., The Albert, Chicago, Ill.	C	99.08	. . .	80.00	14.00	1-36	. .	C None
	Clover, Lot 24239		F	99.08	0.00	94.00	4.00	3-36	2,975	F Dodder, 5
6843	Hagerman & Co., H. J., South Bend	Dickinson Co., The Albert, Chicago, Ill.	C	99.34	. . .	85.00	5.00	8-35	. . .	C None
	Medium Red Clover, Lot 24115		F	99.04	0.20	83.00	6.50	9-35	756	F yellow trefoil, 36
7744	Naber & Co., Chas. F., Alexandria	Dickinson Co., The Albert, Chicago, Ill.	C	97.38	. .	76.00	19.00	2-36		C Yellow trefoil, 192
	Red Clover, Lot 024262		F	97.85	0.60	82.00	7.50	4-36	4,617	F Curled dock, 27
7604	Nappanee Milling Co., Nappanee[83]	Dickinson Co., The Albert, Chicago, Ill.	C	99.00		90.00	10.00	2-36	.	C None
	Red Clover, Lot 24270		F	99.88	0.10	96.50	0.50	3-36	9	F Buckhorn, 9
7255	Riggs & Son, W. G., Sullivan	Dickinson Co., The Albert, Chicago, Ill.	C	99.24	. .	82.00	12.00	1-36	.	C None
	Medium Clover, Lot 24203		F	99.10	0.22	84.50	5.50	3-36	1,260	F Bracted plantain, 18; buckhorn, 27; curled dock, 18; yellow trefoil, 27
7072	Standard Hatcheries, Terre Haute[81]	Dickinson Co., The Albert, Chicago, Ill.	C	99.24		82.00	12.00	1-36	. . .	C None
	Pine Tree Red Clover, Lot 24203		F	98.84	0.16	84.50	9.50	2-36	1,386	F Curled dock, 9; red sorrel, 27
8045	Goodland Grain Co., Goodland	Evans & Hedworth, Remington, Ind.	C	98.16		95.00		1-36		C None
	Medium Clover		F	99.32	0.52	94.00	1.50	5-36	189	F Buckhorn, 9
7620	Farmers Co-op. Co., Monterey[85]	Farmers Co-op. Co., Monterey, Ind.	C	96.00	. . . . .	90.00	2.00	3-36	. . . .	C Bracted plantain, 1,080; buckhorn, 590; common plantain, 90; curled dock, 540; red sorrel, 20,430
	Mammoth Clover		F	95.99	0.24	90.00	4.00	3-36	23,166	F Bracted plantain, 549; buckhorn, 450; common plantain, 180; curled dock, 207; red sorrel, 21,240
7223	Farmers Co-op. Elevator Co., Seymour[86]	Farmers Co-op. Elevator Co., Seymour, Ind.	C	97.48	. . . .	88.00	6.50	2-36	. . . . .	C Buckhorn, 7,920; dodder, 60
	Red Clover		F	93.39	0.65	82.00	11.00	3-36	21,222	F Bracted plantain, 9; buckhorn, 11,880; curled dock, 18; dodder, 216; horse nettle, 81; red sorrel, 18
7584	Fisher Seed & Feed Store, Columbia City[87]	Fisher Seed & Feed Store, Columbia City, Ind.	C	98.00	. . .	. . . . . .	. . .	. . . . .	. . . .	C
	Medium Red Clover, Lot 40		F	99.38	0.20	77.50	15.50	3-36	1,359	F Buckhorn, 360; common plantain, 990; curled dock, 9

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*Not labeled with official Indiana State Labels.
†Certified by retailer.
| C and F stands, respectively, for Claimed and Found.
[80] Removed from sale. Misbranded. Relabeled.
[81] Removed from sale. Misbranded. Relabeled and sold.
[82] Removed from sale. Misbranded. All sold.
[83] Not tagged. Labels furnished.
[84] Not tagged. Labels furnished.
[85] Tag incomplete. Labels furnished.
[86] Removed from sale. Misbranded.
[87] Tag incomplete. Removed from sale. Misbranded.

TABLE 8—Red Clover—Continued

Laboratory No. S.	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, Per Cent	Inert Matter, Per Cent	Germination, Per Cent	Hard Seeds, Per Cent	Date of Germination	Total Number Weed Seeds Per Lb. of Seeds	Number per Pound of Each of the Noxiou Weed Seeds Specified in the Law
7892	†Noragon & Son, Butler	Flower & Co., S. W., Toledo, Ohio	C	99.25	......	78.00	17.00	1-36	......	C None
	Medium Clover, Lot R7		F	98.98	0.32	86.00	13.50	5-36	1,530	F None
7155	Amo Milling Co., Amo	Foster-Kendall Co., Carmel, Ind.	C	91.70	.....	87.00	4.00	12-35	...	C None
	Medium Red Clover, Lot Rych		F	91.18	0.34	77.00	2.00	3-36	837	F Buckhorn, 45; dodder, 18; mustard, 9; red sorrel, 45; yellow trefoil, 90
7755	Cohee & Clark, Kempton	Foster-Kendall Co., Carmel, Ind.	C	99.50	..	84.00	10.00	1-36	....	C None
	Mammoth Red Clover, Lot Kempton		F	99.62	0.34	88.50	4.00	5-36	18	F Buckhorn, 18
7763	Cohee & Clark, Kempton	Foster-Kendall Co., Carmel, Ind.	C	98.88	.	85.00	10.00	1-36	.	C None
	Medium Red Clover, Lot Kempton		F	98.78	0.46	78.50	12.00	4-36	1,098	F Buckhorn, 9; curled dock, 36; yellow trefoil, 9
7503	Decatur Co. Co-op. Co., Greensburg	Foster-Kendall Co., Carmel, Ind.	C	99.50		80.00	12.00	12-35		C None
	Medium Red Clover		F	99.26	0.24	81.50	13.00	4-36	1,251	F Curled dock, 9; prickly lettuce, 9; yellow trefoil, 243
7504	Decatur Co. Co-op. Co., Greensburg	Foster-Kendall Co., Carmel, Ind.	C	99.90	......	85.00	10.00	12-35	. .	C None
	Mammoth Red Clover		F	99.82	0.16	91.00	5.00	4-36	99	F Curled dock, 9
7200	Farmers Co-op. Co., Yorktown	Foster-Kendall Co., Carmel, Ind.	C	99.25	......	78.00	17.00	12-35	....	C None
	Medium Red Clover, Lot 465		F	99.52	0.10	88.50	8.50	3-36	954	F Curled dock, 9; dodder, 9; red sorrel, 9; yellow trefoil, 27
7766	Farmers Grain & Supply Co., Windfall	Foster-Kendall Co., Carmel, Ind.	C	99.25	...	80.00	14.00	1-36	.	C None
	Medium Clover		F	99.06	0.38	78.50	12.50	4-36	243	F Common plantain, 9; red sorrel, 45; yellow trefoil, 9
7751	Markin, Ray, Eaton	Foster-Kendall Co., Carmel, Ind.	C	99.25	......	78.00	17.00	12-35	....	C None
	Medium Red Clover		F	99.09	0.28	77.50	10.00	4-36	1,899	F Curled dock, 9
8051	Mulberry Grain Co., Mulberry[88]	Foster-Kendall Co., Carmel, Ind.	C	98.70	......	85.00	2.00	12-35	.....	C None
	Medium Red Clover		F	98.54	0.20	79.50	6.00	4-36	1,260	F None
7020	Pritchard & Rafert, Inc., Pendleton	Foster-Kendall Co., Carmel, Ind.	C	99.20	.....	75.00	20.00	1-36		C None
	Medium Red Clover, Lot 453		F	99.03	0.19	69.50	29.00	2-36	1,575	F Dodder, 9; yellow trefoil, 36
7118	Rush Co. Hatchery, Rushville	Foster-Kendall Co., Carmel, Ind.	C	99.25	......	78.00	17.00	12-35	.	C None
	Medium Red Clover, Lot Rushville		F	99.26	0.28	84.00	13.00	3-36	1,292	F Curled dock, 9; dodder, 5; yellow trefoil, 18
7119	Rush Co. Hatchery, Rushville	Foster-Kendall Co., Carmel, Ind.	C	99.80	......	90.00	2.00	12-35	......	C None
	Medium Red Clover		F	99.82	0.08	92.50	3.00	3-36	270	F None
7120	Rush Co. Hatchery, Rushville	Foster-Kendall Co., Carmel, Ind.	C	99.80	......	85.00	5.00	12-35	......	C None
	Mammoth Red Clover		F	99.70	0.16	96.00	0.50	3-36	378	F Buckhorn, 27; curled dock, 18; red sorrel, 63
7713	Sellars Grain Co., Russiaville	Foster-Kendall Co., Carmel, Ind	C	99.35	....	78.00	17.00	12-35	.	C None
	Medium Red Clover, Lot 465		F	99.08	0.28	84.00	8.00	4-36	2,021	F Buckhorn, 18; dodder, 5; yellow trefoil, 18
7135	Shelby Co. Farm Bureau Co-op. Ass'n, Inc., Shelbyville	Foster-Kendall Co., Carmel, Ind.	C	99.25		75.00	20.00	12-35	....	C None
	Medium Red Clover, Lot Shelbyville		F	99.30	0.34	71.00	26.50	3-36	918	F Yellow trefoil, 108
7626	Standard Elevator Co., Kewanna	Foster-Kendall Co., Carmel, Ind.	C	99.20	....	85.00	10.00	1-36		C None
	Medium Red Clover		F	98.87	0.26	83.00	2.50	4-36	558	F Buckhorn, 9; red sorrel, 9

7191	Standard Elevator Co., Lapel	Foster-Kendall Co., Carmel, Ind.	C	99.80	.....	85.00	5.00	12-35	...	C None
	Medium Red Clover		F	99.84	0.08	91.50	5.00	3-36	216	F Curled dock, 18; red sorrel, 18
7803	Goodrich Bros. Co., Westfield	Goodrich Bros. Co., Westfield, Ind.	C	99.26	....	78.00	0.00	2-36	...	C Buckhorn, 270; dodder, 90
	Medium Clover, Lot 14		F	99.04	0.60	73.50	5.00	5-36	756	F Buckhorn, 216
7188	Goodrich Bros. Co., Noblesville	Goodrich Bros. Co., Winchester, Ind.	C	99.25	......	90.00	..	1-36	.	C Buckhorn, 450
	Medium Clover, Lot Quail		F	98.86	0.24	89.50	2.00	3-36	905	F Buckhorn, 405; common plantain, 27; dodder, 5; wild carrot, 18
7193	Goodrich Bros. Co., Noblesville	Goodrich Bros. Co., Winchester, Ind.	C	96.70	......	90.00	...	1-36		C Buckhorn, 720; common plantain, 180; curled dock, 180
	Medium Clover, Lot "Phil"		F	94.46	1.64	85.50	5.50	3-36	4,581	F Buckhorn, 1,080; common plantain, 270; curled dock, 126; red sorrel, 27; wild carrot, 18
7101	New Palestine Elevator Co., New Palestine	Goodrich Bros. Co., Winchester, Ind.	C	99.50	...	92.00	0.00	1-36	...	C None
	Medium Clover, Lot Lark		F	99.52	0.08	83.50	9.00	3-36	855	F Buckhorn, 18; curled dock, 9; red sorrel, 18
6954	Habig Bros., Indianapolis	Habig Bros., Indianapolis, Ind.	C	99.30	..	91.50	1.50	3-35	.	C Buckhorn, 630; common plantain, 810; horse nettle 180
	Red Clover, Lot Dennis		F	99.44	0.34	89.50	5.00	1-36	1,332	F Buckhorn, 567; common plantain, 684; horse nettle, 81
7462	Haldeman-Baum Co., Akron[89]	Haldeman-Baum Co., Akron, Ind.	C	99.30	...	86.00	6.00	1-36	.	C Buckhorn, 810; common plantain, 90; curled dock, 90
	Medium Clover, Lot A		F	99.56	0.12	89.50	4.50	4-36	1,197	F Bracted plantain, 9; buckhorn, 621; common plantain, 27; curled dock, 27; dodder, 126; red sorrel, 117
7330	Poseyville Grain & Feed Co., Poseyville	Heldt Co., The, Evansville, Ind.	C	97.65	..	90.00	4.00	2-36	.	C Bracted plantain, 18; buckhorn, 4,177; common plantain, 2,610; curled dock, 18
	Red Clover, Lot 3347		F	98.45	0.14	93.00	3.50	3-36	5,603	F Bracted plantain, 18; buckhorn, 2,970; common plantain, 1,800; dodder, 5
7300	Schultheis, A. M., Haubstadt	Heldt Co., The, Evansville, Ind.	C	98.51	....	94.00	2.00	12-35	.	C Buckhorn, 5,634; common plantain, 9; curled dock, 9
	Medium Red Clover, Lot 3190		F	98.29	0.12	84.50	2.50	4-36	5,940	F Buckhorn, 5,310
7606	Milford Grain & Milling Co., Milford	Hirsch & Sons, Henry, Toledo, Ohio	C	96.06	....	83.00	15.00	9-35	.	C None
	Medium Red Clover, Lot 296		F	98.61	0.12	83.00	10.50	4-36	941	F Buckhorn, 9; dodder, 5; yellow trefoil, 27
7876	Walter Grain Co., Auburn	Hirsch & Sons, Henry, Toledo, Ohio	C	99.18	......	80.00	12.00	2-36	. .	C None
	Medium Red Clover, Lot 1226		F	99.24	0.22	78.00	20.50	5-36	1,548	F Mustard, 18; yellow trefoil .990
6934	Sedalia Elevator, Sedalia	Hooton-Davis Seed Corp., Lebanon, Ind.	C	99.50	....	84.00	......	11-35		C None
	Medium Red Clover, Lot M 537		F	99.42	0.26	93.50	1.00	12-35	140	F Buckhorn, 9; curled dock, 36; dodder, 5
7929	Rudy Huston Grain Co., St. Bernice[90]	Rudy Huston Grain Co., Paris, Ill.	C	...	...	.....	.....	..		C
	Clover		F	99.18	0.60	85.50	8.00	4-36	819	F Buckhorn, 9
7858	Allen Co. Farm Bureau Co-op. Ass'n, Inc., Ft. Wayne	Indiana Farm Bureau Co-op. Ass'n, Inc., Indianapolis, Ind.	C	99.70	.	85.00	10.00	12-35	...	C None
	Medium Red Clover, Lot 2-1061		F	99.51	0.14	80.50	5.00	5-36	9	F Buckhorn, 9
7386	Daviess Co. Farm Bureau Co-op. Ass'n, Inc., Washington	Indiana Farm Bureau Co-op. Ass'n, Inc. Indianapolis, Ind.	C	99.70	.....	85.00	10.00	1-36	..	C None
	Medium Clover, Lot 2-1395		F	99.72	0.10	91.50	1.00	4-36	108	F Buckhorn, 108
7522	Dearborn Co. Farm Bureau Co-op. Ass'n, Inc., Aurora	Indiana Farm Bureau Co-op, Ass'n, Inc., Indianapolis, Ind.	C	99.70	....	85.00	10.00	1-36	....	C None
	Mammoth Red Clover, Lot 2-1408		F	99.74	0.10	85.00	1.00	4-36	81	F Buckhorn, 63; curled dock, 9; red sorrel, 9

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*Not labeled with official Indiana State Labels.

†Certified by retailer.

C and F stands, respectively, for Claimed and Found.

[88] Sample secured from A. F. Kluth, Lafayette, Ind.

[89] Removed from sale. Misbranded.

[90] Not tagged. Removed to Paris, Ill., warehouse.

TABLE 8—Red Clover—Continued

Laboratory No. S.	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor	Purity, Per Cent	Inert Matter, Per Cent	Germination, Per Cent	Hard Seeds, Per Cent	Date of Germination	Total Number Weed Seeds Per Lb. of Seeds	Number per Pound of Each of the Noxious Weed Seeds Specified in the Law
7540	Dearborn Co. Farm Bureau Co-op. Ass'n, Inc., Aurora	Indiana Farm Bureau Co-op. Ass'n, Inc. Indianapolis, Ind.	C 99.70		85.00	10.00	1-36		C None
	Medium Red Clover, Lot 2-1395		F 99.48	0.12	84.50	1.50	4-36	117	F Buckhorn, 117
7232	Farm Bureau Service, Columbus	Indiana Farm Bureau Co-op. Ass'n, Inc., Indianapolis, Ind.	C 99.50	...	85.00	10.00	12-35	..	C None
	Mammoth Clover, Lot 2-1351		F 99.58	0.16	87.00	2.00	3-36	198	F Buckhorn, 18; curled dock, 54; red sorrel, 36
7083	Fayette Co. Farm Bureau Co-op. Ass'n, Inc., Connersville[91]	Indiana Farm Bureau Co-op. Ass'n, Inc., Indianapolis, Ind.	C 99.98	....	84.00	10.00	12-35	..	C None
	Mammoth Clover, Lot 2-1130		F 99.92	0.08	89.00	4.00	2-36	9	F Curled dock, 9
7084	Fayette Co. Farm Bureau Co-op. Ass'n, Inc., Connersville[92]	Indiana Farm Bureau Co-op. Ass'n, Inc., Indianapolis, Ind.	C 99.98	....	84.00	11.00	12-35		C None
	Medium Red Clover, Lot 2-1131		F 100.00	0.00	94.50	2.00	2-36		F None
8002	Hancock Co. Farm Bureau Co-op. Ass'n, Inc., Greenfield	Indiana Farm Bureau Co-op. Ass'n, Inc., Indianapolis, Ind.	C 99.50	....	85.00	10.00	2-36		C None
	Mammoth Clover, Lot 2-1430		F 99.36	0.08	92.00	2.00	5-36		F None
7835	Huntington Co. Farm Bureau Co-op. Ass'n, Inc., Huntington	Indiana Farm Bureau Co-op. Ass'n, Inc., Indianapolis, Ind.	C 99.50	......	85.00	10.00	1-36	..	C None
	Medium Red Clover, Lot 2-1085		F 99.68	0.06	89.50	3.00	5-36	54	F Buckhorn, 54
7236	Johnson Co. Farm Bureau Co-op. Ass'n, Inc., Franklin	Indiana Farm Bureau Co-op. Ass'n, Inc., Indianapolis, Ind.	C 99.70	.....	85.00	10.00	12-35	..	C None
	Medium Red Clover, Lot 2-1373		F 99.80	0.00	88.50	1.00	3-36	9	F Buckhorn, 9
7597	Kosciusko Co. Farm Bureau Co-op. Ass'n, Inc., Warsaw	Indiana Farm Bureau Co-op. Ass'n, Inc., Indianapolis, Ind.	C 99.70	.....	85.00	10.00	1-36	....	C None
	Medium Red Clover, Lot 2-1395		F 99.62	0.10	86.50	1.50	4-36	198	F Buckhorn, 108
7265	Knox Co. Farm Bureau Co-op. Ass'n, Inc., Vincennes	Indiana Farm Bureau Co-op. Ass'n, Inc., Indianapolis, Ind.	C 99.50	.....	85.00	10.00	12-35	......	C None
	Mammoth Clover, Lot 2-1351		F 99.60	0.16	85.50	3.50	3-36	99	F Red sorrel, 9
7280	Knox Co. Farm Bureau Co-op. Ass'n, Inc., Vincennes	Indiana Farm Bureau Co-op. Ass'n, Inc., Indianapolis, Ind.	C 99.70	......	85.00	10.00	12-35	......	C None
	Medium Red Clover, Lot 2-1373		F 99.72	0.02	89.50	3.50	3-36	9	F Buckhorn, 9
7559	LaPorte Co. Farm Bureau Co-op. Ass'n, Inc., LaPorte	Indiana Farm Bureau Co-op. Ass'n, Inc., Indianapolis, Ind.	C 99.70	......	85.00	10.00	1-36	......	C None
	Medium Red Clover, Lot 2-1395		F 99.80	0.06	81.50	3.50	4-36	36	F Buckhorn, 36
7657	Ripley Co. Farm Bureau Co-op. Ass'n, Inc., Osgood	Indiana Farm Bureau Co-op. Ass'n, Inc., Indianapolis, Ind.	C 99.70	......	85.00	10.00	12-35	......	C None
	Mammoth Clover, Lot 2-1351		F 99.54	0.04	84.50	0.50	4-36	270	F Buckhorn, 27; curled dock, 27; red sorrel, 36
7273	Sullivan Co. Farm Bureau Co-op. Ass'n, Inc., Sullivan	Indiana Farm Bureau Co-op. Ass'n, Inc., Indianapolis, Ind.	C 99.70	......	85.00	10.00	12-35	......	C None
	Medium Red Clover, Lot 2-1373		F 99.92	0.04	85.50	1.00	3-36	99	F Buckhorn, 9

7027	Tippecanoe Co. Farm Bureau Co-op. Ass'n, Inc., Lafayette Mammoth Clover, Lot 2-1351	Indiana Farm Bureau Co-op. Ass'n, Inc., Indianapolis, Ind.	C	99.50	......	85.00	10.00	12-35	...	C None
			F	99.54	0.10	90.00	1.50	2-36	243	F Buckhorn, 63; curled dock, 27; red sorrel, 63
7302	Adams & Morrow, Inc., Princeton Medium Clover, Lot I-494	Indiana Seed Co., Indianapolis, Ind.	C	99.60	......	83.00	8.00	12-35	......	C None
			F	99.94	0.04	82.00	5.50	3-36	81	F Buckhorn, 63; curled dock, 18
7303	Adams & Morrow, Inc., Princeton Medium Clover, Lot B-781	Indiana Seed Co., Indianapolis, Ind.	C	99.75	.....	84.00	6.00	1-36	....	C None
			F	99.96	0.02	83.50	4.00	3-36	36	F Buckhorn, 18; curled dock, 18
7712	Armstrong-Landon Co., The, Kokomo Medium Clover, Lot B-1902	Indiana Seed Co., Indianapolis, Ind.	C	95.46	....	82.00	10.00	2-36	.....	C None
			F	96.87	0.00	92.00	3.50	4-36	293	F Buckhorn, 18; curled dock, 18; dodder, 14 yellow trefoil, 63
7081	Chance Bros., Connersville Medium Clover, Lot I-1383	Indiana Seed Co., Indianapolis, Ind.	C	99.60	...	84.00	6.00	1-36	...	C None
			F	99.62	0.18	86.50	0.50	3-36	90	F None
7930	†Dana Elevator Co., Dana Medium Clover, Lot B-1838	Indiana Seed Co., Indianapolis, Ind.	C	99.50	...	86.00	6.00	1-36	....	C None
			F	99.54	0.20	91.50	5.00	5-36	369	F Buckhorn, 9
6821	Farmers Co-op. Co., Southport Medium Clover, Lot I-500	Indiana Seed Co., Indianapolis, Ind.	C	99.50	...	81.00	11.00	3-35	.....	C None
			F	99.85	0.05	95.00	0.00	9-35	243	F Buckhorn, 18
7753	Frankfort Electric Hatchery, Frankfort Medium Clover, Lot I-1322	Indiana Seed Co., Indianapolis, Ind.	C	99.50	....	80.00	12.00	2-36	...	C None
			F	99.64	0.08	76.00	4.50	4-36	405	F Buckhorn, 27; dodder, 9; yellow trefoil, 9
8003	Furry, V. H., Greenfield Medium Clover, Lot I-1822	Indiana Seed Co., Indianapolis, Ind.	C	98.12	......	86.00	6.00	2-36	.	C None
			F	98.38	0.10	92.50	2.00	5-36	270	F None
7103	Indiana Grain Producers Ass'n, Fountaintown Medium Clover, Lot B-781	Indiana Seed Co., Indianapolis, Ind.	C	99.75	......	84.00	6.00	12-35	...	C None
			F	99.88	0.12	84.00	6.50	3-36	54	F Buckhorn, 45; curled dock, 9
7133	Indiana Grain Producers, Inc., Shelbyville Medium Clover, Lot B-781	Indiana Seed Co., Indianapolis, Ind.	C	99.75	......	84.00	6.00	1-36	....	C None
			F	99.78	0.20	83.00	6.00	3-36	....	F None
7032	Karsell Co., Inc., The, Bloomington Medium Clover, Lot B-781	Indiana Seed Co., Indianapolis, Ind.	C	99.75	......	84.00	6.00	1-36	.	C None
			F	99.84	0.08	85.50	3.00	2-36	225	F Buckhorn, 45
7034	Karsell Co., Inc., The, Bloomington Mammoth Clover, Lot I-528	Indiana Seed Co., Indianapolis, Ind.	C	99.50	....	82.00	10.00	12-35	. .	C None
			F	99.52	0.08	84.00	8.50	2-36	513	F Bracted plantain, 90; buckhorn, 36; curled dock, 81; red sorrel, 36
7498	Nading Grain Co., Wm., Greensburg Mammoth Clover, Lot I-528	Indiana Seed Co., Indianapolis, Ind.	C	99.60	.....	84.00	8.00	1-36	....	C None
			F	99.96	0.00	94.00	0.50	4-36	9	F Curled dock, 9
7499	Nading Grain Co., Wm., Greensburg Medium Clover, Lot I-1320	Indiana Seed Co., Indianapolis, Ind.	C	99.50	....	82.00	9.00	2-36		C None
			F	99.78	0.20	84.00	7.00	4-36	63	F Buckhorn, 63
7216	Norman, G. M. & Roberts, Bedford Medium Clover, Lot R-305	Indiana Seed Co., Indianapolis, Ind.	C	99.12	.....	80.00	15.00	12-35	.	C None
			F	99.35	0.22	93.00	6.00	3-36	774	F Dodder, 9; yellow trefoil, 45
7802	Pritchard & Rafert, Inc., Pendleton Medium Clover, Lot R-305	Indiana Seed Co., Indianapolis, Ind.	C	99.12	.....	80.00	15.00	12-35		C None
			F	99.33	0.24	93.00	5.00	5-36	923	F Dodder, 23
7250	Riggs & Son, W. G., Sullivan Medium Clover, Lot R-305	Indiana Seed Co., Indianapolis, Ind.	C	99.50	......	80.00	15.00	12-35		C None
			F	99.40	0.30	94.50	4.50	3-36	554	F Dodder, 5; yellow trefoil, 9
7251	Riggs & Son, W. G., Sullivan Medium Clover, Lot B-781	Indiana Seed Co., Indianapolis, Ind.	C	99.75	......	84.00	6.00	12-35	. . .	C None
			F	99.88	0.06	84.50	2.50	3-36	189	F Buckhorn, 9
8013	Risk, C. B., Knightstown Medium Clover, Lot I-1339	Indiana Seed Co., Indianapolis, Ind.	C	99.00	......	84.00	6.00	2-36		C None
			F	99.08	0.02	86.50	4.50	5-36	297	F Buckhorn, 27
7113	†Rush Service Co., Inc., The, Rushville Mammoth Clover, Lot I-566	Indiana Seed Co., Indianapolis, Ind.	C	99.50	......	82.00	9.00	12-35	......	C None
			F	98.96	0.26	94.00	3.50	3-36	99	F Buckhorn, 27; curled dock, 72
7115	†Rush Service Co., Inc., The, Rushville Medium Clover, Lot MR33	Indiana Seed Co., Indianapolis, Ind.	C	99.50	......	81.00	11.00	11-35	......	C None
			F	99.38	0.02	93.00	1.00	3-36	648	F Dodder, 9; yellow trefoil, 9

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*Not labeled with official Indiana State Labels.
†Certified by retailer.
C and F stands, respectively, for Claimed and Found.

[91] Tag incomplete. Labels furnished.
[92] Tag incomplete. Labels furnished.

TABLE 8—Red Clover—Continued

Laboratory No. S.	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor	Purity, Per Cent	Inert Matter Per Cent	Germination, Per Cent	Hard Seeds, Per Cent	Date of Germination	Total Number Weed Seeds Per Lb. of Seeds	Number per Pound of Each of the Noxious Weed Seeds Specified in the Law
7022	Sanders, O. D., Newcastle	Indiana Seed Co., Indianapolis, Ind. C	99.50	....	88.00	6.00	1-35		C None
	Mammoth Clover, Lot I-571	F	99.54	0.16	88.50	3.00	2-36	81	F Buckhorn, 18; curled dock, 63
7943	†Kenworthy & Son, Paragon[93]	Kenworthy & Son, Monrovia, Ind. C	99.50	....	84.00	8.50	3-36	...	C Buckhorn, 90; curled dock, 90
	English Clover, Lot 34	F	99.74	0.12	86.50	8.50	4-36	162	F Buckhorn, 18; curled dock, 54
7918	Home Grain Co., Lagrange[94]	Kraus, Sam, Ft. Wayne, Ind. C	99.00	..	94.00	.	1-34	...	C None
	Medium Clover	F	97.63	0.60	86.00	6.00	4-36	2,349	F Curled dock, 9
7915	Lima Elevator Co., Howe[95]	Kraus, Sam, Ft. Wayne, Ind. C	99.00	....	83.00	13.00	2-36	..	C None
	Medium Clover, Lot O	F	98.04	0.50	68.50	21.50	5-36	2,498	F Curled dock, 36; dodder, 5; yellow trefoil, 27
7917	Wolcottville Elevator Co., Wolcottville[96]	Kraus, Sam, Ft. Wayne, Ind. C	99.00	....	83.00	13.00	2-36		C None
	Medium Clover, Lot OM	F	97.49	0.52	65.00	31.00	5-36	2,394	F Curled dock, 27; yellow trefoil, 27
7944	Laffary, Willard, Martinsville[97]	Laffary, Willard, Martinsville, Ind. C	....	....	....	....	.	.	C
	Big English Clover	F	98.04	0.80	80.50	5.50	4-36	2,682	F Bracted plantain, 90; buckhorn, 2,070; common plantain, 189; curled dock, 90; red sorrel, 9; wild carrot, 54
7672	Jefferson Co. Farm Bureau Co-op. Ass'n, Inc., Madison	Lewis Implement & Seed Co., Louisville, Ky. C	98.50	....	85.00	5.00	1-36	.	C Curled dock, 80
	Red Bird Sapling Clover, Lot 212	F	98.37	0.28	83.50	1.00	4-36	846	F Buckhorn, 45; red sorrel, 81
7673	Jefferson Co. Farm Bureau Co-op. Ass'n, Inc., Madison[98]	Lewis Implement & Seed Co., Louisville, Ky. C	99.00	....	90.00	....	12-35	.	C Buckhorn, 288
	Red Bird Red Clover, Lot 333	F	98.84	0.20	73.50	1.50	4-36	1,188	F Buckhorn, 153; curled dock, 27; dodder, 9 yellow trefoil, 9
7321	McCarty Seed Co., J. A., Evansville	McCarty Seed Co., J. A., Evansville, Ind. C	99.17	....	88.00	8.00	2-36	.	C Bracted plantain, 9; buckhorn, 261; common plantain, 9; curled dock, 18; dodder, 9; red sorrel, 18
	Red Star Red Clover, Lot 3922	F	98.96	0.28	88.00	1.00	3-36	1,463	F Buckhorn, 342; curled dock, 36; dodder, 5
7286	Pike Co. Farm Bureau Co-op. Ass'n, Inc., Petersburg	McCarty Seed Co., J. A., Evansville, Ind. C	99.17	....	88.00	6.00	2-36	.	C Bracted plantain, 9; buckhorn, 261; common plantain, 9; curled dock, 18; dodder, 9; red sorrel, 18
	Lucky Jim Red Clover, Lot 3922	F	99.48	0.28	91.00	3.50	3-36	851	F Bracted plantain, 18; buckhorn, 198; common plantain, 45; curled dock, 27; dodder, 5; red sorrel, 18
7529	Sawdon, R. A., Aurora	McCullough Seed Co., The J. Chas., Cincinnati, Ohio C	99.50	....	88.00	8.00	1-36	....	C None
	Domestic Red Clover, Lot 3009	F	98.96	0.26	84.00	4.00	4-36	1,224	F Buckhorn, 54
7109	Indiana Grain Producers Ass'n, Morristown	McCullough's Sons Co., The J. M., Cincinnati, Ohio C	99.64	....	85.00	5.00	11-35	.	C None
	Red Clover, Lot 400	F	99.60	0.12	83.50	1.00	3-36	225	F Buckhorn, 36; red sorrel, 9
7145	Indiana Grain Producers, Inc., Shelbyville	McCullough's Sons Co., The J. M., Cincinnati, Ohio C	99.64	....	85.00	5.00	11-35	..	C None
	Red Clover, Lot 400	F	99.44	0.12	82.00	0.50	3-36	324	F Buckhorn, 54

7556	McMahan Seed Co., LaPorte Medium Red Clover	McMahan Seed Co., LaPorte, Ind.	C	99.40	...	88.00	6.00	12-35	...	None
			F	99.20	0.44	79.50	14.00	4-36	1,125	Bracted plantain, 9; buckhorn, 54; common plantain, 36; red sorrel, 36
7580	McMahan Seed Co., Valparaiso Medium Red Clover, Lot E. F.	McMahan Seed Co., Valparaiso, Ind.	C	99.50	...	89.00	6.00	2-36	...	None
			F	98.92	0.80	79.00	4.00	3-36	513	Bracted plantain, 45; buckhorn, 72; common plantain, 63; red sorrel, 153
7126	Franklin Co. Farm Bureau Co-op. Ass'n, Inc., Brookville Mammoth Clover, Lot 116	Market Gardeners' Seed Co., Cincinnati, O.	C	99.30	...	89.00	4.00	11-35	...	Buckhorn, 208; curled dock, 128; dodder, 16
			F	99.40	0.18	92.50	2.00	2-36	702	Buckhorn, 324; common plantain, 72; curled dock 54; dodder, 63; wild carrot, 9
7127	Franklin Co. Farm Bureau Co-op. Ass'n, Inc., Brookville Red Clover, Lot 31	Market Gardeners' Seed Co., Cincinnati, O.	C	99.29	...	85.00	7.00	7-35	...	Buckhorn, 128
			F	98.73	0.20	96.00	0.50	2-36	86	Buckhorn, 27; common plantain, 54; dodder, 5
7107	Indiana Grain Producers Ass'n, Morristown Sapling Clover, Lot 116	Market Gardeners' Seed Co., Cincinnati, O.	C	99.30		89.00	4.00	11-35		Buckhorn, 208; curled dock, 128; dodder, 16
			F	99.43	0.14	91.00	2.50	2-36	846	Buckhorn, 198; common plantain, 45; curled dock, 54; dodder, 90; horse nettle, 9
7108	Indiana Grain Producers Ass'n, Morristown Red Clover, Lot 39	Market Gardeners' Seed Co., Cincinnati, O.	C	99.50	...	87.00	4.00	12-35	...	Buckhorn, 240; curled dock, 88; red sorrel, 40
			F	99.26	0.24	92.00	3.50	2-36	531	Buckhorn, 180; common plantain, 45; red sorrel, 36
7506	Kaiser, W. F., Harrison Red Clover, Lot 99	Market Gardeners' Seed Co., Cincinnati, O.	C	99.45	...	88.00	8.00	11-35	...	Buckhorn, 432; curled dock, 32; dodder, 48
			F	99.72	0.12	84.00	8.50	3-36	630	Buckhorn, 432; common plantain, 9; red sorrel, 9
7648	Milan Milling Co., Milan[99] Sapling Clover, Lot 117	Market Gardeners' Seed Co., Cincinnati, O.	C	93.60	...	85.00	6.00	1-36	...	Buckhorn, 2,736; common plantain, 1,264; dodder, 720; wild carrot, 472
			F	93.03	1.28	81.00	2.50	3-36	12,177	Buckhorn, 4,590; common plantain, 3,600; curled dock, 45; dodder, 1,440; horse nettle, 72; wild carrot, 1,260
7649	Milan Milling Co., Milan Red Clover, Lot 42	Market Gardeners' Seed Co., Cincinnati, O.	C	98.40	...	80.00	10.00	1-36	...	Buckhorn, 232; curled dock, 168; dodder, 184
			F	98.45	0.50	90.00	2.00	3-36	954	Buckhorn, 315; curled dock, 180; dodder, 252; mustard, 9; yellow trefoil, 18
7146	Martin Hardware Co., Clayton Medium Red Clover, Lot R-14	Martin Hardware Co., Clayton, Ind.	C	99.42	...	88.00	7.00	1-36	...	Horse nettle, 90
			F	99.24	0.62	82.00	14.00	3-36	666	Horse nettle, 216
7147	Martin Hardware Co., Clayton Mammoth Clover, Lot M-10	Martin Hardware Co., Clayton, Ind.	C	99.02	...	88.00	7.00	1-36		Buckhorn, 181; curled dock, 362
			F	98.37	1.15	83.00	4.00	3-36	1,080	Buckhorn, 342; curled dock, 288
7087	Miller Grain Co., Bainbridge Mammoth Clover, Lot 1	Miller Grain Co., Bainbridge, Ind.	C	99.25	...	91.00	1.00	2-36	...	None
			F	98.72	0.88	90.00	3.50	3-36	72	Buckhorn, 18; common plantain, 45; curled dock, 9
7090	Miller Grain Co., Bainbridge Medium Clover, Lot A	Miller Grain Co., Bainbridge, Ind.	C	99.50	...	90.00	2.00	1-36	...	None
			F	99.74	0.16	98.50	0.50	3-36	135	Buckhorn, 45
7782	Young & Cox, Richmond Little Red Clover, Lot 2265	New Paris Elevator Co., New Paris, Ohio.	C	99.30	...	90.00	4.00	1-36	...	None
			F	98.88	0.34	89.50	1.50	4-36	1,080	Buckhorn, 378; common plantain, 144; curled dock, 9; wild carrot, 9

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*Not labeled with official Indiana State Labels.
†Certified by retailer.
C and F stands, respectively, for Claimed and Found.
[93] Not tagged. Labels furnished.
[94] Removed from sale. Misbranded. Relabeled.
[95] Removed from sale. Misbranded. All sold.
[96] Removed from sale. Misbranded. All sold.
[97] Not tagged. Removed from sale.
[98] Removed from sale. Misbranded. All Sold.
[99] Removed from sale. Misbranded. Returned to distributor.

TABLE 8—Red Clover—Continued

Laboratory No. S.	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, Per Cent	Inert Matter, Per Cent	Germination, Per Cent	Hard Seeds, Per Cent	Date of Germination	Total Number Weed Seeds Per Lb. of Seeds	Number per Pound of Each of the Noxious Weed Seeds Specified in the Law
7783	Young & Cox, Richmond[100]	New Paris Elevator Co., New Paris, Ohio	C	97.92	.....	80.00	10.00	1–36	......	C None
	Little Red Clover, Lot NP3		F	97.83	0.24	88 00	2.50	4–36	4,986	F Buckhorn, 1,710; common plantain, 27; curled dock, 18; dodder, 54; wild carrot, 27
7905	Middlebury Grain Co., Middlebury	Olds Seed Co., L. L., Madison, Wis.	C	99.00	......	89.00	8.00	2–36	......	C None
	Medium Red Clover, Lot Clark		F	98.41	0.26	86.50	7.00	5–36	3,069	F Chicory, 9; yellow trefoil, 900
8042	Tuholski, A. A., Michigan City	Olds Seed Co., L. L., Madison, Wis.	C	98.40	......	87.00	10.00	2–36	......	C None
	Medium Red Clover, Lot Pelineman		F	98 31	0.20	93.00	5.50	5–36	1,773	F Common plantain, 9; curled dock, 18; yellow trefoil, 36
8008	Pierce Elevator Co., The, Union City[101]	Pierce Elevator Co., The, Union City, Ind.	C	98 48	. .	85.00	....	3–36	. .	C Buckhorn, 360
	Medium Red Clover, Lot Power		F	99.10	0.20	87.00	6.50	4–36	2,232	F Buckhorn, 306; common plantain, 216; horse nettle, 9; wild carrot, 171
8016	Pierce Elevator Co., The, Union City[102]	Pierce Elevator Co., The, Union City, Ind.	C	98 30	.....	90.00	......	3–36	. ...	C Buckhorn, 1,350; common plantain, 360; curled dock, 540
	English Clover, Lot Welch Big		F	98.91	0.14	95.50	2.50	4–36	3,240	F Buckhorn, 990; chicory, 540; common plantain, 117; curled dock, 576; mustard, 18; wild carrot, 9
6801	Pritchard & Rafert, Inc., Pendleton[103]	Pritchard & Rafert, Inc., Pendleton, Ind.	C	99.50	......	88.00	7.00	2–35	.. ...	C None
	Red Clover, Lot 358		F	98.50	0.22	92.50	5.50	9–35	7,560	F Buckhorn, 3,690; common plantain, 2,250; dodder, 1,530; horse nettle, 9; prickly lettuce, 18; wild carrot, 63
7299	Ballard & Morganheimer, Haubstadt	Purcell Seed Co., Evansville, Ind.	C	99.06	......	80.00	5.00	2–36	.....	C Buckhorn, 423; curled dock. 45; red sorrel, 27
	"Tru Val" Red Clover, Lot 4907		F	98.68	0.28	88.50	5.00	3–36	2,376	F Bracted plantain, 18; buckhorn, 477; common plantain, 72; curled dock, 54; red sorrel, 45
7328	Poseyville Grain & Feed Co., Poseyville	Purcell Seed Co., Evansville, Ind.	C	99.16	......	85.00	5.00	2–36	......	C Bracted plantain, 27; buckhorn, 1,800
	"Tru Val" Red Clover, Lot 4858		F	98.92	0.24	87.00	5.00	3–36	2,898	F Bracted plantain, 72; buckhorn, 2,520; common plantain, 36
7314	Purcell Seed Co., Evansville	Purcell Seed Co., Evansville, Ind.	C	99.66	......	86.00	7.00	1–36	......	C Buckhorn, 27
	Red Clover, Lot 4781		F	99.60	0.28	92.00	5.00	3–36	387	F Buckhorn, 18; curled dock, 9
7340	Purcell Seed Co., Evansville	Purcell Seed Co., Evansville, Ind.	C	99.60	......	91.00	3.00	2–36	.....	C Curled dock, 270; red sorrel, 18
	Mammoth Clover, Lot 4814		F	99.68	0.16	94.00	2.50	3–36	144	F Buckhorn, 18; curled dock, 9; red sorrel, 27
7932	Quinlan Seed Store, Terre Haute	Quinlan Seed Store, Terre Haute, Ind.	C	99.40	......	80.00	15.00	11–35	....	C Bracted plantain, 90; buckhorn, 810
	Red Clover, Lot 59542		F	99.54	0.40	83.50	3.00	5–36	36	F Buckhorn, 36
7541	Rich Valley Co-op. Elevator Co., Rich Valley.	Rich Valley Co-op. Elevator Co., Rich Valley, Ind.	C	99.02	......	82.50	7.50	2–36	......	C Buckhorn, 270; common plantain, 2,340; horse nettle, 90
	Medium Clover, Lot 4		F	98.72	0.80	85.00	5 00	4–36	2,871	F Bracted plantain, 18; buckhorn, 189; common plantain, 1,620; curled dock, 18; horse nettle, 36

7365	†Dubois Co. Farm Bureau Co-op. Ass'n, Inc., Huntingburg	Ross Seed Co., Louisville, Ky.	C	99.50	......	90.00	......	1-36	......	C None
	Sapling Clover		F	99.42	0.04	88.00	1.50	4-36	108	F Wild carrot, 9; yellow trefoil, 9
7366	†Dubois Co. Farm Bureau Co-op. Ass'n, Inc., Huntingburg	Ross Seed Co., Louisville, Ky.	C	99.50	......	90.00	......	12-35	....	C Buckhorn, 32; red sorrel, 166
	Red Clover, Lot 2496		F	99.74	0.20	93.50	1.00	4-36	342	F Buckhorn, 27; curled dock, 9; red sorrel, 216
7691	Dunlevy & Son, D. R., Henryville	Ross Seed Co., Louisville, Ky.	C	99.00	......	80.00	13.00	1-36	.....	C Buckhorn, 90; curled dock, 180
	Red Clover		F	98.35	0.84	91.50	4.00	4-36	2,268	F Buckhorn, 126; curled dock, 45; prickly lettuce, 27
7355	McCampbell, Ralph, French Lick	Ross Seed Co., Louisville, Ky.	C	99.40	......	85.00	10.00	1-36	.....	C Buckhorn, 32; red sorrel, 160
	Red Clover		F	99.70	0.16	90.00	4.50	3-36	423	F Buckhorn, 18; red sorrel, 387; wild carrot, 18
7356	McCampbell, Ralph, French Lick	Ross Seed Co., Louisville, Ky.	C	99.40	......	85.00	10.00	11-35	.	C Curled dock, 96
	Sapling Clover		F	99.50	0.14	94.00	0.50	4-36	18	F Buckhorn, 9; red sorrel, 9
7679	Sample, John L., Madison	Ross Seed Co., Louisville, Ky.	C	99.50	......	77.00	17.00	1-36	...	C None
	Sapling Clover, Lot 3098		F	99 56	0.16	88.50	4 00	3-36	342	F Buckhorn, 234; curled dock, 18
7496	Schmocker, John, Batesville	Schmocker, John, Batesville, Ind.	C	98 17	......	92 50	1.50	2 36	...	C Buckhorn, 5,670; dodder, 90
	Red Clover, Lot 73709		F	98.01	0.40	95.00	2.00	4 36	6,426	F Bracted plantain, 54; buckhorn, 5,490; common plantain, 45; dodder, 54; red sorrel, 18; wild carrot, 27; yellow trefoil, 18
7693	James Seed Co., Jeffersonville	Scott Seed Co., New Albany, Ind.	C	95.70	......	80.00	10.00	1-36	.....	C Buckhorn, 2,160; curled dock, 540; dodder, 270; horse nettle, 90
	Home Grown Red Clover, Lot 17		F	96.05	0.54	68.00	5.00	4-36	6,516	F Bracted plantain, 18; buckhorn, 2,070; common plantain, 99; curled dock, 432; dodder, 333; red sorrel, 54
7699	James Seed Co., Jeffersonville	Scott Seed Co., New Albany, Ind.	C	99.50	......	80.00	12.00	1-36	....	C Buckhorn, 90
	Red Clover, Lot 48		F	99.78	0.08	92.00	1.50	4-36	270	F Bracted plantain, 27; buckhorn, 198; common plantain, 45
7523	Tuxedo Feed & Supply Co., Aurora[104]	Scott Seed Co., New Albany, Ind.	C	99.90	.....	92 00	0 00	10-35	....	C Buckhorn, 32; curled dock, 16; red sorrel, 128
	Red Clover, Lot 1		F	98.70	0.71	86.00	1.50	4-36	1,179	F Buckhorn, 18; curled dock, 9; red sorrel, 72
7065	Standard Hatcheries, Terre Haute[105]	Standard Hatcheries, Terre Haute, Ind.	C	97.00	......	90.00		12 35	.....	C None
	Medium Clover		F	96.40	3 01	83 00	4 00	2 36	1,575	F Buckhorn, 477; common plantain, 36; curled dock, 9; dodder, 54; horse nettle, 9
8021	Peck, Myron M., Hobart[106]	Standard Seed Co., Chicago, Ill.	C	98.00	......	78.00	10 00	2-36	.	C None
	Medium Clover, Lot 12392		F	97.16	0.06	97.00	0 50	4-36	8,145	F Dodder, 54; yellow trefoil, 81
7624	Whybrew, C. E., Kewanna	Standard Seed Co., Chicago, Ill.	C	99.50	......	81 00	12.00	1-36	......	C None
	Medium Red Clover, Lot 12368		F	99.94	0.02	90.00	7 50	3-36	198	F Curled dock 18
7879	Stiefel Grain Co., Avilla	Stiefel Grain Co., Avilla, Ind.	C	99.27	......	90.00	5.00	2-36	....	C Buckhorn, 1,440
	Medium Clover		F	99.00	0.08	87.00	6.00	4-36	3,663	F Bracted plantain, 18; buckhorn, 1,890; common plantain, 72; red sorrel, 513
7621	Sun-Field Seed Service, Chicago, Ill.[107]	Sun-Field Seed Service, Chicago, Ill.	C	99.30	.....	82.00	10.00	2-36	......	C None
	Medium Red Clover, Lot 12387		F	97.83	0 22	89.50	8.00	3-36	2,439	F Curled dock, 36; yellow trefoil, 63
7796	Sun-Field Seed Service, Chicago, Ill.[108]	Sun-Field Seed Service, Chicago, Ill.	C	99 30	......	82.00	10.00	2-36	......	C None
	Medium Red Clover, Lot 12387		F	97 25	0.72	80.50	13.50	3-36	2,660	F Curled dock, 54; dodder, 5; yellow trefoil, 81
7986	Sun-Field Seed Service, Chicago, Ill.[109]	Sun-Field Seed Service, Chicago, Ill.	C	99 30	......	80.00	11.00	2-36	....	C None
	Mammoth Clover, Lot 13129		F	98 57	0.08	85 50	5.00	4-36	1,746	F Buckhorn, 18; red sorrel, 18

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*Not labeled with official Indiana State Labels.

†Certified by retailer.

C and F stands, respectively, for Claimed and Found.

[100] Removed from sale. Misbranded. Returned to distributor.

[101] Not tagged. Labels furnished.

[102] Not tagged. Labels furnished.

[103] Removed from sale. Misbranded. Recleaned and sold.

[104] Removed from sale. Misbranded. All sold.

[105] Removed from sale. Misbranded. Relabeled.

[106] Removed from sale. Misbranded. Relabeled.

[107] Sample secured from Christ Heslan, Route 1, Logansport, Ind.

[108] Sample secured from J. S. Jones, Newcastle, Ind.

[109] Sample secured from Henry Burris, Newcastle, Ind.

TABLE 8—Red Clover—Continued

Laboratory No. S.	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, Per Cent	Inert Matter, Per Cent	Germination, Per Cent	Hard Seeds, Per Cent	Date of Germination	Total Number Weed Seeds Per Lb. of Seeds	Number per Pound of Each of the Noxious Weed Seeds Specified in the Law
7112	Sunshine Feed Store, Rushville Medium Clover, Lot 1-486	Sunshine Feed Store, Rushville, Ind.	C	99.40		82.00	10.00	12-35		C None
			F	99.74	0.20	91.00	9.00	3-36	27	F Buckhorn, 18; common plantain, 9
7616	†Annis Feed & Seed Store, Bremen[110] Medium Red Clover	Syler & Syler, Nappanee, Ind.	C	99.00		81.00	10.00	1-36		C None
			F	97.93	0.36	88.50	3.00	3-36	4,707	F Buckhorn, 387; common plantain, 207; curled dock, 63; red sorrel, 135; wild carrot, 45
7841	Frick, Harry D., Wawaka[111] Medium Red Clover	Syler & Syler, Nappanee, Ind.	C	98.50		82.00	9.00	2-36		C None
			F	96.87	0.40	86.00	5.50	4-36	6,813	F Buckhorn, 2,250; Canada thistle, 9; common plantain, 180; curled dock, 90; red sorrel, 54
7928	Syler & Syler, Nappanee Medium Red Clover, Lot RR	Syler & Syler, Nappanee, Ind.	C	99.00		82.00	7.00	2-36		C Buckhorn, 270; curled dock, 90; red sorrel, 90
			F	98.68	0.28	85.50	9.50	5-36	2,277	F Buckhorn, 432; common plantain, 54; curled dock, 27; horse nettle, 9; red sorrel, 90; wild carrot, 45
7627	Farmers Co-op. Co., Monterey Medium Red Clover	Syler & Syler, Plymouth, Ind.	C	99.50		85.00	8.00	2-36		C None
			F	99.48	0.08	89.00	7.00	4-36	1,125	F Buckhorn, 18; curled dock, 45; red sorrel,72
7619	Merkert, John, Leiters Ford Medium Red Clover	Syler & Syler, Plymouth, Ind.	C	99.50		86.00	6.00	2-36		C None
			F	99.44	0.20	85.00	4.50	4-36	1,035	F Red sorrel, 45
7545	Mutual Grain Co., Urbana Medium Red Clover, Lot 812	Syler & Syler, Plymouth, Ind.	C	99.79		85.00	10.00	1-36		C None
			F	99.76	0.12	92.00	6.00	4-36	279	F Red sorrel, 9
7070	Wilson Coal & Grain Co., Rochester Medium Red Clover	Syler & Syler, Plymouth, Ind.	C	99.50		85.00	8.00	12-35		C None
			F	99.78	0.18	93.00	4.50	2-36	9	F Red sorrel, 9
7853	New Haven-Thurman Equity Exchange, New Haven Red Clover, Lot Badger Brand	Teweles Seed Co., L., Milwaukee, Wis.	C	99.25		91.00	7.00	2-36		C None
			F	98.73	0.12	89.50	3.00	5-36	1,728	F Common plantain, 18; red sorrel, 27; yellow trefoil, 63
7468	Wabash Co. Farm Bureau Co-op. Ass'n, Inc., Wabash Medium Red Clover, Lot 2-1396	Wabash Co. Farm Bureau Co-op. Ass'n, Inc., Wabash, Ind.	C	99.75		85.00	10.00	1-36		C None
			F	99.80	0.10	88.50	6.00	4-36	360	F None
8114	Warren Seed Co., Indianapolis Little Red Clover	Warren Seed Co., Indianapolis, Ind.	C	99.00		87.00		3-36		C Buckhorn, 360
			F	98.96	0.24	84.00	6.00	5-36	2,538	F Buckhorn, 387; common plantain, 18; curled dock, 27; red sorrel, 18; wild carrot, 18
7497	Schmocker, John, Batesville[112] Red Clover, Lot 73490	Wessel, Wm. A., Batesville, Ind.	C	98.78		87.00	8.00	1-36		C Buckhorn, 18
			F	98.85	0.22	91.50	4.50	4-36	2,628	F Buckhorn, 2,610; red sorrel, 18
7085	Wilson, John, Roachdale Medium Clover, Lot 12-R	Wilson, John, Roachdale, Ind.	C	99.50		89.00	5.00	1-36		C None
			F	99.82	0.10	90.00	8.50	3-36	270	F None
7293	Wyatt Elevator, Petersburg Mammoth Clover, Lot W. H. R. S.	Wyatt Elevator, Petersburg, Ind.	C	99.00		95.00		1-36		C Bracted plantain, 54; buckhorn, 324; curled dock, 27
			F	99.34	0.30	87.00	5.50	3-36	279	F Bracted plantain, 18; buckhorn, 261

*Not labeled with official Indiana State Labels.

†Certified by retailer.

[110] Removed from sale. Misbranded. Returned to distributor.

[111] Removed from sale. Misbranded. All sold.

[112] Removed from sale. Misbranded. All sold.

TABLE 8—Sweet Clover

Laboratory No. S.	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity Per Cent	Inert Matter, Per Cent	Germination, Per Cent	Hard Seeds, Per Cent	Date of Germination	Total Number Weed Seeds Per Lb. of Seeds	Number per Pound of Each of the Noxious Weed Seeds Specified in the Law
7417	Berne Equity Exchange Co., The, Berne W. B. Sweet Clover, Lot 135	Allied Seed Co., Inc., Ft. Wayne, Ind.	C	99 50		78 00	12 00	1-36		C None
			F	99 50	0 16	73 00	9 00	4-36	1,530	F None
7833	Farmers Elevator Co., Monticello W. B. Sweet Clover, Lot 135	Allied Seed Co., Inc., Ft. Wayne, Ind.	C	99 50		78 00	12 00	1 36		C None
			F	99 38	0 26	65 00	17 50	5 36	1,710	F None
7441	Farmers Exchange, Inc., Warren W. B. Sweet Clover, Lot 135	Allied Seed Co., Inc., Ft. Wayne, Ind.	C	99 50		78 00	12 00	1 36		C None
			F	99 60	0 08	66 00	20 00	3 36	1,719	F Mustard, 9
7788	Farmers Supply Store, Boston Y. B. Sweet Clover, Lot B617	Allied Seed Co., Inc., Ft. Wayne, Ind.	C	99 50		85 00	5 00	1 36		C None
			F	99 34	0 12	84 50	2 50	4 36	1,710	F None
7898	Fretz, R. C., Waterloo Grundy Co. Sweet Clover, Lot 11	Allied Seed Co., Inc., Ft. Wayne, Ind.	C	99 50		92 00		1 36		C None
			F	99 40	0 14	93 00	0.50	5 36	1,908	F Mustard, 18
7747	Knecht Milling Co., Hartford City Y. B. Sweet Clover, Lot B617	Allied Seed Co., Inc., Ft. Wayne, Ind.	C	99 50		85 00	5 00	1 36		C None
			F	99 44	0 14	88 50	2 50	4 36	1,350	F None
7748	Knecht Milling Co., Hartford City W. B. Sweet Clover, Lot 135	Allied Seed Co., Inc., Ft. Wayne, Ind.	C	99 50		78 00	12 00	1-36		C None
			F	99 62	0 20	65 00	20 50	5 36	1,089	F Mustard, 9
7869	Raber Co-op. Co., Raber W. B. Sweet Clover, Lot B423	Allied Seed Co., Inc., Ft. Wayne, Ind.	C	99 50		82 00	8 00	1 36		C None
			F	99 54	0 20	84 50	5 50	5 36	572	F Dodder, 5:, mustard, 27
7877	Stiefel Grain Co., Avilla W. B. Sweet Clover, Lot 135	Allied Seed Co., Inc., Ft. Wayne, Ind.	C	99 50		78 00	12 00	2 36		C None
			F	99 58	0 04	63 00	20 00	5 36	1,098	F Mustard, 18
7885	Strock, Frank, Hudson Y. B. Sweet Clover, Lot B-618	Allied Seed Co., Inc., Ft. Wayne, Ind.	C	99 50		88 00	2 00	1 36		C None
			F	99 44	0.10	87 00	1 50	5 36	1,710	F None
7872	Walter Grain Co., Spencerville Y. B. Sweet Clover, Lot B618	Allied Seed Co., Inc., Ft. Wayne, Ind	C	99 50		88 00	2 00	2 36		C None
			F	99 48	0 14	86 50	1 00	5 36	1,350	F None
7873	Walter Grain Co., Spencerville[113] W. B. Sweet Clover, Lot 135	Allied Seed Co., Inc., Ft. Wayne, Ind.	C	99 50		78 00	12 00	2 36		C None
			F	99 59	0 02	74 50	15 00	5 36	909	F Mustard, 9
7596	Warsaw Feed Store, Warsaw W. B. Sweet Clover, Lot 135	Allied Seed Co., Inc., Ft. Wayne, Ind.	C	99 50		85 00	5 00	1 36		C None
			F	99 56	0.14	69 00	16 00	4 36	1,269	F Mustard, 9
7478	*American Field Seed Co., Chicago, Ill.[114] W. B. Sweet Clover, Lot 14669	American Field Seed Co., Chicago, Ill.	C	96 70		74 00		1 36		C None
			F	97 68	0.32	58 00	9 00	3 36	6,651	F Mustard, 81
7832	*American Field Seed Co., Chicago, Ill.[115] W. B. Sweet Clover, Lot 14669	American Field Seed Co., Chicago, Ill.	C	96.70		74 00		1 36		C None
			F	97.67	0 74	56 50	3 50	4-36	5,391	F Mustard, 63; red sorrel, 18
8076	*American Field Seed Co., Chicago, Ill.[116] W. B. Sweet Clover, Lot 14684	American Field Seed Co., Chicago, Ill.	C	96.30		75.00		2-36		C None
			F	97 70	0 80	48 00	3 00	4 36	8,694	F Canada thistle, 9; mustard, 45
7405	*Lafayette Life Insurance Co., Lafayette Y. B. Sweet Clover, Lot 14668	American Field Seed Co., Chicago, Ill.	C	99 50		92 00		2 36		C None
			F	96 77	0 16	73 50	16 50	3 36	1,809	F Mustard, 9

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*Not labeled with official Indiana State Labels.

†Certified by retailer.

C and F stands, respectively, for Claimed and Found

[113] Distributed by Walter Grain Co., Auburn, Ind

[114] Sample secured from William P. Hunter, Route 3, Logansport, Ind.

[115] Sample secured from Ivan Fields, Agent for Oscar Phillips Jonesboro, Ind.

[116] Sample secured from Homer Hinkle, Heltonville, Ind.

TABLE 8—Sweet Clover—Continued

Laboratory No. S.	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, Per Cent	Inert Matter, Per Cent	Germination, Per Cent	Hard Seeds, Per Cent	Date of Germination	Total Number Weed Seeds Per Lb. of Seeds	Number per Pound of Each of the Noxious Weed Seeds Specified in the Law
7407	*Lafayette Life Insurance Co., Lafayette W. B. Sweet Clover, Lot 14662	American Field Seed Co., Chicago, Ill.	C	99.50		95.00		12-35		C None
			F	99.76	0.00	91.00	1.50	3-36	720	F None
7408	*Lafayette Life Insurance Co., Lafayette W. B. Sweet Clover, Lot 14662	American Field Seed Co., Chicago, Ill.	C	95.50		95.00		12-35		C None
			F	99.54	0.18	87.00	1.50	3-36	747	F Mustard, 27
7730	*Berry Seed Co., Clarinda, Iowa[117] Y. B. Sweet Clover, Lot 14668	Berry Seed Co., Clarinda, Iowa	C	99.50		92.00		2-36		C None
			F	99.04	0.12	81.50	9.50	3-36	1,899	F Canada Thistle, **9**
7922	*Berry Seed Co., Clarinda, Iowa[118] W. B. Sweet Clover, Lot 14669	Berry Seed Co., Clarinda, Iowa	C	96.70		74.00		1-36		C None
			F	97.12	0.88	56.50	2.50	4-36	7,272	F Mustard, 162
8081	*Berry Seed Co., Clarinda, Iowa[119] White Sweet Clover, Lot 14365	Berry Seed Co., Clarinda, Iowa	C	98.02		83.00		1-36		C None
			F	97.97	0.81	59.50	5.00	4-36	2,556	F Mustard, 36
7151	Cox Sales, C. C., Shelbyville W. B. Sweet Clover, 9SJ	Byers Seed Co., Franklin, Ind.	C	99.60		80.00	10.00	1-36		C None
			F	99.90	0.02	73.50	5.50	2-36	225	F Buckhorn, 9; **mustard, 36**
7368	Bohnert Elevator Co., Jasper White Sweet Clover, Lot 1110	Chambers Seed Co., Louisville, Ky.	C	99.00		80.00	10.00	1-36		C None
			F	99.56	0.28	81.00	8.50	3-36	990	F None
7071	†Standard Hatcheries, Terre Haute W. B. Sweet Clover	Corneli Seed Co., St. Louis, Mo.	C	99.60		75.00	8.00	1-36		C None
			F	99.56	0.06	82.50	6.00	2-36	1,296	F Mustard, 36
6765	†McMahan Seed Co., Valparaiso W. B. Sweet Clover	Courteen Seed Co., Milwaukee, Wis.	C	99.50		87.00	8.00	3-35		C None
			F	99.82	0.10	78.50	4.50	8-35	306	F Mustard, 36
7241	Byers Seed Co., Franklin W. B. Sweet Clover, Lot 9SJ	Crabbs Reynolds Taylor Co., Crawfordsville, Ind.	C	99.60		80.00	10.00	12-34		C None
			F	99.58	0.04	78.50	5.50	3-36	945	F Mustard, 45
7056	Clay Co. Farm Bureau Co-op. Ass'n, Inc.[120] Clay City White Sweet Clover, Lot 8SM	Crabbs Reynolds Taylor Co., Crawfordsville, Ind.	C	99.54		85.00	5.00	1-36		C None
			F	99.46	0.16	84.00	6.00	2-36	900	F None
7437	Farmers Grain Co., Liberty Center White Sweet Clover, Lot 8-SM	Crabbs Reynolds Taylor Co., Crawfordsville, Ind.	C	99.54		85.00	5.00	1-36		C None
			F	99.30	0.36	80.00	7.00	4-36	1,269	F Mustard, 9
7044	Johnson Feed & Supply Co., Linton White Sweet Clover, Lot 8-SM	Crabbs Reynolds Taylor Co., Crawfordsville, Ind.	C	99.54		85.00	5.00	1-36		C None
			F	99.20	0.20	83.50	6.50	2-36	1,800	F None
7589	Morocco Grain & Lumber Co., Morocco W. B. Sweet Clover, Lot 2-SN	Crabbs Reynolds Taylor Co., Crawfordsville, Ind.	C	99.54		91.00	1.00	2-36		C None
			F	99.37	0.15	85.00	0.00	3-36	1,215	F Mustard, **45**
7158	Nixon & Van Deventer, Attica Y. B. Sweet Clover, Lot 9-SM	Crabbs Reynolds Taylor Co., Crawfordsville, Ind.	C	99.54		86.00	7.00	1-36		C None
			F	99.22	0.10	86.50	3.00	3-36	2,346	F Curled dock, 9; **mustard,** 27
7189	Standard Elevator Co., Lapel White Sweet Clover, Lot 8-SM	Crabbs Reynolds Taylor Co., Crawfordsville, Ind.	C	99.54		85.00	5.00	1-36		C None
			F	99.22	0.16	78.00	6.50	3-36	1,269	F Mustard, 9
7994	Farmers Grain Co., Pershing Y. B. Sweet Clover, Lot 555	Crawfordsville Seed Co., Crawfordsville, Ind.	C	99.50		70.00	0.00	2-36		C None
			F	99.74	0.18	61.00	0.00	5-36		F None
7176	New Ross Grain & Lumber Co., New Ross W. B. Sweet Clover, Lot 556	Crawfordsville Seed Co., Crawfordsville, Ind.	C	99.50		85.00		1-36		C None
			F	99.90	0.08	77.50	8.00	3-36	90	F None
7764	Davis Grain Co., Michigantown[121] Yellow Sweet Clover, Lot 1—Sweet	Davis Grain Co .,Michigantown, Ind.	C	95.00		90.00		1-36		C None
			F	99.45	0.31	15.50	64.50	5-36	90	F None

7415	Andrews Elevator, Andrews	Davis Seed Corp., Lebanon, Ind.	C	99.50	.....	80.00	12.00	12-35	...	C	None
	W. B. Sweet Clover		F	99.40	0.20	93.50	1.00	4-36	729	F	Mustard, 9
7124	Beck Grain Co., Shelbyville	Davis Seed Corp., Lebanon, Ind.	C	99.50	.....	80.00	2.00	12-35	.....	C	None
	W. B. Sweet Clover, W598		F	99.20	0.20	86.50	0.50	3-36	720	F	None
7138	Beck Grain Co., Shelbyville[122]	Davis Seed Corp., Lebanon, Ind.	C	99.00	.....	80.00	10.00	12-35	.....	C	None
	Y. B. Sweet Clover, Lot Y580		F	99.02	0.26	57.00	4.00	3-36	477	F	Curled dock, 27
7768	Davis Grain Co., Michigantown	Davis Seed Corp., Lebanon, Ind.	C	99.50	.	80.00	10.00	1-36	.....	C	None
	W. B. Sweet Clover, Lot W-601		F	99.56	0.08	80.00	1.50	5-36	1,080	F	None
7996	Farmers Co-op. Co., Centerville	Davis Seed Corp., Lebanon, Ind.	C	99.50	.....	80.00	12.00	1-36	....	C	None
	W. B. Sweet Clover		F	99.26	0.16	82.50	3.50	5-36	1,908	F	Mustard, 18
7204	Farmers Co-op. Co., Selma	Davis Seed Corp., Lebanon, Ind.	C	99.50	.....	80.00	12.00	12-35	....	C	None
	W. B. Sweet Clover		F	99.33	0.20	86.00	2.00	3-36	1,080	F	None
7442	Farmers Exchange, Inc., Warren	Davis Seed Corp., Lebanon, Ind.	C	98.50	...	80.00	10.00	1-36	.....	C	Corn cockle, 144
	Y. B. Sweet Clover, Lot Y609		F	98.88	0.58	73.50	0.00	4-36	360	F	None
7450	Farmers Exchange, Inc., Warren	Davis Seed Corp., Lebanon, Ind.	C	99.50	.	80.00	12.00	1-36	...	C	None
	W. B. Sweet Clover, Lot W598		F	99.74	0.12	87.50	0.50	4-36	630	F	None
7995	Farmers Grain Co., Pershing	Davis Seed Corp., Lebanon, Ind.	C	98.50		76.00	1.00	2-36	...	C	None
	Y. B. Sweet Clover, Lot Y609		F	98.94	0.37	76.00	0.00	5-36	936	F	Curled dock, 36
7093	Hillis Feed Store, Greencastle	Davis Seed Corp., Lebanon, Ind.	C	99.50		80.00	10.00	12-35		C	None
	W. B. Sweet Clover, Lot W598		F	99.44	0.12	88.00	2.00	3-36	1,260	F	None
7095	Hillis Feed Store, Greencastle	Davis Seed Corp., Lebanon, Ind.	C	99.00	....	80.00	10.00	12-35	..	C	None
	Y. B. Sweet Clover, Lot Y609		F	98.92	0.64	77.00	0.50	3-36	837	F	Common plantain, 18; curled dock, 9
7260	Penman Bros., Brazil	Davis Seed Corp., Lebanon, Ind.	C	99.50	.....	80.00	10.00	12-35		C	None
	W. B. Sweet Clover, Lot W-598		F	99.44	0.20	89.00	1.50	3-36	720	F	None
7021	Sanders, O. D., Newcastle	Davis Seed Corp., Lebanon, Ind.	C	99.50		80.00	12.00	1-36		C	None
	W. B. Sweet Clover, Lot W598		F	99.44	0.22	80.00	2.00	2-36	630	F	None
7449	Swayzee Grain Co., Swayzee	Davis Seed Corp., Lebanon, Ind.	C	99.50		80.00	12.00	1-36		C	None
	W. B. Sweet Clover, Lot W-598		F	99.52	0.20	84.50	0.50	3-36	720	F	None
7264	Allan, J. P., Farmersburg	Dickinson Co., The Albert, Chicago, Ill.	C	99.50	.	84.00	6.00	1-36	.	C	None
	W. B. Sweet Clover, Lot 25561		F	99.84	0.00	90.00	1.50	3-36	360	F	None
7221	Greger, A. C., Brownstown	Dickinson Co., The Albert, Chicago, Ill.	C	99.30	..	84.00	14.00	1-36	....	C	None
	W. B. Sweet Clover, Lot 25561		F	99.76	0.02	87.00	4.00	3-36	540	F	None
6766	McMahan Seed Co., Valparaiso	Dickinson Co., The Albert, Chicago, Ill.	C	99.00	..	70.00	14.00	2-35	.....	C	None
	W. B. Sweet Clover, Lot 408		F	99.96	0.02	86.00	1.00	8-35	117	F	Curled dock, 9; mustard, 18
8043	Rolling Prairie Lumber & Grain Co., Rolling Prairie	Dickinson Co., The Albert, Chicago, Ill.	C	99.24	.....	73.00	18.00	3-36	.	C	None
	W. B. Sweet Clover, Lot 25589		F	99.52	0.16	77.00	6.00	5-36	198	F	Curled dock, 9; yellow trefoil, 9
7172	Amo Milling Co., Amo	Foster-Kendall Co., Carmel, Ind.	C	99.60	.	85.00	1.00	12-35	...	C	None
	W. B. Sweet Clover		F	98.76	0.24	85.00	0.50	3-36	9	F	Mustard, 9
7767	Cohee & Clark, Kempton	Foster-Kendall Co., Carmel, Ind.	C	99.60		87.00	8.00	12-35		C	None
	W. B. Sweet Clover, Lot Kempton		F	99.71	0.06	86.50	1.50	4-36	1,080	F	None
7752	Farmers Co-op. Co., Matthews	Foster-Kendall Co., Carmel, Ind.	C	99.60	.....	91.00	1.00	12-35	...	C	None
	W. B. Sweet Clover, Lot Matthews		F	99.56	0.16	83.00	1.50	4-36	900	F	None
7202	Farmers Co-op. Co., Yorktown	Foster-Kendall Co., Carmel, Ind.	C	99.60	..	85.00	8.00	12-35	..	C	None
	W. B. Sweet Clover, Lot Yorktown		F	99.50	0.20	87.50	1.00	3-36	1,188	F	Curled dock, 9; mustard, 9

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*Not labeled with official Indiana State Labels.

†Certified by retailer.

C and F stands, respectively, for Claimed and Found.

[117] Sample secured from Ovid Dawson, Route 2, Hartford City, Ind.

[118] Sample secured from Monroe Stambaugh, Veedersburg, Ind.

[119] Sample secured from Martin Burns, Kewanna, Ind.

[120] Distributed by Clay County Farm Bureau Co-op. Ass'n, Inc., Brazil, Ind.

[121] Removed from sale. Misbranded. All sold or used.

[122] Removed from sale. Misbranded. Relabeled.

TABLE 8—Sweet Clover—Continued

Laboratory No. S.	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, Per Cent	Inert Matter, Per Cent	Germination, Per Cent	Hard Seeds, Per Cent	Date of Germination	Total Number Weed Seeds Per Lb. of Seeds	Number per Pound of Each of the Noxious Weed Seeds Specified in the Law
7170	Farmers Supply, Mooresville	Foster-Kendall Co., Carmel, Ind.	C	99.60	. . .	87.00	8.00	12-35	.	C None
	W. B. Sweet Clover, Lot Farmers, Mooresville		F	99.50	0.16	91.00	1.50	3-36	1,359	F Mustard, 9
7759	Kiefer Feed & Supply Co., Elwood	Foster-Kendall Co., Carmel, Ind.	C	99.60	. . .	87.00	7.00	12-35	. . .	C None
	W. B. Sweet Clover, Lot Kiefer		F	99.52	0.24	84.00	2.00	4-36	900	F None
7479	Logansport Elevator Co., Logansport	Foster-Kendall Co., Carmel, Ind.	C	99.60	.	87.00	8.00	12-35	. . .	C None
	W. B. Sweet Clover, Lot Logansport, North		F	99.62	0.08	91.50	2.50	4-36	1,170	F None
7750	Markin, Ray, Eaton	Foster-Kendall Co., Carmel, Ind.	C	99.70	. . . . . .	80.00	8.00	12-35	.	C None
	Y. B. Sweet Clover, Lot Eaton		F	99.60	0.14	89.50	0.50	4-36	540	F None
7078	Oneal, W. S., Rushville	Foster-Kendall Co., Carmel, Ind.	C	99.70	.	80.00	2.00	12-35		C None
	Y. B. Sweet Clover		F	99.64	0.26	85.50	0.50	3-36	180	F None
7079	Oneal, W. S., Rushville	Foster-Kendall Co., Carmel, Ind.	C	99.60		80.00	5.00	12-35	. . .	C None
	W. B. Sweet Clover, Lot Rushville		F	99.68	0.04	85.50	5.50	3-36	720	F None
7116	Rush Co. Hatchery, Rushville	Foster-Kendall Co., Carmel, Ind.	C	99.60	.	85.00	6.00	12-35	.	C None
	W. B. Sweet Clover, Lot Rushville		F	99.58	0.22	89.50	1.50	3-36	459	F Mustard, 9
7720	Sellars Grain Co., Russiaville	Foster-Kendall Co., Carmel, Ind.	C	99.60	. . . .	87.00	6.00	12-35		C None
	W. B. Sweet Clover, Lot Sellars		F	99.44	0.24	92.50	2.00	4-36	1,350	F None
7196	Wellington Milling Co., Anderson	Foster-Kendall Co., Carmel, Ind.	C	99.60	. . .	80.00	8.00	12-35	.	C None
	Y. B. Sweet Clover, Lot Wellington		F	99.60	0.08	86.50	1.00	3-36	639	F Mustard, 9
7198	Wellington Milling Co., Anderson	Foster-Kendall Co., Carmel, Ind.	C	99.60	. . . .	87.00	6.00	12-35	. . .	C None
	W. B. Sweet Clover, Lot Wellington		F	99.68	0.08	88.00	3.00	3-36	1,350	F None
7740	Goodrich Bros. Co., Eaton	Goodrich Bros. Co., Winchester, Ind.	C	99.50	. . . .	85.00	10.00	1-36		C None
	W. B. Sweet Clover, Lot Lark		F	99.72	0.22	75.00	4.00	5-36	369	F Quack grass, 9
7247	Goodrich Bros. Co., Winchester[123]	Goodrich Bros. Co., Winchester, Ind.	C	99.50	. . . . . .	80.00	10.00	1-35	. .	C None
	W. B. Sweet Clover, Lot 661		F	99.84	0.04	65.50	10.50	3-36	270	F None
7739	Hinshaw Grain Co., Summitville	Goodrich Bros. Co., Winchester, Ind.	C	99.50	. . . .	90.00		1-36	. .	C None
	Y. B. Sweet Clover, Lot 819		F	99.60	0.20	87.00	4.00	4-36	270	F None
7742	Hinshaw Grain Co., Summitville	Goodrich Bros. Co., Winchester, Ind.	C	99.50	. . . . . .	80.00	15.00	2-36	. . .	C None
	W. B. Sweet Clover, Lot Lark		F	99.92	0.04	71.50	9.00	4-36	180	F None
7794	Markleville Elevator Co., Markleville	Goodrich Bros. Co., Winchester, Ind.	C	99.50	. . . . .	90.00	5.00	1-36	. . .	C None
	Yellow Sweet Clover, Lot 819		F	99.42	0.26	88.50	4.50	4-36	135	F Buckhorn, 9; curled dock, 9; mustard, 27
7799	Markleville Elevator Co., Markleville[124]	Goodrich Bros. Co., Winchester, Ind.	C	99.50	. . . . .	85.00	10.00	1-36	. . . .	C None
	W. B. Sweet Clover, Lot Lark		F	99.74	0.06	68.00	5.00	5-36	720	F None
7315	Heldt Co., The, Evansville	Heldt Co., The, Evansville, Ind.	C	99.50	. . . . . .	83.00	4.00	2-36	. . . . . .	C None
	"Thelco" W. B. Sweet Clover, Lot 3357		F	99.46	0.14	78.50	3.00	3-36	1,980	F None
7258	Saiter-Morgan Co., The, Vincennes	Heldt Co., The, Evansville, Ind.	C	99.53	. . . . . .	80.00	12.00	11-35	. . . .	C None
	W. B. Sweet Clover, Lot 3131		F	99.52	0.22	68.50	8.00	3-36	828	F Mustard, 18
7899	Corunna Feed Mill, Corunna	Hirsch & Sons, Henry, Toledo, Ohio	C	99.50	. . . . .	87.00	7.00	12-35	.	C None
	W. B. Sweet Clover, Lot 7041		F	99.40	0.34	82.00	2.50	5-36	1,080	F None
7427	Geneva Milling & Grain Co., Geneva	Hirsch & Sons, Henry, Toledo, Ohio	C	99.50	. . . . . .	87.00	7.00	12-35	. . . .	C None
	W. B. Sweet Clover, Lot 7041		F	99.64	0.26	75.00	5.00	4-36	450	F None

7421	Mauller, A. M., Pleasant Mills Y. B. Sweet Clover, Lot 7045	Hirsch & Sons, Henry, Toledo, Ohio	C	99.56	. . .	92.00	1.00	12-35	. . .	C None
			F	99.38	0.22	91.00	1.50	4-36	1,638	F Buckhorn, 9; mustard, 9
7426	Mauller, A. M., Pleasant Mills W. B. Sweet Clover, Lot 7041	Hirsch & Sons, Henry, Toledo, Ohio	C	99.50	. . . .	87.00	7.00	12-35	. . .	C None
			F	99.42	0.32	80.00	4.00	4-36	720	F None
7852	New Haven-Thurman Equity Exchange, New Haven Y. B. Sweet Clover, Lot 7045	Hirsch & Sons, Henry, Toledo, Ohio	C	99.56	. .	92.00	1.00	12-35	. . . .	C None
			F	99.30	0.26	92.50	3.00	4-36	1,710	F None
7837	Roanoke Elevator Co., Roanoke W. B. Sweet Clover, Lot 7041	Hirsch & Sons, Henry, Toledo, Ohio	C	99.50		87.00	7.00	12-35		C None
			F	99.64	0.14	76.00	3.50	5-36	720	F None
7900	Wolf & Sons, G., Hamilton W. B. Sweet Clover, Lot 7043	Hirsch & Sons, Henry, Toledo, Ohio	C	99.59		72.00	22.00	11-35		C None
			F	99.52	0.06	74.50	17.00	5-36	1,620	F None
7857	Allen Co. Farm Bureau Co-op. Ass'n, Inc., Ft. Wayne Y. B. Sweet Clover, Lot 3822	Indiana Farm Bureau Co-op. Ass'n, Inc., Indianapolis, Ind.	C	99.50		80.00	14.00	12-35	.	C None
			F	99.80	0.04	79.00	1.00	5-36	630	F None
7055	Clay Co. Farm Bureau Co-op. Ass'n, Inc., Clay City[125] W. B. Sweet Clover, Lot 4227	Indiana Farm Bureau Co-op. Ass'r, Inc., Indianapolis, Ind.	C	99.50	. . . .	85.00	10.00	12-35		C None
			F	99.76	0.12	87.00	1.50	2-36	369	F Mustard, 9
7760	Clinton Co. Farm Bureau Co-op. Ass'n, Inc., Frankfort[126] Y. B. Sweet Clover, Lot 4289	Indiana Farm Bureau Co-op. Ass'n, Inc., Indianapolis, Ind.	C	99.50	. .	85.00	10.00	2-36		C None
			F	99.78	0.22	69.50	0.00	5-36		F None
7246	Farm Bureau Service, Inc., Columbus W. B. Sweet Clover, Lot 4227	Indiana Farm Bureau Co-op. Ass'n, Inc., Indianapolis, Ind.	C	99.50	. . . . .	85.00	10.00	1-36	. .	C None
			F	99.68	0.12	92.00	3.00	3-36	639	F Mustard, 9
7457	Grant Co. Farm Bureau Co-op. Ass'n, Inc., Marion W. B. Sweet Clover, Lot 4227	Indiana Farm Bureau Co-op. Ass'n, Inc., Indianapolis, Ind.	C	99.50	. .	85.00	10.00	1-36	.	C None
			F	99.98	0.06	86.60	0.50	4-36	270	F None
8000	Hancock Co. Farm Bureau Co-op. Ass'n, Inc., Greenfield W. B. Sweet Clover, Lot 4290	Indiana Farm Bureau Co-op. Ass'n, Inc., Indianapolis, Ind.	C	99.50	. . .	85.00	10.00	2-36	. . .	C None
			F	99.88	0.02	85.50	4.00	4-36	99	F Mustard, 9
7347	Indiana Farm Bureau Co-op. Ass'n, Inc., Indianapolis[127] W. B. Sweet Clover, Lot 3824	Indiana Farm Bureau Co-op. Ass'n, Inc., Indianapolis, Ind.	C	99.75	. . . .	85.00	10.00	12-35	.	C None
			F	100.00	0.00	75.50	13.50	3-36	.	F None
7233	Johnson Co. Farm Bureau Co-op. Ass'n, Inc., Franklin W. B. Sweet Clover, Lot 4227	Indiana Farm Bureau Co-op. Ass'n, Inc., Indianapolis, Ind.	C	99.50	. . . .	85.00	10.00	1-36	. .	C None
			F	99.72	0.14	86.00	3.00	3-36	270	F None
7561	LaPorte Co. Farm Bureau Co-op. Ass'n, Inc., LaPorte W. B. Sweet Clover, Lot 4239	Indiana Farm Bureau Co-op. Ass'n, Inc., Indianapolis, Ind.	C	99.50	. .	84.00	11.00	1-36	.	C None
			F	99.88	0.04	76.50	8.00	4-36	270	F None
7337	Posey Co. Farm Bureau Co-op. Ass'n, Inc., Mt. Vernon W. B. Sweet Clover, Lot 4227	Indiana Farm Bureau Co-op. Ass'n, Inc., Indianapolis, Ind.	C	99.50	. .	85.00	10.00	1-36	. . .	C None
			F	99.96	0.02	92.50	1.00	3-36	270	F None
7283	Sullivan Co. Farm Bureau Co-op. Ass'n, Inc., Sullivan W. B. Sweet Clover, Lot 2-1080	Indiana Farm Bureau Co-op. Ass'n, Inc., Indianapolis, Ind.	C	99.50	. . . . .	85.00	10.00	12-35	. .	C None
			F	99.76	0.16	90.50	1.00	3-36	270	F None
7028	Tippecanoe Co. Farm Bureau Co-op. Ass'n, Inc., Lafayette W. B. Sweet Clover, Lot 2-1080	Indiana Farm Bureau Co-op. Ass'n, Inc., Indianapolis, Ind.	C	99.50	. . . . .	78.00	15.00	12-35	. .	C None
			F	99.82	0.10	63.50	15.00	2-36	360	F None

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*Not labeled with official Indiana State Labels.
†Certified by retailer.
C and F stands, respectively, for Claimed and Found.

[123] Removed from sale. Misbranded. Relabeled.

[124] Removed from sale. Misbranded. All sold.

[125] Distributed by Clay County Farm Bureau Co-op. Ass'n, Inc., Brazil, Ind.

[126] Removed from sale. Misbranded. All sold.

[127] Sample secured from Agronomy Dept., Purdue University, Lafayette, Ind.

TABLE 8—Sweet Clover—Continued

Laboratory No. S.	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, Per Cent	Inert Matter, Per Cent	Germination, Per Cent	Hard Seeds, Per Cent	Date of Germination	Total Number Weed Seeds Per Lb. of Seeds	Number per Pound of Each of the Noxious Weed Seeds Specified in the Law
7305	Adams & Morrow, Inc., Princeton	Indiana Seed Co., Indianapolis, Ind.	C	99 60		80 00	12 00	12 35		C None
	W. B. Sweet Clover, Lot L-30		F	99 64	0 06	86 50	7 50	3 36	855	F Mustard, 45
7039	Branch Grain & Seed Co., Martinsville	Indiana Seed Co., Indianapolis, Ind.	C	99 60		80 00	12 00	12 35		C None
	W. B. Sweet Clover, Lot 3		F	99 74	0 06	81 00	8 50	2-36	540	F None
7404	Elnora Elevator Co., Elnora	Indiana Seed Co., Indianapolis, Ind.	C	99 70		86 00	8 00	12-35		C None
	White Sweet Clover, Lot 30		F	99 82	0 02	86 00	7 00	3-36	459	F Mustard, 9
7737	Farmers Co-op. Co., Matthews	Indiana Seed Co., Indianapolis, Ind.	C	99 55		85 00	5 00	1 36	..	C None
	W. B. Sweet Clover, Lot 3933		F	99 35	0 18	87 00	1 00	4-36	1,359	F None
7936	Graham Grain & Supply Co., Terre Haute	Indiana Seed Co., Indianapolis, Ind.	C	99 50		84 00	6 00	2 36		C None
	W. B. Sweet Clover, Lot 42		F	99 56	0 36	80 00	5 00	5 36	180	F None
7104	Indiana Grain Producers Ass'n, Fountaintown	Indiana Seed Co., Indianapolis, Ind.	C	99 35		86 00	4 00	10-35		C None
	Y. B. Sweet Clover, Lot I-201		F	99 26	0 14	85 00	3 50	3 36	2,619	F Mustard, 9
7105	Indiana Grain Producers Ass'n, Fountaintown	Indiana Seed Co., Indianapolis, Ind.	C	99 60		80 00	12 00	12 35		C None
	W. B. Sweet Clover, Lot 3		F	99 74	0 14	77 00	10 00	3-36	459	F Mustard, 9
7106	Indiana Grain Producers Ass'n, Morristown	Indiana Seed Co., Indianapolis, Ind.	C	99 60		80 00	12 00	12-35		C None
	W. B. Sweet Clover, Lot 3		F	99 50	0 08	75 00	12 00	3-36	945	F Mustard, 45
7142	Indiana Grain Producers, Inc., Shelbyville	Indiana Seed Co., Indianapolis, Ind.	C	99 55		85 00	5 00	1 36		C None
	W. B. Sweet Clover, Lot 3933		F	99 48	0 16	84 50	3 00	3-36	909	F Mustard, 9
7152	Martin Hardware Co., Clayton	Indiana Seed Co., Indianapolis, Ind.	C	99 70		86 00	8 00	12-35	..	C None
	W. B. Sweet Clover, Lot 30		F	99 46	0 08	85 00	6 00	3-36	900	F None
7500	Nading Grain Co., Wm., Greensburg	Indiana Seed Co., Indianapolis, Ind.	C	99 35		86 00	4 00	1 36		C None
	Y. B. Sweet Clover, Lot I-201		F	99.30	0 26	80 00	2 00	4 36	2,376	F Mustard, 36
7984	Newcastle Elevator Co., Newcastle	Indiana Seed Co., Indianapolis, Ind.	C	99 55		84 00	8 00	12 35		C None
	Grundy Co. Sweet Clover, Lot P493		F	99.52	0.08	88 50	1 00	5 36	1,080	F None
7102	New Palestine Elevator Co., New Palestine	Indiana Seed Co., Indianapolis, Ind.	C	99 70		86 00	8 00	12 35		C None
	W. B. Sweet Clover, Lot 30		F	99 64	0.14	84 00	8 50	3-36	828	F Mustard, 18
6758	Pioneer Elevator Co., Worthington[128]	Indiana Seed Co., Indianapolis, Ind.	C	99 50		85 00	6 00	5 35		C None
	W. B. Sweet Clover, Lot 145		F	99.18	0.16	63 00	22 00	8-35	981	F Mustard, 81
6799	Pritchard & Rafert, Inc., Pendleton	Indiana Seed Co., Indianapolis, Ind.	C	99 60		82 00	13 00	12-34		C None
	W. B. Sweet Clover, Lot I-201		F	99 76	0 20	79 00	7 50	9-35	180	F None
7393	Reynolds Brooks Hdwe. Co., Loogootee	Indiana Seed Co., Indianapolis, Ind.	C	99.70		86 00	8.00	12-35		C None
	W. B. Sweet Clover, Lot 30		F	99 72	0.12	89 00	6.00	4-36	540	F None
7114	†Rush Service Co., Inc., The, Rushville	Indiana Seed Co., Indianapolis, Ind.	C	99.35		86.00	4 00	12-35		C None
	Y. B. Sweet Clover, Lot I-201		F	99 12	0.20	83.50	5.00	3-36	3,159	F Mustard, 9
7121	†Rush Service Co., Inc., The, Rushville	Indiana Seed Co., Indianapolis, Ind.	C	99.50		81.00	9.00	12-35		C None
	W. B. Sweet Clover, Lot 2		F	99.60	0.12	77.50	7.00	3-36	774	F Mustard, 54
7137	Shelby Co. Farm Bureau Co-op. Ass'n, Inc.,									
	Shelbyville	Indiana Seed Co., Indianapolis, Ind.	C	99.35		86.00	4 00	1-36		C None
	Y. B. Sweet Clover, Lot I-201		F	99 30	0.18	89 00	2 00	3-36	2,340	F None
6813	Westermeier Hdwe. Co., Inc., Columbus	Indiana Seed Co., Indianapolis, Ind.	C	99 50		85 00	6.00	7-35		C None
	W. B. Sweet Clover, Lot 145		F	99 78	0 06	73 00	14 00	9-35	189	F Mustard, 9

7187	Farmers Co-op. Co., Shideler[129]	Kraus, Sam, Ft. Wayne, Ind.	C	99.50	......	91.00	5.00	1-36	...	C None
	W. B. Sweet Clover, Lot K		F	99.22	0.16	77.50	1.00	3-36	1,737	F Mustard, 27
7771	Dayton Farm Supply, Richmond[130]	McCullough Seed Co., The J. Chas., Cincinnati, Ohio.	C	99.60	......	90.00	....	1-36	......	C None
	Yellow Sweet Clover, Lot 2716		F	99.62	0.12	77.00	4.50	4-36	1,044	F Mustard, 54
7528	Sawdon, R. A., Aurora	McCullough Seed Co., The J. Chas., Cincinnati, Ohio.	C	99.60	......	90.00	......	1-36	......	C None
	Yellow Sweet Clover, Lot 2716		F	99.74	0.14	81.50	3.00	4-36	477	F Mustard, 27
7510	Schmocker, John, Batesville[131]	McCullough Seed Co., The J. Chas., Cincinnati, Ohio.	C	99.60	......	90.00	....	1-36	......	C None
	Yellow Sweet Clover, Lot 2716		F	99.48	0.26	77.00	2.50	4-36	945	F Mustard, 45
7131	†Werst & Co., Peter, Brookville	McCullough Seed Co., The J. Chas., Cincinnati, Ohio.	C	99.75	......	90.00	2.00	1-36	......	C None
	Grundy Co. White Sweet Clover, Lot 2764		F	99.82	0.04	93.50	1.50	2-36	270	F None
7292	Boonshot Hdwe. Co., Petersburg	Mangelsdorf & Bro., Ed. F., St. Louis, Mo.	C	99.16	......	90.00	...	1-36	......	C None
	W. B. Sweet Clover, Lot B2795		F	98.81	0.20	86.50	3.00	3-36	4,176	F Mustard, 126
8034	McMahan Seed Co., Valparaiso	Mangelsdorf & Bro., Ed. F., St. Louis, Mo.	C	99.50	......	82.00	8.00	3-36	......	C Mustard, 16
	W. B. Sweet Clover, Lot M		F	99.52	0.12	78.00	8.00	4-36	1,278	F Mustard, 18
8046	McMahan Seed Co., Valparaiso	Mangelsdorf & Bro., Ed. F., St. Louis, Mo.	C	99.50	......	65.00	27.00	2-36		C None
	Y. B. Sweet Clover, Lot B5641		F	99.24	0.42	66.00	23.50	4-36	1,935	F Bracted plantain, 9; curled dock, 36
7129	†Werst & Co., Peter, Brookville	Market Gardeners' Seed Co., Cincinnati, Ohio	C	99.60	......	90.00	2.00	10-35	..	C None
	Yellow Sweet Clover, Lot 5466A		F	99.90	0.04	92.50	3.00	2-36	117	F Mustard, 27
7130	†Werst & Co., Peter, Brookville	Market Gardeners' Seed Co., Cincinnati, Ohio	C	99.50	..	88.00	4.00	10-35	...	C None
	White Sweet Clover, Lot 5470		F	99.80	0.18	86.00	8.50	2-36	90	F None
7452	Co-operative Elevator, Francesville	Noble Bros., Gibson City, Ill.	C	99.76	...	85.50	1.50	11-35		C None
	W. B. Sweet Clover, Lot Newday		F	99.74	0.00	89.50	2.00	3-36	909	F Mustard, 9
7460	Co-operative Elevator, Francesville[132]	Noble Bros., Gibson City, Ill.	C	99.86	......	91.50	3.50	11-35		C None
	Grundy Co. Sweet Clover, Lot Newday		F	99.84	0.08	92.50	0.50	3-36	288	F Mustard, 18
7846	†Steckley, George, Kendallville	Northern Field Seed Co., Winona, Minn.	C	99.50	.	91.00	5.00	1-36		C None
	W. B. Sweet Clover, Lot K		F	99.33	0.37	84.00	3.50	4-36	1,260	F None
7883	†Stiefel Grain Co., Albion	Olds Seed Co., L. L., Madison, Wis.	C	99.10	......	81.00	12.00	2-36	......	C None
	W. B. Sweet Clover		F	99.62	0.06	71.50	7.00	5-36	396	F Mustard, 27; quack grass 9
7371	Daviess Co. Farm Bureau Co-op. Ass'n, Inc., Washington	Purcell Seed Co., Evansville, Ind.	C	99.38	......	87.00	8.00	2-36	.	C Mustard, 9
	Tru Val W. B. Sweet Clover, Lot 4857		F	99.30	0.54	80.50	0.50	4-36	486	F Mustard, 36
7339	Purcell Seed Co., Evansville	Purcell Seed Co., Evansville, Ind.	C	99.38	......	87.00	8.00	2-36	.	C Mustard, 9
	Tru Val W. B. Sweet Clover, Lot 4857		F	99.44	0.32	77.50	1.50	3-36	756	F Mustard, 36
7694	Dunlevy & Son, D. R., Henryville	Ross Seed Co., Louisville, Ky.	C	99.50	......	80.00	7.00	1-36	.	C None
	W. B. Sweet Clover		F	99.80	0.02	82.50	3.50	4-36	540	F None
7358	McCampbell, Ralph, French Lick[133]	Ross Seed Co., Louisville, Ky.	C	99.50	......	90.00	5.00	1-36		C None
	White Sweet Clover		F	99.58	0.24	78.00	2.00	4-36	270	F None
7326	Ohio Valley Seed Co., Evansville	Schultz Seed Co., J. M., Dieterich, Ill.	C	99.50	......	83.00	4.00	1-36	......	C None
	W. B. Scarified Sweet Clover, Lot 278		F	99.26	0.14	77.50	5.50	3-36	1,908	F Mustard, 18
7211	Buchanan's Coal & Feed Sales, Seymour	Scott Seed Co., New Albany, Ind.	C	99.20	......	80.00	12.00	1-36	. .	C Mustard, 80
	W. B. Sweet Clover, Lot 150		F	98.88	0.76	80.00	3.00	3-36	1,017	F Mustard, 27
7364	Dubois Co. Farm Bureau Co-op. Ass'n, Inc., Huntingburg	Scott Seed Co., New Albany, Ind.	C	99.50	......	80.00	10.00	1-36	....	C None
	W. B. Sweet Clover, Lot 152		F	99.40	0.20	79.50	6.00	3-36	1,269	F Mustard, 9

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*Not labeled with official Indiana State Labels.

†Certified by retailer.

C and F stands, respectively, for Claimed and Found.

[128] Removed from sale. Misbranded. Returned to distributor.

[129] Distributed by Northern Field Seed Co., Winona, Minn. Removed from sale. Misbranded. Relabeled.

[130] Removed from sale. Misbranded. Shipped into Ohio.

[131] Removed from sale. Misbranded. Relabeled.

[132] Distributed by Co-operative Elevator, Francesville, Ind.

[133] Removed from sale. Misbranded. Relabeled.

TABLE 8—Sweet Clover Continued

Laboratory No. S.	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, Per Cent	Inert Matter, Per Cent	Germination, Per Cent	Hard Seeds, Per Cent	Date of Germination	Total Number Weed Seeds Per Lb. of Seeds	Number per Pound of Each of the Noxious Weed Seeds Specified in the Law
7212	Hunsucker, J. W., Vallonia W. B. Sweet Clover, Lot 150	Scott Seed Co., New Albany, Ind.	C	99.20		80.00	12.00	1-36		Mustard, 80
			F	98.88	0.46	84.00	0.50	3-36	2,187	Mustard, 27
7384	Johnson & Chenoweth, Shoals W. B. Sweet Clover, Lot 152	Scott Seed Co., New Albany, Ind.	C	96.00		80.00	12.00	2-36		None
			F	99.64	0.16	74.00	7.50	4-36	360	None
7536	Tuxedo Feed & Supply Co., Aurora[134] Yellow Sweet Clover, Lot 146	Scott Seed Co., New Albany, Ind.	C	99.30		80.00	12.00	12-35		Mustard, 2
			F	99.68	0.14	66.00	7.50	3-36	792	Bracted plantain, 27; buckhorn, 27; curled dock, 9; red sorrel, 9
7594	Warsaw Feed Store, Warsaw W. B. Sweet Clover, Lot 14664	Standard Seed Co., Chicago, Ill.	C	99.50		82.00	10.00	1-36		None
			F	99.66	0.18	75.00	11.00	3-36	459	Canada thistle, 9
7067	Wilson Coal & Grain Co., Rochester[135] W. B. Sweet Clover, Lot 14664	Standard Seed Co., Chicago, Ill.	C	99.40		96.00	13.00	12-35		None
			F	99.68	0.02	73.00	18.00	2-36	810	None
7544	Rich Valley Co-op. Elevator Co., Rich Valley[136] W. B. Sweet Clover	Syler & Syler, Plymouth, Ind.	C	99.50		82.00	10.00	1-36	....	None
			F	99.68	0.16	51.50	35.50	4-36	360	None
7911	Dembufsky Seed Co., Goshen W. B. Scarified Sweet Clover, Lot Badger Brand	Teweles Seed Co., L., Milwaukee, Wis.	C	99.50	.....	89.00	6.00	2-36	....	None
			F	99.66	0.16	88.00	3.00	5-36	540	None
7855	New Haven-Thurman Equity Exchange, New Haven W. B. Scarified Sweet Clover, Lot Badger Brand	Teweles Seed Co., L., Milwaukee, Wis.	C	99.50	......	89.00	6.00	2-36	......	Non
			F	99.58	0.12	85.50	7.00	5-36	1,080	None
7483	Schwalm, W. B., Logansport W. B. Sweet Clover, Lot Badger Brand	Teweles Seed Co., L., Milwaukee, Wis.	C	99.50		89.00	6.00	2-36	.....	None
			F	99.82	0.06	90.50	2.00	4-36	180	None
7886	Strock, Frank, Hudson Y. B. Scarified Sweet Clover, Lot Badger Brand	Teweles Seed Co., L., Milwaukee, Wis.	C	99.50	...	91.00	4.00	2-36	....	None
			F	99.38	0.44	86.00	2.00	5-36	720	None
7334	Tri. Co. Farm Bureau Co-op. Ass'n, Inc., Evansville Y. B. Sweet Clover, Lot 1	Tri Co. Farm Bureau Co-op. Ass'n, Inc., Evansville, Ind.	C	98.00	......	72.00	......	2-36	......	None
			F	99.80	0.06	77.00	0.50	3-36	225	Buckhorn, 36; curled dock, 9; red sorrel, 90
7600	Stiefel Grain Co., Syracuse[137] Hy-Test W. B. Sweet Clover, Lot 7061	Wolf Seed Co., Ft. Wayne, Ind.	C	99.60	......	84.00	10.00	12-35	....	None
			F	99.58	0.14	63.00	13.00	3-36	549	Mustard, 9
7224	Woodstock Mills, Seymour[138] W. B. Sweet Clover	Woodstock Mills, Seymour, Ind.	C	99.50	....	85.00	9.00	1-36	...	None
			F	99.62	0.12	81.50	5.50	3-36	639	Mustard, 9

*Not labeled with official Indiana State Labels.
†Certified by retailer.
C and F stands, respectively, for Claimed and Found.

[134] Removed from sale. Misbranded. All Sold.

[135] Removed from sale. Misbranded. Relabeled.

[136] Removed from sale. Misbranded. All Sold.

[137] Removed from sale. Misbranded. Relabeled.

[138] Not tagged. Labels furnished.

TABLE 8—White Clover

Laboratory No. S.	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, Per Cent	Inert Matter, Per Cent	Germination, Per Cent	Hard Seeds, Per Cent	Date of Germination	Total Number Weed Seeds Per Lb. of Seeds		Number per Pound of Each of the Noxious Weed Seeds Specified in the Law
8031	Goldblatt Bros., Hammond[139] White Clover, Lot No. 1	Ostberg Seed Co., Chicago, Ill.	C	98.95	....	65.00	...	1-36	....	C	Red sorrel, 450
			F	97.43	1.63	80.25	10.50	5-36	8,084	F	Yellow trefoil, 414
7097	†Vonnegut Hdwe. Co., Indianapolis[140] Fancy White Clover, Lot 6001	Whitney-Eckstein Seed Co., Buffalo, N. Y.	C	98.78	......	83.00	10.00	2-36	....	C	None
			F	98.40	0.35	87.75	9.25	2-36	6,552	F	Buckhorn, 18; **mustard**, 36; red sorrel, 5,175; yellow trefoil, 198
7098	†Vonnegut Hdwe. Co., Indianapolis White Clover	Whitney-Eckstein Seed Co., Buffalo, N. Y.	C	98.60	...	80.00	13.00	1-36	...	C	Red sorrel, 32
			F	98.27	0.72	86.25	9.75	2-36	1,413	F	Buckhorn, 18; **mustard**, 18; red sorrel, 486; yellow trefoil, 216

*Not labeled with official Indiana State Labels.
†Certified by retailer.
C and F stands, respectively, for Claimed and Found.

[139] Removed from sale. Misbranded.

[140] Removed from sale. Misbranded. Relabeled.

TABLE 8—Corn

Laboratory No. S.	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, Per Cent	Inert Matter, Per Cent	Germination, Per Cent	Date of Germination	Total Number Weed Seeds Per Lb. of Seeds	Number Per Pound of Each of the Noxious Weed Seeds Specified in the Law
8238	Alexander & Son, A. B., Vincennes	Alexander & Son, A. B., Vincennes, Ind.	C	98.00	....	90.00	4-36	.....	C None
	Johnson Co. White Corn, Lot B		F	99.86	0.14	85.00	5-36	...	F None
8239	Alexander & Son, A. B., Vincennes	Alexander & Son, A. B., Vincennes, Ind.	C	98.00	.	90.00	4-36	.....	C None
	Johnson Co. White Corn, Lot A		F	99.99	0.01	91.00	5-36	.....	F None
8186	*American Field Seed Co., Chicago, Ill.[141]	American Field Seed Co., Chicago, Ill.	C	.....	..	90.00	2-36	......	C None
	Krugs Corn, Lot 456		F	99.98	0.02	75.00	5-36	.....	F None
8193	*American Field Seed Co., Chicago, Ill.[142]	American Field Seed Co., Chicago, Ill.	C	.	...	90.00	4-36	....	C None
	Early Yellow Dent Corn, Lot 455		F	99.89	0.11	87.00	4-36	...	F None
8196	*American Field Seed Co., Chicago, Ill.[143]	American Field Seed Co., Chicago, Ill.	C	.....	....	90.00	2-36	....	C None
	Reid's Yellow Dent Corn, Lot 452		F	99.84	0.16	72.00	4-36	.....	F None
8214	*American Field Seed Co., Chicago, Ill.[144]	American Field Seed Co., Chicago, Ill.	C	.....	...	92.00	3-36	....	C None
	Leaming Corn, Lot 422		F	99.80	0.20	71.00	4-36	.....	F None
8224	*American Field Seed Co., Chicago, Ill.[145]	American Field Seed Co., Chicago, Ill.	C	.	...	95.00		....	C None
	Woodburn Yellow Dent Corn, Lot 407		F	99.91	0.09	93.00	5-36	.....	F None
8249	*American Field Seed Co., Chicago, Ill.[146]	American Field Seed Co., Chicago, Ill.	C		..	90.00	4-36	....	C None
	Yellow White Cap Corn, Lot 486		F	99.98	0.02	78.00	5-36	.....	F None
8258	*American Field Seed Co., Chicago, Ill.[147]	American Field Seed Co., Chicago, Ill.	C		.	95.00	2-36	.....	C None
	Woodburn Corn, Lot 424		F	99.99	0.01	78.00	5-36	.....	F None
8259	*American Field Seed Co., Chicago, Ill.[148]	American Field Seed Co., Chicago, Ill.	C			90.00	2-36	.....	C None
	Pride of the North Corn, Lot 433		F	99.99	0.01	86.00	5-36	.....	F None
8260	*American Field Seed Co., Chicago, Ill.[149]	American Field Seed Co., Chicago, Ill.	C		..	92.00	4-36	......	C None
	Golden Dent Corn, Lot 455		F	98.81	1.19	87.00	5-36	......	F None
8280	American Field Seed Co., Chicago, Ill.[150]	American Field Seed Co., Chicago, Ill.	C	.....	....	90.00	2-35	....	C None
	Reid's Yellow Dent Corn, Lot 465		F	99.69	0.31	85.00	5-36	....	F None
8364	*American Field Seed Co., Chicago, Ill.[151]	American Field Seed Co., Chicago, Ill.	C	.....	......	95.00	3-36	...	C None
	Early Yellow Dent Corn, Lot 411		F	99.97	0.03	85.00	6-36	......	F None
8290	*Forbes, A. J., Westville	American Field Seed Co., Chicago, Ill.	C	.....	......	90.00	4-36	......	C None
	Longfellow Seed Corn, Lot 461		F	99.70	0.28	77.00	5-36	......	F None
8297	*Forbes, A. J., Westville	American Field Seed Co., Chicago, Ill.	C	.....	......	90.00	2-36	......	C None
	Iowa Silver Mine Corn, Lot 450		F	99.38	0.62	58.00	5-36	......	F None
8173	Chalmers Grain Co., Chalmers[152]	Atkinson, Roy C., Fowler, Ind.	C	99.00	....	95.00	2-36	......	C None
	Hoosier Hybrid Corn, Lot 1		F	99.99	0.01	94.00	4-36	......	F None
8188	Culbertson, Clyde, Vevay	Ayler & Sons, Harry D., Brooksburg, Ind.	C	99.50	......	85.00	3-36	......	C None
	Reid's Corn, Lot 11		F	99.95	0.05	76.00	4-36	.....	F None
8212	Jefferson Co. Farm Bureau Co-op. Ass'n, Inc., Madison	Ayler & Sons, Harry D., Brooksburg, Ind.	C	99.00	.....	95.00	3-36	.....	C None
	Woodburn Yellow Dent Corn, Lot 12		F	99.93	0.07	94.00	4-36	......	F None
8213	Jefferson Co. Farm Bureau Co-op. Ass'n, Inc., Madison[153]	Ayler & Sons, Harry D., Brooksburg, Ind.	C	99.00	.....	95.00	3-36	.....	C None
	Reid's Yellow Dent Corn, Lot 14		F	99.94	0.06	75.00	5-36	......	F None
8329	Baelz, Wm., Corydon[154]	Baelz, Wm., Corydon, Ind.	C	......	......	95.00	3-36	......	C None
	Reid's Yellow Dent Corn		F	99.14	0.86	93.00	5-36	......	F None

8161	Bahler Grain & Feed Co., Galveston[155]	Bahler Grain & Feed Co., Galveston, Ind.	C	99.00		85.00	3-36		C None
	Early Yellow Corn, Lot A-21		F	99.62	0 38	61 00	4-36		F None
8162	Bahler Grain & Feed Co., Galveston	Bahler Grain & Feed Co., Galveston, Ind.	C	99 00		85.00	3-36		C None
	Early Yellow Corn, Lot A-20		F	99.98	0.01	81.00	4-36		F None
8392	*Balley, George, Akron[156]	Balley, George, Akron, Ind.	C						C None
	Corn		F	98.23	1.77	77.00	6-36		F None
8108	Bash Seed Boxes, Inc., S. D., Indianapolis	Bash Seed Boxes, Inc., S. D., Indianapolis, Ind.	C	99.00		90.00	3-36		C None
	90 Day Clarage Corn, Lot S-90		F	99.99	0.01	89.00	4-36		F None
8110	Bash Seed Store, Indianapolis	Bash Seed Store, Indianapolis, Ind.	C	98 00		90 00	1-36		C None
	Reid's Yellow Dent Corn, Lot C		F	99.82	0.18	91.00	4-36		F None
8175	*Berry Seed Co., Clarinda, Iowa[157]	Berry Seed Co., Clarinda, Iowa	C			90 00			C None
	Gold Dent Corn, Lot 449		F	99.99	0.01	78.00	5-36		F None
8184	*Berry Seed Co., Clarinda, Iowa[158]	Berry Seed Co., Clarinda, Iowa	C			90 00			C None
	Gold Dent Corn, Lot 450		F	99.99	0.01	78.00	4-36		F None
8314	*Berry Seed Co., Clarinda, Iowa[159]	Berry Seed Co., Clarinda, Iowa	C						C None
	Crate Krugs Dent Corn, Lot 1422		F	99 94	0 05	49 00	5-36		F None
8067	Farmers Co-op. Co., Wolcott[160]	Berry Seed Co., Clarinda, Iowa	C	99 00		90 00	3-36		C None
	Golden Dent Corn, Lot 443		F	99.99	0.01	87.00	4-36		F None
8068	Farmers Co-op. Co., Wolcott[161]	Berry Seed Co., Clarinda, Iowa	C	99 00		90.00	3-36		C None
	Silver Mine Corn, Lot 441		F	99 78	0 22	69 00	4-36		F None
8278	Bourbon Grain Exchange, Bourbon	Bourbon Grain Exchange, Bourbon, Ind.	C	99 00		92 00	4-36		C None
	Crockers Early Yellow Corn		F	99.51	0.49	92.00	5-36		F None
8222	*Brand, Paul, Edinburg[162]	Brand, Paul, Edinburg, Ind.	C						C None
	Yellow Corn		F	99.92	0.08	69.00	5-36		F None
8330	Bulleit & Son, V. H., Corydon[163]	Bulleit & Son, V. H., Corydon, Ind.	C			95 00	3-36		C None
	Iowa Goldmine Corn		F	98.58	1.42	89.00	6-36		F None
7991	*Burt & Sons, Theo, Melrose, Ohio[164]	Burt & Sons, Theo, Melrose, Ohio	C	99 75		85 00	3 36		C None
	Early Clarage Corn		F	99.99	0.01	59.00	4-36		F None
8321	Burt & Sons, Theo, Melrose, Ohio[165]	Burt & Sons, Theo, Melrose, Ohio	C	99 75		85 00	3-36		C None
	Early Clarage Seed Corn		F	99.87	0.13	68.00	6-36		F None
8049	Caplinger & Simms, Union City[166]	Caplinger & Simms, Union City, Ind.	C						C None
	Corn		F	98.27	1.73	89.00	4-36		F None
8050	Caplinger & Simms, Union City[167]	Caplinger & Simms, Union City, Ind.	C	99 00		90.00	3-36		C None
	Shipley's Yellow Dent Corn		F	99.99	0.01	93.00	4-36		F None

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*Not labeled with official Indiana State Labels.

†Certified by retailer.

C and F stands, respectively, for Claimed and Found.

[141] Sample secured from W. F. Rosenbaum, LaCrosse, Ind.

[142] Sample secured from W. F. Rosenbaum, LaCrosse, Ind.

[143] Sample secured from W. F. Rosenbaum, LaCrosse, Ind.

[144] Sample secured from Levon Mathews, Route 5, Frankfort, Ind.

[145] Sample secured from Charles Sparks, Fortville, Ind.

[146] Sample secured from Fulton County Farm Bureau Co-op. Ass'n, Inc., Rochester, Ind. Removed from sale. Misbranded. All sold.

[147] Sample secured from Daniel Emigh, Knox, Ind.

[148] Sample secured from Daniel Emigh, Knox, Ind.

[149] Sample secured from Daniel Emigh, Knox, Ind.

[150] Sample secured from Fulton County Farm Bureau Co-op. Ass'n, Inc., Rochester, Ind. Tag incomplete.

[151] Sample secured from Burney Jackson, Route 4, Greensburg, Ind.

[152] Sample secured from Marion North, Route 1, Chalmers, Ind

[153] Removed from sale. Misbranded. Relabeled.

[154] Tag incomplete.

[155] Removed from sale. Misbranded. Used for feed.

[156] Sample secured from Milton Smiley, Rochester, Ind.

[157] Sample secured from H. Roy May, Brookston, Ind.

[158] Sample secured from H. Roy May, Brookston, Ind.

[159] Sample secured from Harry W. Hagerty, Brookston, Ind.

[160] Not tagged. Labels furnished.

[161] Not tagged. Labels furnished. Removed from sale. Misbranded. Returned to distributor.

[162] Sample secured from Walter Gardner, Route 8, Rushville, Ind.

[163] Tag incomplete.

[164] Sample secured from Henry C. Lorton, Route 3, Newcastle, Ind.

[165] Sample secured from Herbert E. Smith, Topeka, Ind.

[166] Sample secured from William Johnson, Route 2, Union City, Ind., Not tagged. Labels furnished.

[167] Sample secured from Charles Hamilton, Route 4, Union City, Ind.

TABLE 8—Corn—Continued

Laboratory No. S.	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, Per Cent	Inert Matter, Per Cent	Germination, Per Cent	Date of Germination	Total Number Weed Seeds Per Lb. of Seeds	Number Per Pound of Each of the Noxious Weed Seeds Specified in the Law
8048	Simms, Robert, Union City	Caplinger & Simms, Union City, Ind.	C	99.00	..	90.00	3-36	....	C None
	Shipley Corn		F	99.88	0.12	91.00	4-36	....	F None
8305	Carter, T. Volney, Seymour[168]	Carter, T. Volney, Seymour, Ind.	C	99.50	...	96.00	1-36	...	C None
	Hoosier Yellow Hybrid Corn		F	99.66	0.34	94.00	5-36	..	F None
8362	Birkla, Charles, Sulphur[169]	Chambers Seed Co., Louisville, Ky.	C	98.00	...	90.00	4-36	...	C None
	Early Corn, Lot 1562		F	99.97	0.01	81.00	6-36	5	F None
7807	Chavis Seed Co., Fowler[170]	Chavis Seed Co., Fowler, Ind.	C	.	...	90.00	2-36	....	C None
	Krug Corn		F	99.95	0.05	78.00	3-36	...	F None
8109	Chavis Seed Co., Fowler[171]	Chavis Seed Co., Fowler, Ind.	C	99.00	.	90.00	2-36	.	C None
	Reid's Corn		F	99.60	0.40	78.00	4-36	..	F None
8247	Brodbeck, L. A., Wabash[172]	Brodbeck, L. A., Wabash, Ind.	C	99.00		90.00	3-36		C None
	Indiana Hybrid 400 Zea Mays Corn, Lot B		F	99.92	0.08	87.00	5-36		F None
8088	Cherry, A. O., Shelbyville[173]	Cherry, A. O., Shelbyville, Ind.	C	......	......	92.00	......	......	C None
	Reid's Yellow Dent Corn, Lot 1		F	99.89	0.11	90.00	4-36	......	F None
8089	Cherry, A. O., Shelbyville[174]	Cherry, A. O., Shelbyville, Ind.	C	......	......	92.00	......	......	C None
	Yellow Dent Corn, Lot 4313		F	99.62	0.38	89.00	4-36	......	F None
8090	Cherry, A. O., Shelbyville[175]	Cherry, A. O., Shelbyville, Ind.	C	......	......	92.00	......	......	C None
	Reid's Yellow Dent Corn, Lot 4339		F	99.81	0.18	86.00	4-36	4	F None
8092	Cherry, A. O., Shelbyville[176]	Cherry, A. O., Shelbyville, Ind.	C			92.00	.	....	C None
	Reid's Yellow Dent Corn, Lot 4333		F	99.99	0.01	91.00	4-36	..	F None
8093	Cherry, A. O., Shelbyville[177]	Cherry, A. O., Shelbyville, Ind.	C		..	92.00	....	..	C None
	Armstrong White Corn, Lot 4334		F	99.99	0.01	86.00	4-36		F None
8094	Cherry, A. O., Shelbyville[178]	Cherry, A. O., Shelbyville, Ind.	C		...	92.00	..	..	C None
	Armstrong White Corn, Lot 4315		F	99.04	0.96	87.00	4-36	....	F None
8097	Cherry, A. O., Shelbyville[179]	Cherry, A. O., Shelbyville, Ind.	C	..	....	92.00	....	......	C None
	Reid's Yellow Dent Corn, Lot 4292		F	99.95	0.05	90.00	4-36	..	F None
8306	Marshall Hdwe. Co., Martinsville	Coleman, Walter, Martinsville, Ind.	C	90.00	....	90.00	3-36	..	C None
	Golden Glow Corn		F	99.90	0.10	79.00	5-36		F None
7988	†Farmers Grain Co., Pershing	Corneli Seed Co., St. Louis, Mo.	C	99.25	..	92.00	2-36	..	C None
	Hand Selected Gold Mine Corn		F	99.99	0.01	91.00	4-36	...	F None
8005	Farmers Grain Co., Pershing	Corneli Seed Co., St. Louis, Mo.	C	99.25	..	92.00	2-36	..	C None
	Reid's Hand Selected Corn		F	100.00	0.00	92.00	4-36	.	F None
8063	†Farmers Grain Co., Pershing	Corneli Seed Co., St. Louis, Mo.	C	98.50	.....	90.00	1-36	.	C None
	Gold Mine Corn		F	99.97	0.03	89.00	4-36	..	F None
8064	†Farmers Grain Co., Pershing	Corneli Seed Co., St. Louis, Mo.	C	98.50	..	90.00	1-36	.....	C None
	Reid's Yellow Dent Corn		F	99.98	0.02	90.00	4-36	..	F None
8154	Crabbs Reynolds Taylor Co., Lafayette	Crabbs Reynolds Taylor Co., Crawfordsville, Ind.	C	100.00	.	95.00	4-35	.....	C None
	Troyer's Corn, Lot 6-CB		F	99.98	0.02	94.00	4-36	.	F None
8156	Crabbs Reynolds Taylor Co., Lafayette	Crabbs Reynolds Taylor Co., Crawfordsville, Ind.	C	100.00	.	90.00	3-36		C None
	Reid's Yellow Dent Seed Corn, Lot 3-CD		F	99.98	0.02	87.00	4-36	.	F None

8158	Crabbs Reynolds Taylor Co., Lafayette	Crabbs Reynolds Taylor Co., Crawfordsville, Ind.	C	100.00		90.00	3-36	C None
	Reid's Yellow Dent Seed Corn, Lot 6-CD		F	99.83	0.16	92.00	4-36	F None
8159	Crabbs Reynolds Taylor Co., Lafayette	Crabbs Reynolds Taylor Co., Crawfordsville, Ind.	C	100.00		90.00	3-36	C None
	Reid's Yellow Dent Seed Corn, Lot 7-CD		F	99.82	0.18	95.00	4-36	F None
8180	Crabbs Reynolds Taylor Co., Reynolds	Crabbs Reynolds Taylor Co., Crawfordsville, Ind.	C	100.00		90.00	3-36	C None
	Reid's Yellow Dent Seed Corn, Lot 7-CD		F	99.81	0.19	94.00	4-36	F None
8137	*Cross, Glen & Sexson, Earl, Greenfield[180]	Cross, Glen & Sexson, Earl, Greenfield, Ind.	C					C
	Yellow Corn		F	99.14	0.86	88.00	4-36	F None
8226	Pike Co. Farm Bureau Co-op. Ass'n, Inc., Petersburg[181]	Cruse, Joe, Vincennes, Ind.	C			94.00	3-36	C None
	White Corn		F	99.75	0.25	89.00	5-36	F None
8176	DeWall Seed Co., Gibson City, Ill.[182]	DeWall Seed Co., Gibson City, Ill.	C			95.00		C None
	Seed Corn		F	99.80	0.20	81.00	4-36	F None
8134	Chavis Seed Co., The, Fowler[183]	Dickinson Co., The Albert, Chicago, Ill.	C	99.50		85.00	3-36	C None
	Early Yellow Dent Corn, Lot 72762		F	99.82	0.18	67.00	4-36	F None
8085	Farmers Co-op. Co., Royal Center[184]	Dickinson Co., The Albert, Chicago, Ill.	C	99.50		90.00	3-36	C None
	Yellow Dent Corn, Lot 72756		F	99.87	0.12	75.00	4-36	F None
7971	†Farmers Co-op. Co., Wolcott[185]	Dickinson Co., The Albert, Chicago, Ill.	C	99.50		90.00	2-36	C None
	Reid's Yellow Dent Corn, Lot 0724-17		F	99.81	0.19	81.00	4-36	F None
7972	Farmers Co-op. Co., Wolcott[186]	Dickinson Co., The Albert, Chicago, Ill.	C	99.50		90.00	2-36	C None
	Reid's Yellow Dent Corn, Lot 072417		F	99.99	0.01	78.00	4-36	F None
8250	Hirsch Bros. Grain Co., Grass Creek[187]	Dickinson Co., The Albert, Chicago, Ill.	C	99.50		89.00	4-36	C None
	Golden Glow Corn, Lot 072455		F	99.54	0.46	76.00	5-36	F None
7974	Morocco Grain & Lumber Co., Morocco	Dickinson Co., The Albert, Chicago, Ill.	C	99.50		85.00	3-36	C None
	Yellow Dent Corn, Lot 72762		F	99.83	0.17	78.00	4-36	F None
8351	Paxson, C. E., Elkhart	Dickinson Co., The Albert, Chicago, Ill.	C	99.50		90.00	3-36	C None
	Early Yellow Dent Corn, Lot 072427		F	99.67	0.33	85.00	6-36	F None
8202	Rich Grain Co., Otterbein[188]	Dickinson Co., The Albert, Chicago, Ill.	C	99.50		90.00	3-36	C None
	Yellow Dent Corn, Lot 72756		F	99.73	0.27	68.00	5-36	F None
8203	Rich Grain Co., Otterbein[189]	Dickinson Co., The Albert, Chicago, Ill.	C			90.00		C None
	Yellow Dent Corn		F	99.96	0.04	64.00	4-36	F None
8292	Roberts Feed Co., Richmond[190]	Dickinson Co., The Albert, Chicago, Ill.	C	99.50		90.00	3-36	C None
	Early Yellow Dent Corn, Lot 72757		F	99.99	0.01	60.00	5-36	F None
8294	Roberts Feed Co., Richmond[191]	Dickinson Co., The Albert, Chicago, Ill.	C	99.50		90.00	3-36	C None
	Early Yellow Dent Corn, Lot 72756		F	99.99	0.01	68.00	5-36	F None
8296	Roberts Feed Co., Richmond	Dickinson Co., The Albert, Chicago, Ill.	C	99.50		90.00	3-36	C None
	Yellow Dent Corn, Lot 72756		F	99.90	0.10	64.00	5-36	F None

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*Not labeled with official Indiana State Labels.

†Certified by retailer.

C and F stands, respectively, for Claimed and Found.

[168] Sample secured from R. D. Sellars, Route 1, Mooresville, Ind.

[169] Sample secured from Owen V. Crecelius, Beechwood, Ind. Not tagged. Labels furnished.

[170] Tag incomplete. Sample secured from J. L. McCord, West Point, Ind.

[171] Removed from sale. Misbranded. Returned to seller.

[172] Sample secured from W. K. Gast, Akron, Ind.

[173] Tag incomplete.

[174] Tag incomplete.

[175] Tag incomplete.

[176] Tag incomplete.

[177] Tag incomplete.

[178] Tag incomplete.

[179] Tag incomplete.

[180] Sample secured from David W. Jackson, Route 4, Greenfield, Ind.

[181] Tag incomplete.

[182] Sample secured from H. H. Disney, Danville, Ind. Not tagged. Returned to distributor.

[183] Removed from sale. Misbranded. Returned to distributor.

[184] Removed from sale. Misbranded. Returned to distributor.

[185] Sample secured from Mrs. Eben Wynkoop, Route 2, Wolcott, Ind.

[186] Sample secured from L. H. Wynkoop, Route 2, Wolcott, Ind.

[187] Not tagged. Labels furnished.

[188] Sample secured from Jacob W. Brown, Route 10, Lafayette, Ind.

[189] Sample secured from John W. Yarnell, Route 10, Lafayette, Ind. Tag incomplete.

[190] Sample secured from Robert Newton, Route 2, Richmond, Ind.

[191] Sample secured from Carl J. Norris, Route 3, Richmond, Ind.

TABLE 8—Corn—Continued

Laboratory No. S.	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, Per Cent	Inert Matter, Per Cent	Germination, Per Cent	Date of Germination	Total Number Weed Seeds Per Lb. of Seeds	Number Per Pound of Each of the Noxious Weed Seeds Specified in the Law
8399	Rossville Elevator Co., Rossville[192]	Dickinson Co., The Albert, Chicago, Ill.	C	99.50	......	90.00	3-36	......	C None
	Yellow Dent Corn, Lot 72756		F	99.77	0.23	61.00	6-36	......	F None
7805	Shirley, O. C., Knightstown[193]	Dickinson Co., The Albert, Chicago, Ill.	C	......	......	......	......	......	C
	Reid's Yellow Dent Corn, Lot 072415		F	99.99	0.01	83.00	3-36	......	F None
8322	Elkhart Co. Farm Bureau Co-op. Ass'n, Inc., Goshen	Elkhart Co. Farm Bureau Co-op. Ass'n, Inc., Goshen, Ind.	C	99.50	......	94.00	3-36	......	C None
	Huron Co. Yellow Dent Corn, Lot 10		F	99.86	0.13	90.00	5-36	......	F None
8111	Everitt's Seed Store, Indianapolis[194]	Everitt's Seed Store, Indianapolis, Ind.	C	98.00		98.00	2-36	......	C None
	Reid's Early Yellow Dent Seed Corn		F	99.60	0.40	74.00	4-36	......	F None
8107	Fagan Seed Co., Indianapolis	Fagan Seed Co., Indianapolis, Ind.	C	99.00	......	95.00	3-36	......	C None
	100 Day Yellow Dent Corn, Lot Rob.		F	99.99	0.01	85.00	4-36	......	F None
8183	Farmers Co-op. Co., Wolcott[195]	Farmers Co-op. Co., Wolcott, Ind.	C	99.50	......	90.00	3-36	......	C None
	Yellow Dent Corn, Lot 72767		F	99.99	0.01	83.00	4-36	......	F None
8151	Galveston Farmers Elevator Co., Galveston	Foster-Kendall Co., Carmel, Ind.	C	99.00	......	90.00	1-36	......	C None
	Corn, Lot W80		F	99.55	0.45	90.00	4-36	......	F None
8264	King Elevator Co., Wabash	Foster-Kendall Co., Carmel, Ind.	C	99.00	......	90.00	3-36	......	C None
	90 Day Corn		F	99.57	0.43	82.00	5-36	......	F None
8168	Orme & Sons, Arnold, Rushville	Foster-Kendall Co., Carmel, Ind.	C	99.00	......	92.00	1-36		C None
	Reid's Yellow Dent Corn, Lot C-1		F	99.91	0.07	93.00	4-36	......	F None
8066	Shirley, O. C., Knightstown[196]	Foster-Kendall Co., Carmel, Ind.	C	99.00	......	90.00	1-36	......	C None
	Reid's Yellow Dent Corn, Lot W80		F	99.95	0.04	77.00	4-36	......	F None
8245	Shirley, O. C., Knightstown	Foster-Kendall Co., Carmel, Ind.	C	99.00	......	90.00	1-36	......	C None
	Reid's Yellow Dent Corn, Lot W-80		F	99.69	0.31	83.00	5-36	......	F None
8248	Standard Elevator Co., Kewanna	Foster-Kendall Co., Carmel, Ind.	C	99.00	......	90.00	1-36	......	C None
	90 Day Yellow Dent Corn, Lot Robinson		F	99.52	0.48	81.00	5-36	......	F None
8181	Standard Elevator Co., Monon	Foster-Kendall Co., Carmel, Ind.	C	99.00	......	90.00	1-36	......	C None
	90 Day Yellow Dent Corn, Lot S2		F	99.80	0.20	90.00	4-36	......	F None
8157	Walton Elevator Co., Walton	Foster-Kendall Co., Carmel, Ind.	C	99.00	......	90.00	1-36	......	C None
	Reid's Type Yellow Dent Corn, Lot W80		F	99.17	0.83	82.00	4-36	......	F None
8390	Young & Cox, Richmond[197]	Foster-Kendall Co., Carmel, Ind.	C	99.00	......	90.00	4-36	......	C None
	Reid's Dent Corn, Lot F 14		F	99.87	0.12	73.00	6-36	......	F None
7636	Funk & Sons, Edward J., Kentland	Funk & Sons, Edward J., Kentland, Ind.	C	99.50	......	95.00	2-36	......	C None
	Krug Corn		F	99.99	0.01	99.00	3-36	......	F None
8255	*Gardner Seed Co., Rochester, N. Y.[198]	Gardner Seed Co., Rochester, N. Y.	C	99.00	......	90.00	2-36	......	C None
	Early Growmore Strain Yellow Corn, Lot 103, Stock 11		F	98.61	1.36	95.00	5-36	......	F None
8256	*Gardner Seed Co., Rochester, N. Y.[199]	Gardner Seed Co., Rochester, N. Y.	C	99.00	......	90.00	2-36	......	C None
	Golden Glow Corn, Lot 102, Stock 13		F	99.99	0.01	92.00	5-36	......	F None
8396	*Gardner Seed Co., Rochester, N. Y.[200]	Gardner Seed Co., Rochester, N. Y.	C	99.00	......	90.00	2-36	......	C None
	Cornell No. 11 Corn, Lot 140		F	99.50	0.50	96.00	6-36	......	F None
8397	*Gardner Seed Co., Rochester, N. Y.[201]	Gardner Seed Co., Rochester, N. Y.	C	99.00	......	90.00	2-36	......	C None
	Corn, Lot 103		F	99.36	0.64	96.00	6-36	......	F None

8149	Rossville Elevator Co., Rossville[202]	Goodrich Bros. Hay & Grain Co., Gadsden, Ind.	C	99.00	......	95.00	3-36	......	C None
	Yellow Dent Corn		F	99.40	0.60	52.00	4-36	......	F None
7486	Howat, Thomas E., Francesville	Howat, Thomas E., Francesville, Ind.	C	99.00	......	92.00	12-35	......	C None
	Hybrid Corn, Lot ED 666		F	99.99	0.01	98.00	3-36	......	F None
8053	Howat, Thomas E., Francesville	Howat, Thomas E., Francesville, Ind.	C	95.00	......	85.00	2-36	......	C None
	Feldmans Seed Corn, Lot 1		F	99.99	0.01	75.00	4-36	......	F None
8054	Howat, Thomas E., Francesville[203]	Howat, Thomas E., Francesville, Ind.	C	95.00	......	85.00	3-36	......	C None
	100 Day Yellow Dent Corn, Lot 2		F	99.93	0.07	67.00	4-36	......	F None
8241	Hutton, W. E., Vincennes[204]	Hutton, W. E., Vincennes, Ind.	C	98.00	......	95.00	4-36	......	C None
	Johnson Co. White Corn		F	99.68	0.32	78.00	5-36	......	F None
8319	Elkhart Co. Farm Bureau Co-op., Ass'n, Inc., Goshen	Indiana Farm Bureau Co-op. Ass'n, Inc., Indianapolis, Ind.	C	99.50	......	90.00	3-36	......	C None
	White Corn, Lot 4315		F	99.32	0.67	87.00	6-36	......	F None
8320	Elkhart Co. Farm Bureau Co-op. Ass'n, Inc., Goshen	Indiana Farm Bureau Co-op. Ass'n, Inc., Indianapolis, Ind.	C	99.50	......	90.00	3-36	......	C None
	Eureka Corn		F	99.99	0.01	96.00	5-36	......	F None
8286	Rush Co. Farm Bureau Co-op. Ass'n, Inc., Rushville	Indiana Farm Bureau Co-op. Ass'n, Inc., Indianapolis, Ind.	C	99.50		90.00	3-36	......	C None
	Yellow Dent Corn, Lot 4313		F	99.67	0.31	87.00	5-36	10	F Horse nettle, 5
8347	Martin Feed Store, Elkhart	Isbell Seed Co., Jackson, Mich.	C	99.50	......	92.00	1-36	......	C None
	Purple Tip Corn		F	99.99	0.01	86.00	5-36	......	F None
8368	Steuben Co. Farm Bureau Co-op. Ass'n, Inc.,[205]								
	Pleasant Lake	Isbell Seed Co., Jackson, Mich.	C	99.00	......	90.00	1-36	......	C None
	Michigan Yellow Dent Corn		F	99.99	0.01	78.00	6-36	......	F None
8353	Stump Grain & Coal Co., Garrett[206]	Isbell Seed Co., Jackson, Mich.	C	99.00	......	90.00	3-36	......	C None
	Golden Glow Corn, Lot 960		F	99.99	0.01	86.00	6-36	......	F None
7013	†McMahan Seed Co., Valparaiso[207]	Jacques, Wm. H., Prescott, Wis.	C	99.80	......	70.00	......	......	C None
	Stowells Evergreen Sweet Corn		F	99.61	0.39	40.00	2-36	......	F None
7014	†McMahan Seed Co., Valparaiso[208]	Jacques, Wm. H., Prescott, Wis.	C	99.80	......	60.00	......	......	C None
	Country Gentleman Sweet Corn		F	99.79	0.21	51.00	2-36	......	F None
8328	James Seed Co., Jeffersonville	James Seed Co., Jeffersonville, Ind.	C	98.00	......	93.00	5-36	......	C None
	Northern Field Corn, Lot 1		F	99.99	0.01	95.00	5-36	......	F None
8141	Johnson, P. L., Vincennes	Johnson, P. L., Vincennes, Ind.	C	99.00	......	95.00	3-36	......	C None
	Knight Corn		F	99.99	0.01	92.00	4-36	......	F None
8142	Johnson, P. L., Vincennes	Johnson, P. L., Vincennes, Ind.	C	99.00	......	95.00	3-36	......	C None
	Johnson Co. White Corn		F	99.76	0.24	90.00	4-36	......	F None
8143	Johnson, P. L., Vincennes	Johnson, P. L., Vincennes, Ind.	C	99.00	......	90.00	3-36	......	C None
	Yellow Corn		F	99.99	0.01	88.00	4-36	......	F None
8191	Kellen, Charles W., Otterbein[209]	Kellen, Charles W., Otterbein, Ind.	C	......	......	90.00	3-36	......	C None
	Krugs Corn		F	98.81	1.18	83.00	5-36	......	F None
8201	Knapp Seed & Feed Store, C. E., South Bend	King & Sons, H. C., Battle Creek, Mich.	C	99.50	......	92.95	4-36	......	C None
	Ensilage Corn, Lot IRC		F	100.00	0.00	89.00	4-36	......	F None
8348	Martin Feed Store, Elkhart	King & Sons, H. C., Battle Creek, Mich.	C	99.50	......	92.95	4-36	......	C None
	Red Cob Corn, Lot IRC		F	99.99	0.01	83.00	5-36	......	F None

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*Not labeled with official Indiana State Labels.

†Certified by retailer.

C and F stands, respectively, for Claimed and Found.

[192] Removed from sale. Misbranded. Returned to distributor.

[193] Not tagged. Labels furnished.

[194] Removed from sale. Misbranded. Replaced by seller.

[195] Sample secured from John G. Brown, Monon, Ind.

[196] Removed from sale. Misbranded. Returned to distributor.

[197] Sample secured from Russell Lane, Route 2, Richmond, Ind.

[198] Sample secured from Dale Becknell, Route 1, Bourbon, Ind.

[199] Sample secured from Burl Becknell, Bourbon, Ind.

[200] Sample secured from A. J. Forbes, Westville, Ind.

[201] Sample secured from Andrew Bolinger, Route 9, Huntington, Ind.

[202] Removed from sale. Misbranded.

[203] Removed from sale. Misbranded. Relabeled.

[204] Not tagged. Labels furnished.

[205] Removed from sale. Misbranded. All sold.

[206] Not tagged. Labels furnished.

[207] Removed from sale. Misbranded. Used for feed. Tag incomplete.

[208] Tag incomplete.

[209] Sample secured from Arthur Hawkins, Route 10, Lafayette, Ind. Tag incomplete.

TABLE 8– Corn– Continued

Laboratory No. S.	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, Per Cent	Inert Matter, Per Cent	Germination, Per Cent	Date of Germination	Total Number Weed Seeds Per Lb. of Seeds	Number Per Pound of Each of the Noxious Weed Seeds Specified in the La
8257	Kirksville Seed Co., Marion[210] Woodburn Corn, Lot Mankin	Kirksville Seed Co., Kirksville, Mo.	C	95.00		98.00	4-36		C None
			F	99.99	0.01	64.00	5-36		F None
8262	Kirksville Seed Co., Marion[211] Medium Early Yellow Dent Corn, Lot Green	Kirksville Seed Co., Kirksville, Mo	C	99.00		90.00	3-36		C None
			F	99.83	0.17	59.00	5-36		F None
8265	Kirksville Seed Co., Marion[212] Medium Early Yellow Dent Corn, Lot Reed	Kirksville Seed Co., Kirksville, Mo.	C	99.00	...	98.00	4-36		C None
			F	99.99	0.01	81.00	5-36		F None
8266	Kirksville Seed Co., Marion[213] Medium Early Yellow Dent Corn, Lot Green	Kirksville Seed Co., Kirksville, Mo.	C	99.00	...	80.00	4-36		C None
			F	99.99	0.01	59.00	5-36		F None
8267	Kirksville Seed Co., Marion[214] Medium Early Yellow Dent Corn, Lot Reed	Kirksville Seed Co., Kirksville, Mo.	C	99.00	...	90.00	4-36		C None
			F	99.95	0.05	70.00	5-36		F None
8393	Kirksville Seed Co., Marion[215] Iowa Gold Mine Corn, Lot Taylor	Kirksville Seed Co., Kirksville, Mo.	C	98.00	...	90.00	5-36		C None
			F	99.77	0.23	80.00	6-36		F None
8204	Knapp, C. E., South Bend Early Yellow Dent Corn, Lot 3	Knapp, C. E., South Bend, Ind.	C	99.00	...	94.00	4-36		C None
			F	99.83	0.17	93.00	4-36		F None
8172	Lachmund, Howard, Brookston Early Dent Corn	Lachmund, Howard, Brookston, Ind.	C	99.00	...	90.00	3-36		C None
			F	99.95	0.05	79.00	4-36		F None
8386	Laughlin Feed & Grain Co., Scotland[216] Yellow Dent Corn	Laughlin Feed & Grain Co., Scotland, Ind.	C	98.00		90.00	5-36		C None
			F	99.94	0.06	26.00	6-36		F None
8307	Lawrence Co. Farm Bureau Co-op. Ass'n, Inc., Bedford[217] Corn	Lawrence Co. Farm Bureau Co-op. Ass'n, Inc., Bedford, Ind.	C	...		90.00	3-36		C None
			F	99.91	0.09	75.00	5-36		F None
8302	*Farmers Feed & Coal Co., Bloomington Yellow Corn	Lawson, Lewis, Bloomington, Ind.	C	...	...		...		C
			F	99.83	0.17	72.00	5-36		F None
8251	Young & Cox, Richmond Leaming Corn	Livingston Seed Co., Columbus, Ohio.	C	99.00		90.00	2-36		C None
			F	99.67	0.33	89.00	5-36		F None
8281	Young & Cox, Richmond Woodburn Corn	Livingston Seed Co., Columbus, Ohio	C	99.00		90.00	2-36		C None
			F	99.52	0.48	89.00	5-36		F None
8282	Young & Cox, Richmond Reid's Yellow Dent Corn	Livingston Seed Co., Columbus, Ohio	C	99.00	...	90.00	2-36		C None
			F	99.70	0.30	83.00	5-36		F None
8334	Hamilton, John W., Medora Seed Corn	Louisville Seed Co., Louisville, Ky.	C	98.00	...	90.00	3-36		C None
			F	99.93	0.07	83.00	5-36		F None
8303	*McCormack, C. J., Vincennes[218] Yellow Corn	McCormack, C. J., Vincennes, Ind.	C	...	...	...	...		C
			F	99.76	0.24	82.00	5-36		F None
8041	Young & Cox, Richmond[219] Woodburn Corn, Lot 2970	McCullough Seed Co., The J. Chas., Cincinnati, Ohio	C	99.50	...	85.00	2-36		C None
			F	99.99	0.01	77.00	4-36		F None
8336	Bulleit & Son, V. H., Corydon[220] Reid's Yellow Dent Corn	McGrain, Albert, Corydon, Ind.	C		...	95.00	2-36		C None
			F	99.94	0.06	91.00	5-36		F None
7629	McMahan Seed Co., Valparaiso[221] Yellow Corn, Lot Walters	McMahan Seed Co., Valparaiso, Ind.	C	99.50	...	85.00	2-36		C None
			F	99.73	0.27	61.00	4-36		F None
8311	Heise Bros. & Co., Mitchell Improved Reid's Yellow Dent Corn	Matthews, H. L., Mitchell, Ind.	C	99.00	...	90.00	3-36		C None
			F	99.99	0.01	85.00	5-36		F None

8240	Pike Co. Farm Bureau Co-op. Ass'n, Inc., Petersburg[222]	Mehne, Lawrence, Jasper, Ind.	C			94 00		C	
	Yellow Dent Corn, Lot No. 1		F	99 94	0 06	86 00	5 36	F	None
8402	Moore Bros., Kirklin[223]	Moore Bros., Kirklin, Ind.	C	98 00		85 00	3-36	C	None
	Yellow Dent Corn, Lot 2		F	99 00	1 00	26 00	6-36	F	None
8403	Moore Bros., Kirklin[224]	Moore Bros., Kirklin, Ind.	C	98 00		95 00	3-36	C	None
	Yellow Dent Corn, Lot 3		F	98 86	1 05	29 00	6-36	F	None
8409	*Morgan Packing Co., Brownstown[225]	Morgan Packing Co., Brownstown, Ind.	C					C	
	Stowell's Evergreen Sweet Corn, Lot First		F	99 35	0 65	49 00	7 36	F	None
8410	*Morgan Packing Co., Brownstown[226]	Morgan Packing Co., Brownstown, Ind.	C					C	
	Stowell's Evergreen Sweet Corn, Lot Second		F	99 84	0 16	56 00	7-36	F	None
8411	*Morgan Packing Co., Brownstown[227]	Morgan Packing Co., Brownstown, Ind.	C					C	
	Sweet Corn		F	99 99	0 01	72 00	7-36	F	None
8412	*Morgan Packing Co., Brownstown[228]	Morgan Packing Co., Brownstown, Ind.	C					C	
	Sweet Corn		F	99.80	0 20	48 50	7-36	F	None
8413	*Morgan Packing Co., Brownstown[229]	Morgan Packing Co., Brownstown, Ind.	C					C	
	Stowell's Evergreen Sweet Corn		F	95.62	0.05	58.00	7-36	F	None
8160	Musgrave, Paul, Martinsville[230]	Musgrave, Paul, Martinsville, Ind.	C	99 00		90 00	3 36	C	None
	Reid's Yellow Dent Corn		F	99 88	0 12	74 00	4-36	F	None
7811	Young & Cox, Richmond[231]	New Paris Elevator Co., New Paris, Ohio	C			90.00	2-36	C	None
	Reid's Corn		F	99.80	0.20	85.00	3-36	F	None
8036	Brown Supply Co., Valparaiso	O. & M. Seed Co., The, Green Springs, Ohio	C	98 00		85 00	3 36	C	None
	Silver Mine Seed Corn		F	99.99	0.01	93 00	4 36	F	None
7953	†Indiana Feed & Seed Co., Ft. Wayne	O. & M. Seed Co., The, Green Springs, Ohio	C	99 00		90.00	2 36	C	None
	O. & M. Blue Mountain Seed Corn		F	99 99	0 01	84 00	4-36	F	None
7956	†Indiana Feed & Seed Co., Ft. Wayne	O. & M. Seed Co., The, Green Springs, Ohio	C	99 00		90 00	2 36	C	None
	O. & M. Leaming Seed Corn		F	99 99	0 01	85 00	4 36	F	None
7963	†Indiana Feed & Seed Co., Ft. Wayne[232]	O. & M. Seed Co., The, Green Springs, Ohio	C	99 00		88 00	2 36	C	None
	O. & M. Surecrop Seed Corn		F	99 99	0 01	76.00	4 36	F	None
8059	†Royal Hatchery & Supply Co., Union City	O. & M. Seed Co., The, Green Springs, Ohio	C	99 00		85 00	2 36	C	None
	O. & M. Leaming Corn		F	99 99	0 01	81 00	4 36	F	None
8061	†Royal Hatchery & Supply Co., Union City	O. & M. Seed Co., The, Green Springs, Ohio	C	99.00		85 00	2 36	C	None
	O. & M. Early Clarage Corn		F	99.85	0 15	79 00	4-36	F	None
8065	†Royal Hatchery & Supply Co., Union City[233]	O. & M. Seed Co., The, Green Springs, Ohio	C	99 00		80 00	2 36	C	None
	O. & M. Haskins Early Corn		F	99 77	0.23	63 00	4 36	F	None
8037	Brown Supply Co., Valparaiso	Olds Seed Co., L. L., Madison, Wis.	C	99 50		94 00	1 36	C	None
	Golden Glow Seed Corn		F	99 99	0 01	89 00	4 36	F	None

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*Not labeled with official Indiana State Labels.

†Certified by retailer.

C and F stands, respectively, for Claimed and Found.

[210] Removed from sale. Misbranded.

[211] Sample secured from Eldon Douglass, Lafontaine, Ind.

[212] Removed from sale. Misbranded.

[213] Removed from sale. Misbranded.

[214] Removed from sale. Misbranded.

[215] Sample secured from Milton Smiley, Rochester, Ind.

[216] Removed from sale. Misbranded. Sold for feed.

[217] Removed from sale. Misbranded. All sold. Tag incomplete.

[218] Sample secured from W. J. Duckworth, Paragon, Ind.

[219] Distributed by New Paris Elevator Co., New Paris, Ohio.

[220] Tag incomplete.

[221] Removed from sale. Misbranded.

[222] Tag incomplete.

[223] Removed from sale. Misbranded. Used for feed.

[224] Removed from sale. Misbranded. Used for feed.

[225] Sample secured from Albert Wischmeier, Route 2, Brownstown, Ind.

[226] Sample secured from Albert Wischmeier, Route 2, Brownstown, Ind.

[227] Sample secured from Henry J. F. Hackman, Route 2, Brownstown, Ind.

[228] Sample secured from S. J. Brewer, Route 1, Vallonia, Ind.

[229] Sample secured from John Lambring, Route 2, Brownstown, Ind.

[230] Removed from sale. Misbranded.

[231] Tag incomplete.

[232] Not tagged. Labels furnished.

[233] Removed from sale. Misbranded. Returned to distributor.

TABLE 8—Corn—Continued

Laboratory No. S.	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, Per Cent	Inert Matter, Per Cent	Germination, Per Cent	Date of Germination	Total Number Weed Seeds Per Lb. of Seeds	Number Per Pound of Each of the Noxious Weed Seeds Specified in the Law
8098	†Lapaz Grain Co., Lapaz	Olds Seed Co., L. L., Madison, Wis.	C	99.00	......	94.00	1-36	......	C None
	Golden Glow Corn, Lot Columbus		F	99.79	0.21	90.00	4-36	......	F None
8295	Sowash Grain Co., E. K., Crown Point	Olds Seed Co., L. L., Madison, Wis.	C	99.00	......	99.00	3-36	......	C None
	Improved Leaming Corn, Lot Lema		F	99.86	0.14	81.00	5-36	......	F None
7946	Fretz, R. C., Waterloo	Outland, T. W., Antwerp, Ohio	C	95.00	......	95.00	3-35	......	C None
	Clarage Corn		F	99.58	0.42	99.00	4-36	......	F None
7954	Fretz, R. C., Waterloo[234]	Outland, T. W., Antwerp, Ohio	C	95.00	......	95.00	3-34	......	C None
	Early Yellow Dent Corn		F	99.89	0.11	82.00	4-36	......	F None
7955	†Gelzleichter & Son, J., Huntington[235]	Outland, T. W., Antwerp, Ohio	C	......	......	88.00	3-36	......	C None
	Early Yellow Dent Corn		F	99.99	0.01	79.00	4-36	......	F None
8352	Henderson Reed Co., Ft. Wayne[236]	Outland, T. W., Antwerp, Ohio	C	......	......	90.00	5-36	......	C None
	Yellow Dent Corn		F	99.56	0.44	83.00	6-36	......	F None
8100	†Troyer Seed Co., Goshen	Outland, T. W., Antwerp, Ohio	C	99.00	......	93.00	3-36	......	C None
	Early Yellow Dent Corn		F	99.99	0.01	83.00	4-36	......	F None
8102	†Troyer Seed Co., Goshen[237]	Outland, T. W., Antwerp, Ohio	C	99.00	......	93.00	3-36	......	C None
	Woodburn Corn		F	99.99	0.01	72.00	4-36	......	F None
8103	†Troyer Seed Co., Goshen[238]	Outland, T. W., Antwerp, Ohio	C	99.00	......	93.00	3-36	......	C None
	90 Day Yellow Dent Corn		F	99.85	0.15	78.00	4-36	......	F None
7632	Whitley Co. Farm Bureau Co-op. Ass'n, Inc., Columbia City	Parker, Roy W., Pierceton, Ind.	C	99.00	.....	95.00	2-36	......	C None
	Improved Mac Corn		F	99.98	0.02	88.00	3-36	......	F None
8363	Batman, A. J., Marengo	Purcell Seed Co., Evansville, Ind.	C	98.00	......	90.00	3-36	......	C None
	"Tru Val" Reid's Yellow Dent Corn, Lot 5263		F	99.82	0.17	84.00	6-36	......	F None
7973	Farmers Co-op. Co., Wolcott[239]	Purcell Seed Co., Evansville, Ind.	C	99.00	.....	96.00	3-36	......	C None
	Red Cob White Corn		F	99.51	0.49	94.00	4-36	......	F None
8394	Purdue, A. V., Rochester[210]	Purdue, A. V., Rochester, Ind.	C	......	.....	94.00	4-36	......	C None
	Mixed Corn		F	99.73	0.27	38.00	6-36	......	F None
8217	*Rose, M. O., Vincennes	Rose, M. O., Vincennes, Ind.	C	......	......	......	......	......	C
	Reid's Yellow Dent Corn, Lot 1		F	99.85	0.15	94.00	4-36	......	F None
8225	Brownstown Feed Exchange, Brownstown	Ross Seed Co., Louisville, Ky.	C	99.00	......	90.00	3-36	......	C None
	Reid's Yellow Dent Seed Corn		F	99.75	0.24	95.00	5-36	......	F None
8233	Brownstown Feed Exchange, Brownstown	Ross Seed Co., Louisville, Ky.	C	99.00	......	90.00	3-36	......	C None
	Johnson Co. Seed Corn		F	99.83	0.17	90.00	5-36	......	F None
8165	Rush Service Co., Rushville	Rush Service Co., Rushville, Ind.	C	96.00	......	80.00	4-36	......	C None
	Yellow Corn, Lot A		F	98.77	1.23	72.00	4-36	......	F None
8205	Argos Elevator Co., Argos	Rychener, S., Pettisville, Ohio	C	98.00	......	85.00	3-36	......	C None
	Early Clarage Corn		F	99.99	0.01	78.00	4-36	......	F None
8276	Bremen Elevator, Bremen[241]	Rychener, S., Pettisville, Ohio	C	98.00	......	85.00	3-36	......	C None
	Woodburn Yellow Dent Corn		F	99.99	0.01	60.00	5-36	......	F None

8355	Corunna Feed Mill, Corunna[242]	Rychener, S., Pettisville, Ohio	C	98.00	....	90.00	3-36	C None
	Yellow Dent Corn, Lot Hoe		F	99.65	0.35	75.00	6-36	F None
8197	LaPorte Co. Farm Bureau Co-op. Ass'n, Inc., LaPorte[243]	Rychener, S., Pettisville, Ohio	C	99.00	....	90.00	3-36	C None
	Early Butler Corn		F	99.99	0.01	66.00	5-36	F None
8200	LaPorte Co. Farm Bureau Co-op. Ass'n, Inc., LaPorte	Rychener, S., Pettisville, Ohio	C	98.00	....	90.00	3-36	C None
	Ohio Yellow Dent Corn, Lot Row		F	99.81	0.19	88.00	4-36	F None
8253	Markle Elevator Co., Markle	Rychener, S., Pettisville, Ohio	C	99.00	....	90.00	3-36	C None
	Early Dent Corn, Lot Row		F	99.99	0.01	87.00	5-36	F None
8254	Markle Elevator Co., Markle[244]	Rychener S., Pettisville, Ohio	C	99.00	....	85.00	3-36	C None
	Early Butler Corn, Lot Noble		F	99.99	0.01	67.00	5-36	F None
8285	Northern Indiana Co-op. Ass'n, Mentone	Rychener, S., Pettisville, Ohio	C	98.00	....	90.00	3-36	C None
	Reid's Yellow Dent Corn		F	99.99	0.01	88.00	5-36	F None
8277	Plymouth Farm Supply Co., Plymouth	Rychener, S. Pettisville, Ohio	C	98.00	....	85.00	3-36	C None
	Pa. Sure Crop Corn		F	99.99	0.01	87.00	5-36	F None
8383	Plymouth Farm Supply Co., Plymouth	Rychener, S., Pettisville, Ohio	C	98.00	....	85.00	3-36	C None
	Early Yellow Dent Corn		F	99.45	0.54	75.00	6-36	F None
8384	Plymouth Farm Supply Co., Plymouth[245]	Rychener, S., Pettisville, Ohio	C	98.00	....	85.00	3-36	C None
	Woodburn Yellow Dent Corn, Lot P		F	99.70	0.28	39.00	6-36	F None
8206	Way, C. B., LaPorte[246]	Rychener, S., Pettisville, Ohio	C	99.00	....	90.00	3-36	C None
	Early Butler Corn, Lot N		F	99.68	0.32	71.00	5-36	F None
7989	*Scarff's Sons, W. N., New Carlisle, Ohio[217]	Scarff's Sons, W. N., New Carlisle, Ohio	C	99.00	....	90.00	1-36	C None
	Blue Clarage Corn		F	99.54	0.46	86.00	4-36	F None
7990	*Scarff's Sons, W. N., New Carlisle, Ohio[218]	Scarff's Sons, W.N., New Carlisle, Ohio	C	99.00	....	90.00	1-36	C None
	Woodburn Corn		F	99.67	0.33	89.00	4-36	F None
8327	Clark Co. Farm Bureau Co-op. Ass'n, Inc., Jeffersonville	Scott Seed Co., New Albany, Ind.	C	98.00	....	90.00	3-36	C None
	90 Day Yellow Dent Corn, Lot Rob		F	99.90	0.10	81.00	5-36	F None
8101	Dembufsky Seed Co., Goshen	Scott Seed Co., New Albany, Ind.	C	98.00	....	90.00	1-36	C None
	Johnson Co. White Corn		F	99.92	0.08	83.00	4-36	F None
8164	Hayes, R. E., Campbellsburg	Scott Seed Co., New Albany, Ind.	C	98.00	....	90.00	1-36	C None
	Boone Co. White Corn		F	99.82	0.18	87.00	4-36	F None
8166	Hayes, R. E., Campbellsburg	Scott Seed Co., New Albany, Ind.	C	98.00	....	90.00	2-36	C None
	Reid's Yellow Dent Corn, Lot Kelly		F	99.67	0.33	82.00	5-36	F None
8312	Norman, G. M. & Roberts, Bedford	Scott Seed Co., New Albany, Ind.	C	98.00	....	90.00	3-36	C None
	Reid's Yellow Dent Corn, Lot R		F	99.61	0.39	83.00	5-36	F None
8369	Sunshine Feed Store, Scottsburg	Scott Seed Co., New Albany, Ind.	C	98.00	....	90.00	3-36	C None
	90 Day Yellow Corn, Lot R		F	99.83	0.17	80.00	6-36	F None
8370	Sunshine Feed Store, Scottsburg	Scott Seed Co., New Albany, Ind.	C	98.00	....	90.00	3-36	C None
	Reid's Yellow Dent Corn, Lot Rob		F	99.62	0.38	88.00	6-36	F None
8187	Tuxedo Feed & Supply Co., Aurora[249]	Scott Seed Co., New Albany, Ind.	C	98.00	....	90.00	3-36	C None
	Reid's Yellow Dent Corn, Lot Kelly		F	99.74	0.26	78.00	4-36	F None

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*Not labeled with official Indiana State Labels.

†Certified by retailer.

C and F stands, respectively, for Claimed and Found.

[234] Removed from sale. Misbranded. Used for feed.

[235] Tag incomplete.

[236] Sample secured from Earl Black, Ft. Wayne, Ind. Tag incomplete.

[237] Removed from sale. Misbranded. Returned to distributor.

[238] Removed from sale. Misbranded.

[239] Distributed by C. E. Hightower, Oakland City, Ind.

[240] Sample secured from Milton Smiley, Rochester, Ind. Misbranded. Refund paid by A. V. Purdue to Milton Smiley.

[241] Removed from sale. Misbranded. Returned to distributor.

[242] Removed from sale. Misbranded. All sold.

[243] Removed from sale. Misbranded. Returned to distributor.

[244] Removed from sale. Misbranded. Returned to distributor.

[245] Removed from sale. Misbranded.

[246] Removed from sale. Misbranded. Returned to distributor.

[247] Sample secured from Harry H. Stafford, Route 1, Hagerstown, Ind.

[248] Sample secured from R. E. Bennington, Route 1, Galveston, Ind.

[249] Removed from sale. Misbranded. All sold.

TABLE 8—Corn—Continued

Laboratory No. S.	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, Per Cent	Inert Matter, Per Cent	Germination, Per Cent	Date of Germination	Total Number Weed Seeds Per Lb. of Seeds	Number Per Pound of Each of the Noxious Weed Seeds Specified in the Law
8299	*Forbes, Vernon J., Westville	Shumway, R. H., Rockford, Ill.	C	......	......	......	......	......	C
	Murdock Yellow Dent Corn, Lot 1562		F	99.99	0.01	93.00	5-36	......	F None
8385	*Sink, Floyd, Camden[250]	Sink, Floyd, Camden, Ind.	C				....	......	C
	Seed Corn		F	99.68	0.32	7.00	6-36		F None
8169	Soy Seed Co., Camden	Soy Seed Co., Camden, Ind.	C	98.00	......	85.00	3-36		C None
	Reid's Yellow Dent Corn		F	99.38	0.19	76.00	4-36		F None
8194	*Standard Seed Co., Chicago, Ill.[251]	Standard Seed Co., Chicago, Ill.	C	......	......	92.00	2-36		C None
	Reid's Yellow Dent Corn, Lot 443		F	99.69	0.31	86.00	4-36		F None
8356	Steckley Feed Mill, Kendallville[252]	Steckley Feed Mill, Kendallville, Ind.	C	99.00		95.00	3-36	....	C None
	Early Yellow Dent Corn		F	99.99	0.01	79.00	6-36	......	F None
8227	Sullivan Co. Farm Bureau Co-op. Ass'n, Inc., Sullivan	Sullivan Co. Farm Bureau Co-op. Ass'n, Inc., Sullivan, Ind.	C	99.00	..	90.00	4-36	.	C None
	Yellow Dent Corn		F	99.65	0.35	81.00	5-36	......	F None
8056	Sunshine Feed Store, Greenfield	Sunshine Feed Store, Greenfield, Ind.	C	98.00	.	90.00	3-36	. .	C None
	Reid's Yellow Dent Corn		F	99.22	0.76	81.00	4-36	.....	F None
8252	Haldeman-Baum Co., Akron	Syler & Syler, Nappanee, Ind.	C	99.00		90.00	4-36	. . .	C None
	Haskins Corn		F	99.99	0.01	82.00	5-36	.....	F None
8318	Martin's Feed Mills, New Paris, Ind.	Syler & Syler, Nappanee, Ind.	C	99.00	.	90.00	4-36	.....	C None
	Reid's Yellow Dent Corn		F	99.99	0.01	79.00	6-36	....	F None
8414	Stiefel Grain Co., Kimmell	Syler & Syler, Nappanee, Ind.	C	99.00	.. ..	85.00	3-36	......	C None
	Golden Surprise Corn		F	99.52	0.48	58.00	7-36	....	F None
8354	Waterloo Mills, Waterloo	Syler & Syler, Nappanee, Ind.	C	98.00	.....	90.00	4-36	......	C None
	Shur Crop Corn		F	99.86	0.14	86.00	6-36	......	F None
8179	Brookston Grain Corp., Brookston	Syler & Syler, Plymouth, Ind.	C	99.00	...	85.00	3-36	......	C None
	Golden Surprise Early Yellow Dent Corn, Lot C		F	99.89	0.11	84.00	4-36	......	F None
8357	Home Grain Co., Lagrange[253]	Syler & Syler, Plymouth, Ind.	C	99.00	.. ..	90.00	3-36	. ....	C None
	Golden Surprise Yellow Dent Corn		F	99.57	0.43	78.00	6-36	......	F None
8261	Royal Center Hatchery, Royal Center[254]	Syler & Syler, Plymouth, Ind.	C	99.00	...	90.00	3-36	.....	C None
	Golden Surprise Yellow Dent Corn		F	99.82	0.18	58.00	5-36	......	F None
8317	Topeka Roller Mill, Topeka	Syler & Syler, Plymouth, Ind.	C	99.00	.....	90.00	3-36	......	C None
	Golden Surprise Yellow Corn		F	99.33	0.67	82.00	5-36	......	F None
8271	Whybrew, C. E., Kewanna[255]	Syler & Syler, Plymouth, Ind.	C	99.00	......	90.00	3-36	......	C None
	Golden Surprise Yellow Dent Corn		F	99.98	0.01	60.00	5-36	......	F None
8417	Tempest, Thomas R., Columbus[256]	Tempest, Thomas R., Columbus, Ind.	C	98.00	......	94.00	3-36	.....	C None
	Yellow Corn		F	99.66	0.34	38.00	7-36	. ....	F None
8178	Barr Grain Co., Chalmers	Teweles Seed Co., L., Milwaukee, Wis.	C	99.00	.. ...	94.00	3-36	......	C None
	Improved Leaming Corn, Lot Badger Brand		F	99.99	0.01	89.00	5-36	....	F None
8182	Barr Grain Co., Chalmers[257]	Teweles Seed Co., L., Milwaukee, Wis.	C	99.00	.....	92.00	3-36	. ...	C None
	Reid's Yellow Dent Corn, Lot Badger Brand		F	99.70	0.30	76.00	5-36	....	F None
8279	Bourbon Grain Exchange, Bourbon	Teweles Seed Co., L., Milwaukee, Wis.	C	99.00	......	92.00	3-36	....	C None
	Reid's Yellow Dent Corn, Lot Badger Brand		F	99.99	0.01	90.00	5-36	..	F None

8174	Brookston Grain Corp., Brookston	Teweles Seed Co., L., Milwaukee, Wis.	C	99.00		96.00	3-36		C	None
	Wisconsin No. 12 or Golden Glow Corn, Lot Badger Brand		F	99.83	0.17	94.00	4-36		F	None
8395	Hamlet Grain Co., Hamlet[255]	Teweles Seed Co., L., Milwaukee, Wis.	C	99.00		91.00	3-36		C	None
	Pride of the North Corn, Lot Badger Brand		F	99.85	0.15	72.00	6-36		F	None
8358	Home Grain Co., Lagrange	Teweles Seed Co., L., Milwaukee, Wis.	C	99.00		95.00	4-36		C	None
	Pride of the North Corn, Lot Badger Brand		F	99.98	0.02	86.00	6-36		F	None
8359	Home Grain Co., Lagrange	Teweles Seed Co., L., Milwaukee, Wis.	C	99.00		96.00	4-36		C	None
	Wisconsin No. 12 Corn, Lot Badger Brand		F	99.87	0.13	90.00	6-36		F	None
8360	Home Grain Co., Lagrange	Teweles Seed Co., L., Milwaukee, Wis.	C	99.00		94.00	4-36		C	None
	Medina Pride Corn, Lot Badger Brand		F	99.87	0.13	89.00	6-36		F	None
8099	Lapaz Grain Co., Lapaz	Teweles Seed Co., L., Milwaukee, Wis.	C	99.00		91.00	3-36		C	None
	Pride of the North Corn, Lot Badger Brand		F	99.33	0.67	81.00	4-36		F	None
8080	Phillips, J. C., Star City	Teweles Seed Co., L., Milwaukee, Wis.	C	99.00		96.00	3-36		C	None
	Leaming Fodder Corn, Lot Badger Brand		F	99.99	0.01	93.00	4-36		F	None
8084	Phillips, J. C., Star City[259]	Teweles Seed Co., L., Milwaukee, Wis.	C	99.00		96.00	3-36		C	None
	Red Cob Fodder Corn, Lot Badger Brand		F	99.18	0.82	84.00	4-36		F	None
8086	Phillips, J. C., Star City	Teweles Seed Co., L., Milwaukee, Wis.	C	99.00		96.00	3-36		C	None
	Wisconsin No. 12 Golden Glow Corn, Lot Badger Brand		F	99.66	0.34	92.00	4-36		F	None
8274	Phillips, J. C., Star City	Teweles Seed Co., L., Milwaukee, Wis.	C	99.00		96.00	3-36		C	None
	Wisconsin No. 12 Golden Glow Corn, Lot Badger Brand		F	99.99	0.01	89.00	5-36		F	None
8275	Phillips, J. C., Star City	Teweles Seed Co., L., Milwaukee, Wis.	C	99.00		96.00	4-36		C	None
	Leaming Fodder Corn, Lot Badger Brand		F	99.88	0.12	90.00	5-36		F	None
8207	Thomas Co., R. N., Madison	Thomas Co., R. N., Madison, Ind.	C	99.00		85.00	4-36		C	None
	Reid's Yellow Corn, Lot 75545		F	99.25	0.75	82.00	4-36		F	None
8208	Thomas Co., R. N., Madison	Thomas Co., R. N., Madison, Ind.	C	99.00		85.00	4-36		C	None
	Woodburn Corn, Lot 75544		F	98.80	1.20	82.00	4-36		F	None
8289	Thompson, Alexander, Lafayette[260]	Thompson, Alexander, Lafayette, Ind.	C			90.00	4-36		C	None
	Troyer's Reid's Corn		F	99.50	0.50	86.00	5-36		F	None
8211	Jefferson Co. Farm Bureau Co-op. Ass'n, Inc., Madison[261]	Thompson, John H., Madison, Ind.	C	99.00		95.00	3-36		C	None
	Yellow Dent Corn		F	99.97	0.03	82.00	4-36		F	None
8163	Troyer, C. E., Lafontaine[262]	Troyer, C. E., Lafontaine, Ind.	C	99.50		90.00	3-36		C	None
	Seed Corn HH639, Lot 2		F	99.86	0.14	91.00	4-36		F	None
8235	Troyer, C. E., Lafontaine[263]	Troyer, C. E., Lafontaine, Ind.	C	99.50		90.00	3-36		C	None
	Reid's Seed Corn, Lot 4		F	99.85	0.15	89.00	5-36		F	None
8268	Troyer, C. E., Lafontaine	Troyer, C. E., Lafontaine, Ind.	C	99.50		90.00	3-36		C	None
	Seed Corn HH694, Lot 1		F	99.99	0.01	92.00	5-36		F	None
8269	Troyer, C. E., Lafontaine	Troyer, C. E., Lafontaine, Ind.	C	99.50		95.00	3-36		C	None
	Krug Seed Corn, Lot 6		F	99.80	0.20	97.00	5-36		F	None
8270	Troyer, C. E. Lafontaine	Troyer, C. E., Lafontaine, Ind.	C	99.50		90.00	3-36		C	None
	Reid's Yellow Dent Seed Corn, Lot 4		F	99.98	0.02	93.00	5-36		F	None

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*Not labeled with official Indiana State Labels.

†Certified by retailer.

C and F stands, respectively, for Claimed and Found.

[250] Sample secured from R. N. Carter, Route 4, Logansport, Ind.

[251] Sample secured from St. Joseph Farm, Notre Dame, Ind.

[252] Sample secured from Homer Rasler, Route 5, Lagrange, Ind.

[253] Removed from sale. Misbranded. Returned to distributor.

[254] Removed from sale. Misbranded. All sold.

[255] Removed from sale. Misbranded. Returned to distributor.

[256] Sample secured from Charles D. Ketner, Route 1, Hope, Ind.

[257] Removed from sale. Misbranded. All sold.

[258] Sample secured from Clarence Switzer, Route 5, Knox, Ind.

[259] Removed from sale. Misbranded. Retagged and sold.

[260] Sample secured from James Ruch, Route 9, Lafayette, Ind. Tag incomplete.

[261] Removed from sale. Misbranded. Retagged and sold.

[262] Drawn at County Agent's Office, Martinsville, Ind.

[263] Sample secured from E. F. Brown, County Agent, Rushville, Ind.

TABLE 8—Corn—Continued

Laboratory No. S.	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, Per Cent	Inert Matter, Per Cent	Germination, Per Cent	Date of Germination	Total Number Weed Seeds Per Lb. of Seeds	Number Per Pound of Each of the Noxious Weed Seeds Specified in the Law
8407	*Fisher Seed & Feed Store, Columbia City 90 Day Yellow Dent Corn	Vanhouten, Robert, Columbia City, Ind.	C	....		......	....	......	C
			F	99.78	0.22	6.00	7-36	.....	F None
8308	Mooresville Milling Co., Mooresville Reid's Yellow Corn, Lot B	Vogler & Son, L. A., Hope, Ind.	C	99.00	....	92.00	3-36	......	C None
			F	99.76	0.24	83.00	5-36	......	F None
8243	Hamilton Co. Farm Bureau Co-op. Ass'n, Inc., Noblesville[261] Corn, H. H. No. 612 Round Kernels	Wally Agricultural Service, Ft. Wayne, Ind.	C	......	.....	85.00	3-36	......	C None
			F	99.96	0.04	90.00	5-36	......	F None
8106	Warren Seed Co., Indianapolis[265] Reid's Yellow Dent Corn, Lot 1934 Crop	Warren Seed Co., Indianapolis, Ind.	C	98.00	....	97.00	3-36	......	C None
			F	99.98	0.02	80.00	4-36	......	F None
8398	*Young & Cox, Richmond[266] Reid's Yellow Dent Corn	Young & Cox, Richmond, Ind.	C	....	....	.....	.....	......	C
			F	99.99	0.01	83.00	6-36	......	F None

*Not labeled with official Indiana State Labels.

†Certified by retailer.

C and F stands, respectively, for Claimed and Found.

[264] Tag incomplete.

[265] Removed from sale. Misbranded.

[266] Sample secured from Cyril Strickler, Williamsburg, Ind.

TABLE 8—Lespedeza (Largely Korean)

Laboratory No. S.	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, Per Cent	Inert Matter, Per Cent	Germination, Per Cent	Hard Seeds, Per Cent	Date of Germination	Total Number Weed Seeds Per Lb. of Seeds	Number per Pound of Each of the Noxious Weed Seeds Specified in the Law
7298	Adams & Morrow, Inc., Princeton	Adams & Morrow, Inc., Princeton, Ind.	C	99.20	....	88.00	4.00	2-36		C None
	Korean Lespedeza, Lot Pauley No. 2		F	98.65	0.79	95.50	1.50	3-36	918	F Horse nettle, 18
7677	Irwin Feed Store & Hatchery, Madison	Allied Seed Co., Inc., Peoria, Ill.	C	99.00	....	90.00	......	1-36		C None
	Korean Lespedeza, Lot P58		F	98.32	0.54	72.50	13.50	4-36	1,260	F None
8291	*Moore, Joseph T., Monticello	American Field Seed Co., Chicago, Ill.	C	99.00		88.00		3-36		C None
	Korean Lespedeza, Lot 5093		F	99.24	0.38	86.00	9.00	5-36	1,350	F Bracted plantain, 36; common plantain, 54; dodder, 54; horse nettle, 36
7213	*Berry Seed Co., Clarinda, Iowa[267]	Berry Seed Co., Clarinda, Iowa	C	....	....	....				C
	Korean Lespedeza, Lot 5085		F	96.48	1.28	90.50	8.50	3-36	8,672	F Bracted plantain, 5,130; buckhorn, 54; common plantain, 1,170; curled dock, 27; dodder, 14; horse nettle, 27
7690	Dunlevy & Son, D. R., Henryville[268]	Bundy Bros., Vallonia, Ind.	C	97.00	..	90.00	7.00	2-36		C None
	Korean Lespedeza, Lot 4		F	96.20	1.25	76.50	9.50	4-36	10,602	F Bracted plantain, 738; buckhorn, 207; curled dock, 18; dodder, 5,040; wild carrot, 9
8126	Jenner & Son, W. E., Marengo[269]	Bundy Bros., Vallonia, Ind.	C	99.00	......	93.00		1-36		C None
	Korean Lespedeza, Lot 2		F	98.10	1.21	76.00	17.50	5-36	2,835	F Bracted plantain, 81; buckhorn, 45; common plantain, 81; curled dock, 9; dodder, 1,890; horse nettle, 9
7066	Standard Hatcheries, Terre Haute[270]	Corneli Seed Co., St. Louis, Mo.	C	98.51	....	65.00	25.00	1-36		C None
	Korean Lespedeza		F	96.82	1.43	84.50	11.00	3-36	3,735	F Bracted plantain, 36; buckhorn, 72; curled dock, 9; dodder, 18; horse nettle, 90
7168	Nixon & Van Deventer, Attica[271]	Crabbs Reynolds Taylor Co., Crawfordsville, Ind.	C	99.39	...	90.50	3.00	12-35		C None
	Korean Lespedeza, Lot 3-PI		F	99.10	0.40	92.00	6.00	3-36	1,976	F Bracted plantain, 126; dodder, 41; horse nettle, 9
7562	Brown Supply Co., Valparaiso[272]	Dickinson Co., The Albert, Chicago, Ill.	C	99.52	....	86.00	9.00	4-35		C None
	Korean Lespedeza, Lot 2085		F	99.40	0.40	89.00	3.50	3-36	369	F Bracted plantain, 9; dodder, 54; horse nettle, 36
7997	Farmers Grain Co., Pershing[273]	Foster-Kendall Co., Carmel, Ind.	C	96.81	......	78.00	21.00	1-36		C None
	Lespedeza		F	96.67	0.78	84.50	8.00	5-36	4,941	F Bracted plantain, 135; buckhorn, 468; common plantain, 126; curled dock, 36; horse nettle, 486

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*Not labeled with official Indiana State Labels.

†Certified by retailer.

C and F stands, respectively, for Claimed and Found.

[267] Sample secured from James H. Knight, Bedford, Ind.

[268] Removed from sale. Misbranded. All sold.

[269] Removed from sale. Misbranded. Relabeled.

[270] Removed from sale. Misbranded. Relabeled.

[271] Removed from sale. Misbranded. Relabeled.

[272] Removed from sale. Misbranded. Returned to distributor.

[273] Removed from sale. Misbranded. Returned to distributor.

TABLE 8—Lespedeza (Largely Korean)—Continued

Laboratory No. S.	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, Per Cent	Inert Matter, Per Cent	Germination, Per Cent	Hard Seeds, Per Cent	Date of Germination	Total Number Weed Seeds Per Lb. of Seeds	Number per Pound of Each of the Noxious Weed Seeds Specified in the Law
7526	†Aurora Farmers Supply Co., Aurora Lespedeza	Garth & Orr, Trenton, Ky.	C	98.00	......	98.00	......	1-35	......	C None
			F	99.02	0.40	82.00	12.50	3-36	414	F Bracted plantain, 90; common plantain, 36; curled dock, 9; dodder, 9
7317	Heldt Co., The, Evansville[274]	Heldt Co., The, Evansville, Ind.	C	98.42	.....	80.00	13.00	2-36	......	C Bracted plantain, 369; buckhorn, 36; common plantain, 63; dodder, 90
	Korean Lespedeza, Lot 3365		F	98.54	0.51	95.50	4.00	3-36	2,259	F Bracted plantain, 288; buckhorn, 18; common plantain, 90; dodder, 45; horse nettle, 18
7308	Murphy & Co., Princeton Thelco Korean Lespedeza, Lot 3288	Heldt Co., The, Evansville, Ind.	C	99.41	......	85.00	9.00	9-35	......	C Dodder, 36; horse nettle, 60
			F	99.30	0.50	78.50	7.50	4-36	482	F Dodder, 32; horse nettle, 270
7289	Pike Co. Farm Bureau Co-op. Ass'n, Inc., Petersburg Thelco Korean Lespedeza, Lot 3288	Heldt Co., The, Evansville, Ind.	C	99.44	......	85.00	......	9-35	......	C Dodder, 36; horse nettle, 60
			F	99.58	0.20	82.00	6.00	3-36	486	F Dodder, 63; horse nettle, 243
7696	Clark Co. Farm Bureau Co-op. Ass'n, Inc., Jeffersonville Korean Lespedeza, Lot 4243	Indiana Farm Bureau Co-op. Ass'n, Inc., Indianapolis, Ind.	C	99.00	.....	78.00	15.00	1-36	.....	C None
			F	98.70	1.20	83.00	6.00	5-36	549	F Dodder, 9; horse nettle, 180
7261	Clay Co. Farm Bureau Co-op. Ass'n, Inc., Brazil Korean Lespedeza, Lot 4194	Indiana Farm Bureau Co-op. Ass'n, Inc., Indianapolis, Ind.	C	99.00	......	78.00	15.00	12-35	......	C None
			F	99.30	0.66	88.00	8.00	3-36	185	F Dodder, 5
7053	Clay Co. Farm Bureau Co-op. Ass'n, Inc., Clay City[275] Korean Lespedeza, Lot 4194	Indiana Farm Bureau Co-op. Ass'n, Inc., Indianapolis, Ind.	C	99.00	......	78.00	15.00	12-35	.....	C None
			F	99.32	0.68	83.50	14.50	3-36	......	F None
7524	Dearborn Co. Farm Bureau Co-op. Ass'n, Inc., Aurora Korean Lespedeza, Lot 4243	Indiana Farm Bureau Co-op. Ass'n, Inc., Indianapolis, Ind.	C	99.00	.....	78.00	15.00	1-36	...	C None
			F	98.67	1.19	86.50	6.00	4-36	363	F Dodder, 12; horse nettle, 171
7226	Jackson Co. Farm Bureau Co-op. Ass'n, Inc., Seymour Korean Lespedeza, Lot 4194	Indiana Farm Bureau Co-op. Ass'n, Inc., Indianapolis, Ind.	C	99.00	......	78.00	15.00	12-35	......	C None
			F	98.91	0.91	86.50	11.00	3-36	378	F Bracted plantain, 18
7574	LaPorte Co. Farm Bureau Co-op. Ass'n, Inc., LaPorte[276] Korean Lespedeza, Lot 4264	Indiana Farm Bureau Co-op. Ass'n, Inc., Indianapolis, Ind.	C	99.00	......	70.00	15.00	1-36	......	C None
			F	98.91	0.30	82.00	8.00	4-36	1,962	F Bracted plantain, 54; common plantain, 72; dodder, 45; horse nettle, 171
7161	Putnam Co. Farm Bureau Co-op. Ass'n, Inc., Greencastle Korean Lespedeza, Lot 4194	Indiana Farm Bureau Co-op. Ass'n, Inc., Indianapolis, Ind.	C	99.00	......	78.00	15.00	12-35	......	C None
			F	99.12	0.68	88.50	10.00	3-36	405	F Common plantain, 36; dodder, 9
7654	Ripley Co. Farm Bureau Co-op. Ass'n, Inc., Osgood Korean Lespedeza, Lot 4243	Indiana Farm Bureau Co-op. Ass'n, Inc., Indianapolis, Ind.	C	99.00	......	78.00	15.00	1-36	......	C None
			F	98.07	1.85	82.50	6.50	4-36	369	F Dodder, 36; horse nettle, 153
7658	Scott Co. Farm Bureau Co-op. Ass'n, Inc., Scottsburg.[277] Korean Lespedeza, Lot 4243	Indiana Farm Bureau Co-op. Ass'n, Inc., Indianapolis, Ind.	C	99.00	......	78.00	15.00	1-36	....	C None
			F	97.80	2.04	84.00	4.00	4-36	621	F Horse nettle, 171

7282	Sullivan Co. Farm Bureau Co-op. Ass'n, Inc., Sullivan	Indiana Farm Bureau Co-op. Ass'n, Inc., Indianapolis, Ind.	C	99.00	......	78.00	10.00	12-35	......	C None
	Korean Lespedeza, Lot 4194		F	98.90	0.96	83.00	12.00	3-36	189	F Horse nettle, 9
7700	Washington Co. Farm Bureau Co-op. Ass'n, Inc., Salem	Indiana Farm Bureau Co-op. Ass'n, Inc., Indianapolis, Ind.	C	99 00	..	70 00	15 00	1-36	.	C None
	Korean Lespedeza, Lot 4264		F	98.77	0.56	85.00	8.50	5-36	1,116	F Bracted plantain, 126; buckhorn, 9; horse nettle, 81
7227	Bottorff, D. M., Columbus	Indiana Seed Co., Indianapolis, Ind.	C	99.50	......	84.00	6.00	1-36	......	C None
	Korean Lespedeza, Lot I-183		F	99.58	0.40	83.50	15.00	3-36	180	F None
7274	Griffin Hardware, Carlisle	Indiana Seed Co., Indianapolis, Ind.	C	99.50	......	84.00	6.00	1-36	......	C None
	Korean Lespedeza, Lot I-1831		F	98.86	0.92	80.50	15.00	3-36	279	F Dodder, 9
7143	Indiana Grain Producers, Inc., Shelbyville	Indiana Seed Co., Indianapolis, Ind.	C	99.00	......	84.00	10.00	12-35	......	C None
	Korean Lespedeza, Lot B-1825		F	99.34	0.42	86.00	7.00	3-36	698	F Bracted plantain, 54; dodder, 14
7230	Indiana Seed Co., Indianapolis[278]	Indiana Seed Co., Indianapolis, Ind.	C	99.00	......	82.00	8.00	1-36	......	C Buckhorn, 90; dodder, 45
	Korean Lespedeza, Lot I-1830		F	99.30	0.46	79.50	17.50	3-36	414	F Bracted plantain, 45; dodder, 9
7252	W. G. Riggs & Son, Sullivan	Indiana Seed Co., Indianapolis, Ind.	C	99.50	......	84.00	6.00	1-36	......	C None
	Korean Lespedeza, Lot I-1831		F	99.38	0.46	83.50	13.50	3-36	207	F Bracted plantain, 9; dodder, 9; horse nettle, 9
7920	Vermillion Co. Farmers, Inc., Dana[279]	Indiana Seed Co., Indianapolis Ind.	C	99.00	......	80.00	10.00	1-36	......	C None
	Korean Lespedeza, Lot I-1834		F	97.59	1.29	41.50	10.50	6-36	1,728	F Bracted plantain, 18
7220	Bundy Bros., Vallonia[280]	Kentucky Lespedeza Growers Ass'n, Eminence, Ky.	C	99 50	......	85.00	10.00	1-36	......	C None
	Korean Lespedeza, Lot T-2		F	99 44	0.32	86.50	11.50	3-36	459	F Horse nettle, 9
7680	Sample, John L., Madison[281]	Kentucky Lespedeza Growers Ass'n, Eminence, Ky.	C	99.00	......	85.00	15.00	2 36	......	C Dodder, 2
	Korean Lespedeza, Lot R & H		F	99 08	0.72	84.00	9.00	4-36	311	F Common plantain, 9; dodder, 32
7078	*Lawrence Co. Farm Bureau Co-op. Ass'n, Inc., Bedford[282]	Lawrence Co. Farm Bureau Co-op. Ass'n, Inc., Bedford, Ind.	C	......	......	......	......	......	......	C
	Lespedeza		F	98 96	0.36	90 00	6 50	4-36	1,895	F Bracted plantain, 9; common plantain, 36; curled dock, 18; dodder, 14; horse nettle, 108
7046	Bloomfield Mill & Elevator Co., Bloomfield	Lewis Implement & Seed Co., Louisville, Ky.	C	99 00	.	85 00	5 00	12-35		C Dodder, 32
	Red Bird Korean Lespedeza, Lot 1576		F	99.03	0.53	81.00	9.00	2-36	1,103	F Bracted plantain, 9; buckhorn, 9; curled dock, 18; dodder, 14; horse nettle, 153
7182	Heise Bros., Bedford	Lewis Implement & Seed Co., Louisville, Ky.	C	99 00	. ...	90 00	....	1-36		C Bracted plantain, 192; curled dock, 16; dodder, 48; horse nettle, 32
	Red Bird Korean Lespedeza, Lot 1575		F	99 20	0.32	92.50	6 00	3-36	10,221	F Bracted plantain, 207; dodder, 27
7000	Hunger, C. G., Madison	Lewis Implement & Seed Co., Louisville, Ky.	C	99.00	......	85.00	5.00	12-35	......	C None
	Red Bird Korean Lespedeza, Lot 1576		F	99 52	0 26	79 00	10 50	2-36	198	F Horse nettle, 18
7670	Jefferson Co. Farm Bureau Co-op. Ass'n, Inc., Madison	Lewis Implement & Seed Co., Louisville, Ky.	C	99 00	....	90 00	. ...	12-35	. .	C Bracted plantain, 176; dodder, 32; horse nettle, 176
	Red Bird Korean Lespedeza, Lot 1581		F	98 68	0 32	81 00	15 00	4-36	1,521	F Bracted plantain, 540; curled dock, 18; dodder, 36; horse nettle, 27

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*Not labeled with official Indiana State Labels.

†Certified by retailer.

C and F stands, respectively, for Claimed and Found.

[274] Not tagged. Labels furnished.

[275] Distributed by Clay County Farm Bureau Co-op. Ass'n, Inc., Brazil, Ind.

[276] Removed from sale. Misbranded. All sold.

[277] Removed from sale. Misbranded. All sold.

[278] Sample secured from State Highway Commission of Indiana, Seymour, Ind.

[279] Removed from sale. Misbranded. All sold.

[280] Not tagged. Labels furnished.

[281] Distributed by Giltner Seed Co., Eminence, Ky.

[282] Sample secured from Olin Lively, Route 1, Heltonville, Ind.

TABLE 8—Lespedeza (Largely Korean)—Continued

Laboratory No. S.	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor	Purity, Per Cent	Inert Matter, Per Cent	Germination, Per Cent	Hard Seeds, Per Cent	Date of Germination	Total Number Weed Seeds Per Lb. of Seeds	Number per Pound of Each of the Noxious Weed Seeds Specified in the Law
7033	Pennington Implement & Seed Store, Bloomington[283]	Lewis Implement & Seed Co., Louisville, Ky. C	99.25	....	90.00	.....	1-36	....	C Bracted plantain, 32; dodder, 48; horse nettle, 32
	Red Bird Korean Lespedeza, Lot 1581	F	99.38	0.12	89.00	8.50	3-36	1,053	F Bracted plantain, 90; common plantain, 90; dodder, 153
7685	Scott Co. Farm Bureau Co-op. Ass'n, Inc., Scottsburg	Lewis Implement & Seed Co., Louisville, Ky. C	99.00	.	85.00	5.00	1-36	.....	C Bracted plantain, 160; curled dock, 32; dodder, 32
	Red Bird Korean Lespedeza, Lot 1520	F	98.89	0.55	86.50	11.50	4-36	1,161	F Bracted plantain, 279; buckhorn, 36; dodder, 108; horse nettle, 108; wild carrot, 9; oxeye daisy, 81
7688	Bulleit & Sons, V. H., Corydon[284] Korean Clover	Louisville Seed Co., Louisville, Ky. C	99.00	. .	85.00	5.00	2-36	..	C None
		F	98.00	0.40	79.50	13.50	4-36	3,537	F Curled dock, 9; dodder, 90; horse nettle, 18
7681	Sample, John L., Madison Common Japan Clover	Louisville Seed Co., Louisville, Ky. C	96.09	..	65.00	3.00	2-36	..	C Bracted plantain, 64; buckhorn, 16
		F	96.34	1.38	61.50	9.00	4-36	12,608	F Bracted plantain, 72; dodder, 18; red sorrel, 18
7686	Scott Co. Farm Bureau Co-op. Ass'n, Inc., Scottsburg[285] Korean Clover	Louisville Seed Co., Louisville, Ky. C	99.00		85.00	5.00	2-36	...	C None
		F	96.99	1.74	73.50	10.50	4-36	4,032	F Common plantain, 63; dodder, 63; horse nettle, 126
8124	Trinkle, G. V., Hardinsburg[286] Korean Clover	Louisville Seed Co., Louisville, Ky. C	99.55	....	85.00	5.00	12-35	......	C None
		F	99.34	0.12	89.00	9.00	5-36	1,188	F Bracted plantain, 468; dodder, 81; horse nettle, 9
7514	Krick & Sons Co., A., Milan	McCullough Seed Co., The J. Chas., Cincinnati, Ohio C	99.00	...	92.00	2.00	1-36	..	C Common plantain, 90; horse nettle, 450
	Korean Lespedeza, Lot 2360	F	98.69	0.48	94.00	4.00	3-36	2,480	F Buckhorn, 36; common plantain, 864; curled dock, 9; dodder, 23; horse nettle, 558
7530	Sawdon, R. A., Aurora[287]	McCullough Seed Co., The J. Chas., Cincinnati, Ohio C	99.00	......	91.00	2.00	1-36	....	C None
	Korean Lespedeza, Lot 2356	F	97.66	0.97	82.50	12.50	3-36	4,581	F Bracted plantain, 54; common plantain, 378; curled dock, 27; dodder, 342
7653	Eckert-Palmer Hardware, Osgood[288]	Market Gardeners' Seed Co., The, Cincinnati, Ohio C	95.10	....	83.00	7.00	12-35	......	C Bracted plantain, 1,064; curled dock, 24; dodder, 208
	Korean Clover, Lot 1307	F	87.71	2.91	78.50	8.50	4-36	13,266	F Bracted plantain, 1,800; buckhorn, 9; common plantain, 3,060; curled dock, 54; dodder, 333; horse nettle, 900
7651	Versailles Feed Co., Versailles	Market Gardeners' Seed Co., The, Cincinnati, Ohio C	99.50	......	85.00	7.00	12-35	......	C Bracted plantain, 32
	Korean Clover, Lot 1305	F	99.30	0.10	85.50	9.00	4-36	896	F Bracted plantain, 81; curled dock, 18; dodder, 32; horse nettle, 135

7373	Greenwood & Co., Washington	Meacham, Chas. M., Morganfield, Ky.	C	99.36		90.00		1-36		C None
	Korean Lespedeza, Lot 104		F	98.84	0.70	85.50	13.50	3-36	1,616	F Bracted plantain, 18; common plantain, 306; curled dock, 9; dodder, 23
7279	Knox Co. Farm Bureau Co-op. Ass'n, Inc., Vincennes	Meacham, Chas. M., Morganfield, Ky.	C	99.68		90.00		1-36		C None
	Kentucky Cert. Lespedeza, Lot Field No. 2		F	99.52	0.44	96.50	2.00	3-36	180	F None
7288	Pike Co. Farm Bureau Co-op. Ass'n, Inc., Petersburg[289]	Meacham, Chas. M., Morganfield, Ky.	C	97.00		90.00		1-36		C None
	Korean Lespedeza, Lot No. 2		F	98.96	0.52	89.50	9.50	3-36	1,710	F Bracted plantain, 18; buckhorn, 18; common plantain, 900; horse nettle, 54
7001	Hunger, C. G., Madison	National Seed Co., Louisville, Ky.	C	97.00		80.00		12-35		C Curled dock, 100
	Japan Clover, Lot 83		F	97.20	1 28	70.50	7.00	2-36	3,240	F Bracted plantain, 18; buckhorn, 72
7372	Daviess Co. Farm Bureau Co-op. Ass'n, Inc., Washington	Purcell Seed Co., Evansville, Ind.	C	97.44		80 00	5.00	2-36		C Bracted plantain, 27; buckhorn, 180; common plantain, 270; curled dock, 90
	Tru Val Korean Lespedeza, Lot 4894		F	98.03	1.23	93.50	4.50	3-36	2,642	F Bracted plantain, 108; buckhorn, 279; common plantain, 900; dodder, 5
7352	Graves, A. J., Tell City	Purcell Seed Co., Evansville, Ind.	C	99.50		80.00	10.00	1-36		C Bracted plantain, 45
	Tru Val Korean Lespedeza, Lot 4829		F	99.32	0.50	86.50	12.50	3-36	469	F Bracted plantain, 9; horse nettle, 9
7297	Kohlmeier, E. C., Mackey	Purcell Seed Co., Evansville, Ind.	C	99 02		85.00	3 00	2-36		C Bracted plantain, 18
	Tru Val Korean Lespedeza, Lot 4889		F	99.38	0.42	81.50	10.00	3-36	469	F Bracted plantain, 99; dodder, 10
7331	Poseyville Grain & Feed Co., Poseyville	Purcell Seed Co., Evansville, Ind.	C	98.86		80.00	10.00	2-36		C None
	Tru Val Korean Lespedeza, Lot 4862		F	98.41	0.79	86.50	5.00	3-36	4,784	F Dodder, 5; horse nettle, 9
7674	Irwin Feed Store & Hatchery, Madison	Ross Seed Co., Louisville, Ky.	C	99.06		90.00	4.00	1-36		C Buckhorn, 48; dodder, 32
	Korean Clover, Lot 2793		F	98.87	0.56	88.50	6.00	4-36	1,476	F Bracted plantain, 99; dodder, 117; horse nettle, 1,080
7370	McCampbell, Ralph, French Lick	Ross Seed Co., Louisville, Ky.	C	98 50		80.00	10.00	11-35		C Bracted plantain, 48; common plantain, 32; dodder, 9; horse nettle, 570
	Korean Clover, Lot 1615		F	99.20	0.66	87.50	4.00	4-36	648	F Bracted plantain, 18; dodder, 36; horse nettle, 405; wild carrot, 9
7269	Weed Hardware, Vincennes	Ross Seed Co., Louisville, Ky.	C	96.00		74.00	6.00	2-36		C Bracted plantain, 64; buckhorn, 16
	Common Japan Clover		F	96.26	1.38	68.50	7.00	3-36	12,159	F Bracted plantain, 45; buckhorn, 18; dodder, 36
7401	Worthington Grain Co., Worthington	Ross Seed Co., Louisville, Ky.	C	96.00		70.00	5.00	10-35		C Bracted plantain, 90; buckhorn, 90
	Common Japan Clover		F	96.55	1.40	66.00	4.50	3-36	9,999	F Bracted plantain, 9
7052	Combs, Gilbert, Bloomfield	Schultz Seed Co., J. M., Dieterich, Ill.	C	99.00		90 00		12-35		C None
	Reliable Korean Lespedeza		F	99.40	0.40	81.50	5.50	3-36	954	F Bracted plantain, 36; horse nettle, 18
7933	†Quinlan Seed Store, Terre Haute[290]	Schultz Seed Co., J. M., Dieterich, Ill.	C	99 08		90 00		2-36		C None
	Korean Lespedeza, Lot 18		F	99.21	0.20	83.50	4.50	4-36	1,737	F Dodder, 72; horse nettle, 45
7663	Castner Hardware, Holton	Scott Seed Co., New Albany, Ind.	C	99 00		75.00	15 00	12-35		C None
	Korean Lespedeza, Lot 10		F	98 49	0.72	68.50	17.50	4-36	1,521	F Bracted plantain, 9; buckhorn, 36; horse nettle, 27; wild carrot, 9
7375	Dilly & Son, Phil, Huntingburg[291]	Scott Seed Co., New Albany, Ind.	C	99.00		80.00	10.00	12-35		C None
	Korean Lespedeza, Lot 6		F	99.42	0.26	81.50	16.00	3-36	846	F Bracted plantain, 27; curled dock, 18; dodder, 63; horse nettle, 18

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*Not labeled with official Indiana State Labels.

†Certified by retailer.

C and F stands, respectively, for Claimed and Found.

[283] Removed from sale. Misbranded. Relabeled.

[284] Removed from sale. Misbranded. All sold.

[285] Removed from sale. Misbranded. All sold.

[286] Not tagged. Labels furnished. Removed from sale. Misbranded. All sold.

[287] Removed from sale. Misbranded. Relabeled.

[288] Contains 5.88% common lespedeza with 38.50% germination and 0.50% hard seeds. Relabeled.

[289] Removed from sale. Misbranded. Relabeled and sold.

[290] Removed from sale. Misbranded. All sold.

[291] Removed from sale. Misbranded. All sold.

TABLE 8—Lepedeza (Largely Korean)—Continued

Laboratory No. S.	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor	Purity, Per Cent	Inert Matter, Per Cent	Germination, Per Cent	Hard Seeds, Per Cent	Date of Germination	Total Number Weed Seeds Per Lb. of Seeds	Number per Pound of Each of the Noxious Weed Seeds Specified in the Law
7363	Dubois Co. Farm Bureau Co-op. Ass'n, Inc., Huntingburg........................	Scott Seed Co., New Albany, Ind...........C	99 00	......	80.00	10.00	1–36	......	C Bracted plantain. 180
	Korean Lespedeza, Lot 120	F	98.56	0.99	85.00	10.00	3–36	1,152	F Bracted plantain, 135; buckhorn, 18; common plantain, 45; horse nettle, 54
7228	Farmers Co-op. Elevator Co., Seymour[292]....	Scott Seed Co., New Albany, Ind...........C	99.00	.....	75.00	15 00	12–35	..	C None
	Korean Lespedeza	F	99.01	0.32	82.00	13.50	3–36	1,566	F Bracted plantain, 189; buckhorn, 360; common plantain, 72; dodder, 90; horse nettle, 225
7183	Heise Bros., Bedford.......................	Scott Seed Co., New Albany, Ind...........C	99 00	......	80.00	10.00	12–35	......	C None
	Korean Lespedeza, Lot 6	F	99.70	0.28	77.00	18.50	3–36	......	F None
7697	James Seed Co., Jeffersonville...............	Scott Seed Co., New Albany, Ind...........C	98.50	.....	80.00	10.00	1–35	..	C Buckhorn, 1,260; dodder, 450
	Korean Lespedeza, Lot 109	F	98 18	1.09	67.50	27.50	4–36	3,600	F Bracted plantain, 1,431; buckhorn, 45; common plantain, 36; curled dock, 27; dodder, 666; horse nettle, 45
7698	James Seed Co., Jeffersonville.....	Scott Seed Co., New Albany, Ind......... C	99.00	......	80.00	10.00	12–35	......	C None
	Korean Lespedeza, Lot 6	F	99.32	0.44	88.00	9.50	4–36	531	F Curled dock, 18; dodder, 36; horse nettle, 27
7666	Jennings Co. Farm Bureau Co-op. Ass'n, Inc., North Vernon...........................	Scott Seed Co., New Albany, Ind...........C	99 00	......	80.00	10.00	1–36	......	C None
	Korean Lespedeza, Lot 135	F	99.46	0.38	79.00	8.50	4–36	180	F Bracted plantain, 9; common plantain, 54; curled dock, 27
7383	Johnson & Chenoweth, Shoals...............	Scott Seed Co., New Albany, Ind...........C	99 00	......	80.00	10.00	1–36	......	C Bracted plantain, 180
	Korean Lespedeza, Lot 120	F	98 66	0.66	90.00	6.00	3–36	1,351	F Bracted plantain, 153; buckhorn, 72; dodder, 10; horse nettle, 117; wild carrot, 9
7051	Karsell Co., Inc., The, Bloomington[293].......	Scott Seed Co., New Albany, Ind...........C	9[illegible].00	......	75.00	15.00	1–36	......	C None
	Korean Lespedeza, Lot 10	F	98 62	0.64	65 50	14 00	2-36	1,530	F Bracted plantain, 27; buckhorn, 243; curled dock, 9; horse nettle, 54; wild carrot, 27
7664	Linkhart & Son, North Vernon..............	Scott Seed Co., New Albany, Ind...........C	99 00	......	80.00	10.00	12–35	......	C None
	Korean Lespedeza, Lot 6	F	99.21	0 51	82.50	11 50	4–36	279	F Bracted plantain, 54; dodder, 18; horse nettle, 27
7219	Lucas, Henry, Brownstown.................	Scott Seed Co., New Albany, Ind...........C	98.80	......	80.00	12.00	1–36	......	C Bracted plantain, 90
	Korean Clover, Lot 113	F	98.35	1 47	89 50	7.50	3–36	266	F Bracted plantain, 45; curled dock, 18; dodder, 5; horse nettle, 18
7707	Reid, Volney T., Salem...................	Scott Seed Co., New Albany, Ind...........C	99.00	.....	80.00	10.00	2 36	......	C Bracted plantain, 64
	Korean Lespedeza, Lot 74	F	99.16	0.40	80.00	11.50	4–36	999	F Bracted plantain, 63; dodder, 36
7714	Reid, Volney T., Salem[294]..................	Scott Seed Co., New Albany, Ind...........C	98.50	......	80.00	10.00	1–36	......	C Buckhorn, 90
	Korean Lespedeza, Lot 31	F	99.12	0.16	81.50	14.00	4–36	1,377	F Bracted plantain, 396; buckhorn, 9; curled dock, 18; dodder, 54
7539	Tuxedo Feed & Supply Co., Aurora..........	Scott Seed Co., New Albany, Ind...........C	99.00	......	80 00	10.00	12–35	..	C None
	Korean Lespedeza, Lot 6	F	99 44	0.32	83.00	12 00	3 36	405	F Bracted plantain, 9; dodder, 27; horse nettle, 9

8127	Watson Hardw are Co., Milltown[295]	Scott Seed Co., New Albany, Ind.	C	99.00	......	80.00	15 00	2-36	......	C	Bracted plantain, 64
	Korean Lespedeza, Lot 74		F	99.82	0.14	84.50	13.00	5-36	189	F	Bracted plantain, 9; curled dock, 9; dodder, 72; horse nettle, 9
7708	Wiseman & Son, Wm. H. P., Corydon[296]	Scott Seed Co., New Albany, Ind.	C	99 00	......	80.00	10.00	2-36	......	C	Bracted plantain, 160
	Korean Lespedeza, Lot 74		F	99.10	0.44	76.00	18.50	4-36	1,476	F	Bracted plantain, 117; curled dock, 9; dodder, 72; horse nettle, 18
7403	Elnora Elevator Co., Elnora	Wyatt Elevator Co., Petersburg, Ind.	C	99 58	..	85 00	....	1-36	....	C	Bracted plantain, 41
	Korean Lespedeza, Lot Campbell		F	99 27	0 47	79 00	16 00	3-36	779	F	Bracted plantain, 135; dodder, 14
7706	Farmers Produce Co., Salem[297]	Wyatt Elevator, Petersburg, Ind.	C	98 00	..	80 00	15 00	3-36	....	C	Bracted plantain, 9; buckhorn, 207; common plantain, 630; curled dock, 36; dodder, 27; horse nettle, 63
	Korean Lespedeza, Lot Abell		F	96 00	1 73	79 50	7 50	4-36	6,093	F	Bracted plantain, 180; buckhorn, 135; common plantain, 990; curled dock, 36; dodder, 36; horse nettle, 36
7675	Irwin Feed Store & Hatchery, Madison	Wyatt Elevator, Petersburg, Ind.	C	99.58	....	85 00	.	1-36		C	Bracted plantain, 41
	Korean Lespedeza		F	99 53	0 23	86 00	8 50	4-36	783	F	Bracted plantain, 27; dodder, 36
8125	Turley, James E., English	Wyatt Elevator, Petersburg, Ind.	C	98 00	.. ..	80 00	15 00	3-36		C	Bracted plantain, 9; buckhorn, 207; common plantain, 630; curled dock, 36; dodder, 27; horse nettle, 63
	Korean Lespedeza, Lot Ca & P		F	97.12	1.44	80.50	9 00	5-36	4,509	F	Bracted plantain, 27; buckhorn, 990; common plantain, 189; curled dock, 18; dodder, 18; horse nettle, 27
7715	Washington Co. Farm Bureau Co-op. Ass'n, Inc., Salem	Wyatt Elevator, Petersburg, Ind.	C	98.00	......	80.00	15.00	3-36	.....	C	Bracted plantain, 108; curled dock, 9; dodder, 45
	Korean Lespedeza, Lot P & P		F	97.26	0.40	85.50	5 00	4-36	4,689	F	Bracted plantain, 54; dodder, 81; horse nettle, 54
7294	Wyatt Elevator, Petersburg[298]	Wyatt Elevator, Petersburg, Ind.	C	99.58	......	85.00	......	2-36	......	C	Bracted plantain, 41
	Korean Lespedeza, Lot Campbell		F	99.40	0.40	87.00	11 50	3-36	828	F	Bracted plantain, 144; common plantain, 45; dodder, 99
7296	Wyatt Elevator, Petersburg[299]	Wyatt Elevator, Petersburg, Ind.	C	98.00	......	80.00	10.00	1-36	......	C	Bracted plantain, 279; buckhorn, 18; common plantain, 117; curled dock, 9; dodder, 27
	Korean Lespedeza, Lot 200		F	96.33	2.39	80.50	11.50	3-36	2,583	F	Bracted plantain, 279; buckhorn, 27; common plantain, 54; curled dock, 9; dodder, 45; horse nettle, 9
6999	Irwin Feed Store & Hatchery, Madison[300]	Wyatt Seed & Feed Store, Petersburg, Ind.	C	99.00	......	80 00	10.00	1-35	......	C	Horse nettle, 180
	Korean Clover, Lot 401		F	99.34	0.24	87 00	8.00	2-36	1,071	F	Bracted plantain ,54; buckhorn, 36; curled dock, 9; dodder, 117; horse nettle, 45

***Not labeled with official Indiana State Labels.**

†Certified by retailer.

C and F stands, respectively, for **Claimed and Found.**

[292] Removed from sale. Misbranded. Relabeled.

[293] Sample secured from State Highway Commission of Indiana, Bloomington, Ind.

[294] Removed from sale. Misbranded. All sold.

[295] Removed from sale. Misbranded. All sold.

[296] Removed from sale. Misbranded. Relabeled.

[297] Removed from sale. Misbranded. All sold.

[298] Removed from sale. Misbranded. All sold.

[299] Removed from sale. Misbranded. All sold.

[300] Removed from sale. Misbranded. Returned to distributor.

TABLE 8—Millet

Laboratory No. S.	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, Per Cent	Inert Matter, Per Cent	Germination, Per Cent	Date of Germination	Total Number Weed Seeds Per Lb. of Seeds	Number Per Pound of each of the Noxious Weed Seeds Specified in the Law
6749	Paxson Feed Co., Elkhart	Dickinson Co., The Albert, Chicago, Ill.	C	98.76		85.00	4 35		C None
	Hungarian Millet, Lot 8312		F	99 28	0 72	94 00	7-35	54	F Mustard, 54
6750	Paxson Feed Co., Elkhart	Dickinson Co., The Albert, Chicago, Ill.	C	98 38		80.00	5-35		C None
	German Type Millet, Lot 8210		F	98 25	0.45	86.00	7-35	3.600	F None
6767	Huntington Co. Farm Bureau Co-op. Ass'n, Inc., Huntington	Indiana Farm Bureau Co-op. Ass'n, Inc., Indianapolis, Ind.	C	99.00		90.00	4-35		C None
	German Millet		F	99.59	0.39	85.00	8-35		F None
6764	†Brown Supply Co., Valparaiso	Smoke Bros., Valparaiso, Ind.	C	99 00		90 00	5-35		C None
	Hungarian Millet		F	98.21	1 57	84 50	8 35	963	F Canada thistle, 9; horse nettle, 414

TABLE 8—Oats

Laboratory No. S.	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, Per Cent	Inert Matter, Per Cent	Germination, Per Cent	Date of Germination	Total Number Weed Seeds Per Lb. of Seeds	Number Per Pound of each of the Noxious Weed Seeds Specified in the Law
7962	Alvey Feed Store, Terre Haute[301]	Alvey Feed Store, Terre Haute, Ind.	C						C
	Oats		F	99.44	0.56	73 00	4-36		F None
7961	*American Field Seed Co., Chicago, Ill.[302]	American Field Seed Co., Chicago, Ill.	C			95 00	2-36		C None
	Swedish Select Seed Oats, Lot 590		F	98.70	0.46	93 50	4 36	18	F None
7965	†Standard Hatcheries, Terre Haute	Big Four Milling Co., Mattoon, Ill.	C	95 00		90.00	1-36		C None
	White Oats		F	98.70	0.92	91.50	4-36	90	F Curled dock, 85
7966	Burt & Sons, Theo, Melrose, Ohio[303]	Burt & Sons, Theo, Melrose, Ohio	C	99.00		95.00	1-36		C None
	Sensation Oats		F	99.29	0.45	85.00	5 36		F None
8057	*Burt & Sons, Theo, Melrose, Ohio[304]	Burt & Sons, Theo, Melrose, Ohio	C	99.25		95 00	1-36		C None
	Sensation Oats		F	99 44	0.45	95 00	4-36	18	F None
8058	Payne, Golden, Newcastle[305]	Burt & Sons, Theo, Melrose, Ohio	C	99.00		95.00	1-36		C None
	Sensation Oats		F	98 81	0.77	92 00	4-36	63	F None
7964	*Butt & Co., L. T., Center Point	Butt & Co., L. T., Center Point, Ind.	C						C
	Oats		F	98.44	1.52	93.50	4-36	468	F Curled dock, 9; red sorrel, 9

8062	Hancock Co. Farm Bureau Co-op. Ass'n, Inc., Greenfield[306] Oats	Hancock Co. Farm Bureau Co-op. Ass'n, Inc., Greenfield, Ind.	C	......	......	......	......	......	C	
			F	97.48	2.18	93.00	4-36	315	F	Canada thistle, 9; curled dock, 81; mustard, 9
8096	*Heise Bros., Bedford Oats	Heise Bros., Orleans, Ind.	C	......	......	......	......	......	C	
			F	98.08	0.32	95.50	4-36	32	F	Mustard, 16
7050	Karsell Co., Inc., The, Bloomington[307] Seed Oats	Karsell Co., Inc., The, Bloomington, Ind.	C	......	......	......	......	......	C	
			F	91.28	5.24	80.50	2-36	3,402	F	Curled dock, 288; mustard, 486; quack grass, 36; red sorrel, 36
8060	Kellam & Son, R. P., Newcastle Oats	Kellam & Son, R. P., Newcastle, Ind.	C	96.00	....	95.00	....	....	C	None
			F	94.76	0.90	87.50	4-36	414	F	Curled dock, 81; mustard, 189
7957	†Indiana Feed & Seed Co., Ft. Wayne Swedish Seed Oats	O. & M. Seed Co., The, Green Springs, Ohio	C	99.00	......	90.00	2-36	......	C	None
			F	99.22	0.59	94.50	4-36	......	F	None
7813	Bulleit & Sons, V. H., Corydon Early Burt Seed Oats	Scott Seed Co., New Albany, Ind.	C	98.00	......	90.00	11-35	......	C	None
			F	99.38	0.60	90.00	5-36	25	F	Mustard, 5
7959	Etna Lumber & Elevator Co., Etna Green New Victory Seed Oats, Lot 583	Sun-Field Seed Service, Chicago, Ill.	C	99.50	......	95.00	1-36	......	C	None
			F	98.85	0.75	91.00	4-36	......	F	None
7815	Hobbs Grain Co., Hobbs New Victory Seed Oats, Lot 583	Sun-Field Seed Service, Chicago, Ill.	C	99.50	......	95.00	1-36	......	C	None
			F	98.41	1.05	89.50	4-36	9	F	None
8055	Mulberry Grain Co., Mulberry[308] Mammoth Cluster Seed Oats, Lot 557A	Sun-Field Seed Service, Chicago, Ill.	C	99.50	......	92.00	1 36	......	C	None
			F	99.47	0.32	79.00	4-36	......	F	None
6739	Noblesville Milling Co., Noblesville[309] New Victory Seed Oats, Lot 561	Sun-Field Seed Service, Chicago, Ill.	C	99.50	......	95.00	1-35	......	C	None
			F	96.66	0.44	95.00	7-35	36	F	None
7958	Scott & Son, Ed., West Terre Haute Mammoth Cluster Victory Seed Oats, Lot 557A	Sun-Field Seed Service, Chicago, Ill.	C	99.50	......	85.00	12-35	......	C	None
			F	99.69	0.15	71.50	4-36	8	F	None
7814	Farmers Produce Co., Salem Early Burt Oats	Wyatt Elevator, Petersburg, Ind.	C	97.00	......	90.00	3-36	......	C	None
			F	98.92	0.86	92.00	5-36	153	F	Common Plantain, 135

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*Not labeled with official Indiana State Labels.

†Certified by retailer.

C and F stands, respectively, for Claimed and Found.

[301] Not tagged. Sold for feeding purposes.

[302] Sample secured from Ivan Fields, Route 1, Jonesboro, Ind.

[303] Sample secured from Roy A. Truitt, Dana, Ind. Rural route.

[304] Sample secured from Fred Wayman, Newcastle, Ind.

[305] Sample secured from William H. Livingston, Route 1, Straughn, Ind.

[306] Not tagged. Returned to seller.

[307] Not tagged. Labels furnished. Sample secured from State Highway Commission of Indiana, Bloomington, Ind.

[308] Removed from sale. Misbranded. All sold.

[309] Removed from sale. Misbranded. Returned to distributor.

TABLE 8—Orchard Grass

Laboratory No. S.	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, Per Cent	Inert Matter, Per Cent	Germination, Per Cent	Date of Germination	Total Number Weed Seeds Per Lb. of Seeds	Number per Pound of Each of the Noxious Weed Seeds Specified in the Law
7704	Eberts Grain Co., Scottsburg[310] Orchard Grass, Lot 751	Eberts Grain Co., Louisville, Ky.	C	80.00	..	88.00	12-35		C Red sorrel, 127
			F	81.41	15.63	92.50	5-36	19,494	F Buckhorn, 198; curled dock, 774; oxeye daisy, 72; red sorrel, 11,700
7682	Sample, John L., Madison[311] Orchard Grass, Lot M67298	Giltner Seed Co., Eminence, Ky.	C	86.00	......	80.00	1-36	....	C Buckhorn, 1,600; curled dock, 10
			F	88.67	8.75	77.00	4-36	9,729	F Buckhorn, 4,500; curled dock, 3,150; red sorrel, 54
7047	Bloomfield Mill & Elevator Co., Bloomfield Orchard Grass, Lot 813	Lewis Implement & Seed Co., Louisville, Ky.	C	80.00	....	85.00	12-35	...	C Curled dock, 224; red sorrel, 448
			F	76.04	23.21	84.50	3-36	1,206	F Buckhorn, 18; curled dock, 216; oxeye daisy, 18; red sorrel, 504
7037	Farmers Feed & Coal Co., Bloomington Red Bird Orchard Grass, Lot 813	Lewis Implement & Seed Co., Louisville, Ky.	C	80.00	....	80.00	12-35		C Curled dock, 224; red sorrel, 448
			F	85.58	13.72	85.50	2-36	4,041	F Buckhorn, 72; curled dock, 576; oxeye daisy, 18; red sorrel, 1,800
7669	Jefferson Co. Farm Bureau Co-op. Ass'n, Inc., Madison	Lewis Implement & Seed Co., Louisville, Ky.	C	80.00	....	85.00	1-36	.....	C Curled dock, 448; oxeye daisy, 448; red sorrel, 224
	Orchard Grass, Lot 809		F	82.10	17.30	87.50	5-36	3,618	F Buckhorn, 414; curled dock, 1,242; oxeye daisy, 594; red sorrel, 468
7348	Boonville Milling Co., Boonville[312] Orchard Grass, Lot 293	National Seed Co., Louisville, Ky.	C	84.00		90.00	12-35	....	C Buckhorn, 458; red sorrel, 458
			F	82.06	13.75	70.50	5-36	21,267	F Buckhorn, 2,700; curled dock, 792; red sorrel, 12,825
7323	Purcell Seed Co., Evansville	Purcell Seed Co., Evansville, Ind.	C	36.56	...	80.00	2-36	...	C Curled dock, 1,350; oxeye daisy, 1,350; red sorrel, 15,300
	Tru Val Orchard Grass, Lot 4903		F	84.66	12.55	84.50	4-36	29,349	F Buckhorn, 72; curled dock, 306; oxeye daisy, 2,475; wild garlic (onion), 396; red sorrel, 24,300
7390	Johnson & Chenoweth, Shoals Orchard Grass	Ross Seed Co., Louisville, Ky.	C	85.00	...	85.00	10-35	..	C Curled dock, 450
			F	88.04	11.06	89.50	4-36	1,512	F Buckhorn, 36; curled dock, 1,026

*Not labeled with official Indiana State Labels.
†Certified by retailer.
C and F stands, respectively, for Claimed and Found.

[310] Removed from sale. Misbranded. All sold.
[311] Removed from sale. Misbranded. All sold.
[312] Removed from sale. Misbranded. Relabeled.

TABLE 8—Red Top

Laboratory No. S.	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, Per Cent	Inert Matter, Per Cent	Germination, Per Cent	Date of Germination	Total Number Weed Seeds Per Lb. of Seeds	Number per Pound of Each of the Noxious Weed Seeds Specified in the Law
7623	*American Field Seed Co., Chicago, Ill.[313]	American Field Seed Co., Chicago, Ill.	C	92.40		90.00	12-35		C None
	Red Top, Lot 9092		F	93.94	4.77	88.75	3-36	86,490	F Common plantain, 45; red sorrel, 45
6928	Crabbs Reynolds Taylor Co., Lafayette	Crabbs Reynolds Taylor Co., Crawfordsville, Ind.	C	95.00		90.00	7-35		C None
	Red Top, Lot 1 DE		F	95.29	4.22	88.75	11-35	18,045	F Red sorrel, 45
7253	Riggs & Son, W. G., Sullivan[314]	Crabbs Reynolds Taylor Co., Crawfordsville, Ind.	C	94.00		92.00	12-35		C None
	Red Top, Lot 7-DC		F	94.36	3.16	94.75	3-36	71,550	F Common plantain, 900
7391	Johnson & Chenoweth. Shoals	Davis Seed Corp., Lebanon, Ind.	C	94.00		80.00	12-35		C None
	Red Top		F	95.35	4.35	87.50	4-36	28,800	F None
7272	Emison Hardware Store, Vincennes	Dickinson Co., The Albert, Chicago, Ill.	C	96.00		90.00	1-36		C None
	Red Top, Lot 41221		F	96.22	2.98	90.00	3-36	3,330	F Oxeye daisy, 135; red sorrel, 45
7277	Griffin Hardware, Carlisle[315]	Dickinson Co., The Albert, Chicago, Ill.	C	94.20		90.00	8-35		C None
	Red Top, Lot 41134		F	93.60	5.00	88.25	3-36	55,080	F Buckhorn, 45; common plantain, 135; oxeye daisy, 450
8346	Paxson, C. E., Elkhart[316]	Dickinson Co., The Albert, Chicago, Ill.	C	96.40		90.00	5-36		C None
	Red Top, Lot 41272		F	95.81	3.59	86.50	6-36	15,795	F Common plantain, 630; oxeye daisy, 720; red sorrel, 45
7064	Standard Hatcheries, Terre Haute	Dickinson Co., The Albert, Chicago, Ill.	C	96.00		90.00	1-36		C None
	Red Top, Lot 41221		F	95.72	3.48	91.75	2-36	7,065	F Common plantain, 45; oxeye daisy, 270
7705	Eberts Grain Co., Scottsburg[317]	Eberts Grain Co., Louisville, Ky.	C	91.20		90.00	2-36		C None
	Red Top, Lot 822		F	85.66	9.04	93.25	5-36	101,250	F Common plantain, 13,500
6816	McKinley & Son, George, Borden[318]	Hall Seed Co., Louisville, Ky.	C	90.92		91.00	11-34		C None
	Red Top		F	89.61	8.14	34.50	9-35	197,325	F Common plantain, 45; oxeye daisy, 45; red sorrel, 135
7295	Butler Feed Store, Oakland City[319]	Heldt Co., The, Evansville, Ind.	C	92.53		89.00	9-35		C None
	"Thelco" Red Top, Lot 3300		F	91.21	5.73	52.00	3-36	52,065	F Buckhorn, 45; common plantain, 540; oxeye daisy, 180
6778	†Heldt & Voelker Co., Evansville[320]	Heldt Co., The, Evansville, Ind.	C	92.00		90.00	4-35		C Common plantain, 450
	Thelco Red Top, Lot 2618		F	94.17	4.83	40.25	9-35	12,510	F Buckhorn, 45; common plantain, 90; oxeye daisy, 225
7316	Heldt Co., The, Evansville[321]	Heldt Co., The, Evansville, Ind.	C	90.13		88.00	9-35		C Red sorrel, 1,350
	Comet Red Top, Lot 3301		F	91.85	5.14	64.50	4-36	49,815	F Common plantain, 180; oxeye daisy, 45; red sorrel, 90
7342	Heldt Co., The, Evansville	Heldt Co., The, Evansville, Ind.	C	92.04		89.00	12-35		C Common plantain, 1,350
	Red Top, Lot 3322		F	90.56	7.85	82.50	3-36	35,820	F Common plantain, 270

*Not labeled with official Indiana State Labels.

†Certified by retailer.

C and F stands, respectively, for Claimed and Found.

[313] Sample secured from H. A. Luzadder, Logansport, Ind.

[314] Removed from sale. Misbranded. All sold.

[315] Removed from sale. Misbranded. All sold.

[316] Removed from sale. Misbranded. Relabeled.

[317] Removed from sale. Misbranded. All sold.

[318] Removed from sale. Misbranded.

[319] Removed from sale. Misbranded. All sold.

[320] Removed from sale. Misbranded. Returned to distributor.

[321] Removed from sale. Misbranded. All sold.

TABLE 8—Red Top—Continued

Laboratory No. S.	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, Per Cent	Inert Matter Per Cent	Germination, Per Cent	Date of Germination	Total Number Weed Seeds Per Lb. of Seeds	Number per Pound of Each of the Noxious Weed Seeds Specified in the Law
7350	Kinderman & Sons, Wm., Boonville[322] Thelco Red Top, Lot 3276	Heldt Co., The, Evansville, Ind.	C	92.31	......	90.00	8-35		C None
			F	93.19	4.83	80.25	4-36	17,775	F Buckhorn, 45; common plantain, 90; oxeye daisy, 540
7262	Clay Co. Farm Bureau Co-op. Ass'n, Inc., Brazil Red Top, Lot 3712	Indiana Farm Bureau Co-op. Ass'n, Inc., Indianapolis, Ind.	C	92.00	.....	85.00	12-35	......	C None
			F	94.25	4.70	73.75	4-36	96,795	F Oxeye daisy, 45
6795	Indiana Farm Bureau Co-op. Ass'n, Inc., Indianapolis[323] Red Top, Lot 3712	Indiana Farm Bureau Co-op. Ass'n, Inc., Indianapolis, Ind.	C	94.00	......	92.00	6-35	......	C None
			F	95.23	3.79	72.50	9-35	87,030	F Buckhorn, 45; common plantain, 135
6796	Indiana Farm Bureau Co-op. Ass'n, Inc., Indianapolis[324] Red Top, Lot 3712	Indiana Farm Bureau Co-op. Ass'n, Inc., Indianapolis, Ind.	C	94.00	...	92.00	6-35	...	C None
			F	95.05	3.88	73.50	9-35	85,095	F Common plantain, 45
7824	White Co. Farm Bureau Co-op. Ass'n, Inc., Monticello[325] Red Top, Lot 3712	Indiana Farm Bureau Co-op. Ass'n, Inc., Indianapolis, Ind.	C	92.00	.	85.00	12-35	......	C None
			F	94.80	4.00	63.00	4-36	90,000	F None
6814	Farm Bureau Service, Columbus Red Top, Lot I-651	Indiana Seed Co., Indianapolis, Ind.	C	84.00		80.00	7-35	....	C Common plantain, 225
			F	96.08	3.63	75.00	9-35	26,730	F Buckhorn, 45; common plantain, 45; red sorrel, 90
7243	Throckmorton Seed Store, Franklin Red Top, Lot I-651	Indiana Seed Co., Indianapolis, Ind.	C	93.00	.....	85.00	12-35	......	C Common plantain, 540
			F	93.56	5.85	72.75	3-36	40,140	F Buckhorn, 45; oxeye daisy, 315; red sorrel, 180
7399	Worthington Grain Co., Worthington Red Top, Lot I-651	Indiana Seed Co., Indianapolis, Ind.	C	93.00	....	85.00	12-35	C	Common plantain, 540
			F	94.14	5.46	81.25	5-36	29,925	F Common plantain, 90; oxeye daisy, 45; red sorrel, 90
8122	Jansen-Overman Co., Indianapolis Red Top	Jansen Overman Co., Indianapolis, Ind.	C	90.00	......	90.00	1-36	......	C None
			F	94.14	4.97	97.00	5-36	35,460	F Buckhorn, 45; common plantain, 180; oxeye daisy, 90; red sorrel, 45
7820	Moore & Kemple Hardware Co., Lafayette Fancy Solid Red Top, Lot 577	Kellogg-Kelly Seed Co., St. Joseph, Mo.	C	96.83	......	86.00	2-36	......	C None
			F	97.11	2.69	85.50	4-36	4,500	F None
8077	*Lawrence Co. Farm Bureau Co-op. Ass'n, Inc., Bedford[326] Red Top	Lawrence Co. Farm Bureau Co-op. Ass'n, Inc., Bedford, Ind.	C	......	......	....	......	......	C
			F	94.94	4.28	67.25	4-36	87,300	F None
7036	Farmers Feed & Coal Co., Bloomington[327] Red Bird Red Top, Lot 626	Lewis Implement & Seed Co., Louisville, Ky.	C	92.00	......	90.00	12-35	......	C Red sorrel, 224; white top, 448
			F	90.49	7.90	78.00	3-36	21,330	F Red sorrel, 180; white top, 2,250
7671	Hallawell's Feed Store, North Vernon Red Bird Red Top, Lot 629	Lewis Implement & Seed Co., Louisville, Ky.	C	92.00	......	90.00	1-36	......	C Red sorrel, 48; white top, 448
			F	93.36	6.17	87.50	4-36	28,575	F Common plantain, 135; oxeye daisy, 225; red sorrel, 315; white top, 450
6906	Jefferson Co. Farm Bureau Co-op. Ass'n, Inc., Madison[328] Red Top, Lot RB	Lewis Implement & Seed Co., Louisville, Ky.	C	94.00	......	90.00	8-35	......	C White top, 448
			F	91.07	8.44	92.75	11-35	1,350	F None

7002	Jefferson Co. Farm Bureau Co-op. Ass'n, Inc., Madison	Lewis Implement & Seed Co., Louisville, Ky.	C	92.00	....	90.00	11-35		C None
	Red Bird Red Top, Lot 622		F	93.66	5.76	87.25	2-36	27,540	F Red sorrel, 90
7035	Pennington Implement & Seed Store, Bloomington	Lewis Implement & Seed Co., Louisville, Ky.	C	92.00	......	90.00	1-36	.	C Red sorrel, 224; white top, 448
	Red Bird Red Top, Lot 626		F	92.18	6.62	81.00	3-36	29,025	F Red sorrel, 225; white top, 2,700
7646	Scott Co. Farm Bureau Co-op. Ass'n, Inc., Scottsburg	Lewis Implement & Seed Co., Louisville, Ky.	C	92.00	....	90.00	1-36	.....	C Red sorrel, 48; white top, 448
	Red Bird Red Top, Lot 629		F	93.62	5.68	88.50	5-36	27,945	F Red sorrel, 45
7359	Wedeking Co., C. W., Dale	Lewis Implement & Seed Co., Louisville, Ky.	C	92.00	......	88.00	12-35	.....	C Red sorrel, 224; white top, 448
	Red Bird Red Top, Lot 626		F	91.38	7.54	85.50	3-36	25,920	F Buckhorn, 45; common plantain, 90; red sorrel, 45; white top, 90
7689	Hunger, C. G., Madison[329]	Louisville Seed Co., Louisville, Ky.	C	93.45	......	93.00	1-36	......	C None
	Red Top		F	89.08	10.18	92.00	5-36	31,500	F None
6858	Butler Feed Store, Oakland City[330]	McCarty Seed Co., J. A., Evansville, Ind.	C	93.14	....	90.00	8-35	.....	C None
	Red Top, Lot 1319		F	93.17	4.88	86.50	11-35	26,505	F Bracted plantain, 45; common plantain, 90; oxeye daisy, 720
7290	Pike Co. Farm Bureau Co-op. Ass'n, Inc., Petersburg[331]	McCarty Seed Co., J. A., Evansville, Ind.	C	92.00	......	88.00	2-36	.....	C White top, 1,800
	Lucky Jim Red Top, Lot 117		F	90.59	9.11	74.00	4-36	5,850	F White top, 1,800
6784	St. Meinrad Milling Co., St. Meinrad	McCarty Seed Co., J. A., Evansville, Ind.	C	92.23	....	90.00	2-35	......	C None
	Red Top, Lot 14		F	91.54	6.77	85.25	9-35	39,915	F Bracted plantain, 45; buckhorn, 45; common plantain, 90; oxeye daisy, 135
6824	Fagan Seed Store, Indianapolis	McCullough Seed Co., The J. Chas., Cincinnati, O.	C	94.35	......	90.00	8-35	....	C None
	Fancy Red Top, Lot 2485		F	93.74	5.57	79.00	10-35	57,780	F Buckhorn, 45; common plantain, 135
6871	Irwin Feed Store & Hatchery, Madison	McCullough Seed Co., The J. Chas., Cincinnati, O.	C	92.00	....	90.00	8-35	.....	C Common plantain, 18
	Fancy Red Top, Lot 2411		F	91.99	7.22	79.00	10-35	51,435	F Buckhorn, 45; common plantain, 90
7557	McMahan Seed Co., LaPorte	McMahan Seed Co., LaPorte, Ind.	C	92.70	......	90.00	9-35	.....	C None
	Red Top		F	93.19	5.16	84.50	4-36	36,900	F None
7225	Greger, A. C., Brownstown	Mangelsdorf & Bro., Ed. F., St. Louis, Mo.	C	92.00	.....	90.00	8-35	....	C None
	Red Top		F	97.05	2.56	90.00	3-36	3,600	F None
7360	Boonville Milling Co., Boonville[332]	National Seed Co., Louisville, Ky.	C	84.00	.....	90.00	1-35	......	C None
	Red Top, Lot 842		F	84.14	7.73	86.50	3-36	141,300	F Common plantain, 10,800
7410	Boonville Milling Co., Boonville	National Seed Co., Louisville, Ky.	C	94.00	...	90.00	11-35	....	C None
	Red Top, Lot 855X		F	92.58	6.39	84.25	3-36	77,805	F Bracted plantain, 45; common plantain, 45; oxeye daisy, 225; red sorrel, 90
7387	Daviess Co. Farm Bureau Co-op. Ass'n, Inc., Washington	Purcell Seed Co., Evansville, Ind.	C	92.00	.....	90.00	2-36	.....	C White top, 18
	Tru Val Fancy Red Top, Lot 4927		F	89.10	10.80	87.00	4-36	23,445	F Red sorrel, 45; white top, 4,050
6978	Eckerty & Son, C., Eckerty	Purcell Seed Co., Evansville, Ind.	C	92.00	..	88.00	12-35	......	C White top, 1,250
	Tru Val Fancy Red Top, Lot 4579		F	90.91	8.43	88.25	1-36	47,700	F White top, 1,350
7351	Graves, A. J., Tell City	Purcell Seed Co., Evansville, Ind.	C	93.89	....	88.00	2-36	...	C White top, 1,800
	Tru Val Fancy Red Top, Lot 4821		F	92.51	7.09	90.00	4-36	28,440	F Oxeye daisy, 90; white top, 4,950

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*Not labeled with official Indiana State Labels.

†Certified by retailer.

C and F stands, respectively, for Claimed and Found.

[322] Removed from sale. Misbranded. All sold.

[323] Removed from sale. Misbranded. Relabeled.

[324] Sample secured from Clay County Farm Bureau Co-op. Ass'n, Inc., Braz il, Ind Removed from sale. Misbranded. All sold.

[325] Removed from sale. Misbranded. Returned to distributor

[326] Sample secured from Olin Lively, Route 1, Heltonville, Ind.

[327] Removed from sale. Misbranded. All sold.

[328] Removed from sale. Misbranded. Relabeled.

[329] Removed from sale. Misbranded. Relabeled.

[330] Removed from sale. Misbranded. Returned to distributor.

[331] Removed from sale. Misbranded. All sold.

[332] Removed from sale. Misbranded. Relabeled.

TABLE 8—Red Top—Continued

Laboratory No. S.	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, Per Cent	Inert Matter, Per Cent	Germination, Per Cent	Date of Germination	Total Number Weed Seeds Per Lb. of Seeds	Number per Pound of Each of the Noxious Weed Seeds Specified in the Law
6860	Johnson & Chenoweth, Shoals Tru Val Fancy Red Top, Lot 4398 "C"	Purcell Seed Co., Evansville, Ind.	C	92.21	......	90.00	9-35	......	C Common plantain, 9; red sorrel, 9
			F	91.15	8.15	85.50	11-35	44,550	F None
7310	Kohlmeier, E. C., Mackey Tru Val Fancy Red Top, Lot 4487	Purcell Seed Co., Evansville, Ind.	C	92.10	......	90.00	12-35	......	C Common plantain, 51; white top, 1,800
			F	89.50	9.90	91.50	4-36	32,940	F Common plantain, 90; white top, 450
7332	Marvel, B. O., Owensville Tru Val Fancy Red Top, Lot 4524	Purcell Seed Co., Evansville, Ind.	C	92.26	......	88.00	12-35		C Common plantain, 450; white top, 1,800
			F	90.00	9.40	86.00	5-36	45,540	F Common plantain, 90; white top, 4,500
7380	Walker, W. A. Loogootee "Judge" Fancy Red Top, Lot 4609	Purcell Seed Co., Evansville, Ind.	C	90.00	......	91.00	2-36	......	C None
			F	93.48	6.22	96.25	4-36	28,800	F None
6872	Irwin Feed Store & Hatchery, Madison[333] Red Top	Ross Seed Co., Louisville, Ky.	C	93.00	......	90.00	8-35	......	C None
			F	94.29	5.32	80.75	11-35	37,215	F Common plantain, 135; red sorrel, 630
6876	†McCarty Seed Co., J. A., Evansville[334] Lucky Jim Red Top, Lot 1319	Schultz Seed Co., J. M., Dieterich, Ill.	C	93.14	......	90.00	8-35	......	C None
			F	92.96	4.26	57.00	11-35	41,400	F Common plantain, 225; oxeye daisy, 135; red sorrel, 90
7319	†Ohio Valley Seed Co., Evansville[335] Red Top, Lot D-23	Schultz Seed Co., J. M., Dieterich, Ill.	C	92.00	......	85.00	11-35	...	C None
			F	83.00	9.73	78.25	4-36	34,740	F Common plantain, 2,520; oxeye daisy, 720
7935	†Quinlan Seed Store, Terre Haute Red Top, Lot 438	Schultz Seed Co., J. M., Dieterich, Ill.	C	90.00	......	90.00	1-36	.....	C Common plantain, 225
			F	91.47	6.13	82.50	4-36	37,440	F Common plantain, 360; oxeye daisy, 180
7683	Dunlevy & Son, D. R., Henryville Red Top, Lot 625	Scott Seed Co., New Albany, Ind.	C	94.00	......	90.00	9-35	......	C Common plantain, 900
			F	93.46	5.70	88.00	4-36	39,780	F Common plantain, 45; oxeye daisy, 45; red sorrel, 90
7692	James Seed Co., Jeffersonville Red Top, Lot 604	Scott Seed Co., New Albany, Ind.	C	94.00	......	90.00	11-35	......	C None
			F	94.07	4.49	86.75	5-36	40,455	F Bracted plantain, 45; common plantain, 135; red sorrel, 225
7665	Linkhart & Son, North Vernon Red Top, Lot 604	Scott Seed Co., New Albany, Ind.	C	94.00	......	90.00	9-35	......	C None
			F	94.21	4.15	85.50	4-36	38,430	F Red sorrel, 180
6808	Lucas Cash Store, Brownstown Red Top, Lot 612	Scott Seed Co., New Albany, Ind.	C	92.00	......	90.00	8-35	......	C Red sorrel, 180
			F	98.14	1.57	96.25	9-35	14,715	F Buckhorn, 45; common plantain, 45; oxeye, daisy, 135; red sorrel, 990
7377	Dilly & Son, Phil, Huntingburg Fancy Red Top, Lot 4	Shultz Seed Co., Olney, Ill.	C	94.00	......	90.00	8-35	......	C None
			F	96.70	3.20	81.00	5-36	15,795	F Red sorrel, 45
7335	†McCarty Seed Co., J. A., Evansville Lucky Jim Red Top, Lot 122	Shultz Seed Co., Olney, Ill.	C	93.20	......	90.00	2-36	......	C None
			F	94.70	4.83	88.50	4-36	44,325	F Common plantain, 180; oxeye daisy, 45

*Not labeled with official Indiana State Labels.
†Certified by retailer.
C and F stands, respectively, for Claimed and Found.

[333] Removed from sale. Misbranded. Relabeled and sold.
[334] Removed from sale. Misbranded. All sold.
[335] Removed from sale. Misbranded. All sold. Contains 6.90% Timothy with a germination of 93.25%.

TABLE 8—Soy Beans

Laboratory No. S.	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, Per Cent	Inert Matter, Per Cent	Germination, Per Cent	Hard Seeds, Per Cent	Date of Germination	Total Number Weed Seeds Per Lb. of Seeds	Number Per Pound of Each of the Noxious Weed Seeds Specified in the Law
8366	Hardy & Son, M. N., Scottsburg	Adams & Morrow, Inc., Princeton, Ind.	C	98.00	....	85.00		4-36	....	C None
	Kingwa Soy Beans		F	99.94	0.06	84.00	0.00	6-36	....	F None
8287	Blume Estate Renyolds[336]	Blume Estate, Wolcott, Ind.	C	99.00	....	96.00	....	4-36	....	C None
	Manchu Soy Beans		F	99.47	0.52	90.00	0.00	5-36	4	F None
8244	Cambridge Feed Mills, Inc., Cambridge City	Cambridge Feed Mills, Inc., Cambridge City, Ind.	C	85.00	....	90.00	....	4-36	....	C None
	Dunfield Soy Beans		F	99.30	0.70	88.00	0.00	5-36	....	F None
8199	Central Michigan Grain Corp., Edwardsburg, Mich.[337]	Central Michigan Grain Corp., Edwardsburg, Mich.	C	....	....	90.00	....	....	....	C None
	Manchu Soy Beans		F	99.32	0.67	81.00	0.00	4-36	....	F None
8381	*Cook, Geo. D., Birdseye	Cook, Geo. D., Birdseye, Ind.	C	....	....	....	....	....	....	C
	Sootee Soy Beans		F	99.00	0.99	79.00	0.00	6-36	....	F None
8379	Drabing, C. L., French Lick[338]	Drabing, C. L., French Lick, Ind.	C	....	....	....	....	....	....	C
	Soy Beans		F	97.74	2.19	91.00	0.00	6-36	12	F None
8382	*Drabing, C. L., French Lick[339]	Drabing, C. L., French Lick, Ind.	C	....	....	....	....	....	....	C
	Soy Beans		F	97.49	2.37	86.00	0.00	6-36	44	F None
8332	Eberts Grain Co., Memphis	Eberts Grain Co., Scottsburg, Ind.	C	95.00	....	90.00	....	3-36	....	C None
	Kingwa Soy Beans		F	98.28	0.73	88.00	0.00	5-36	155	F None
8338	Eberts Grain Co., Memphis	Eberts Grain Co., Scottsburg, Ind.	C	95.00	....	90.00	....	3-36	....	C None
	Black Wilson Soy Beans		F	97.67	1.84	88.00	0.00	5-36	52	F None
8344	Eberts Grain Co., Memphis	Eberts Grain Co., Scottsburg, Ind.	C	95.00	....	90.00	....	3-36	....	C None
	Virginia Soy Beans		F	99.51	0.16	90.00	0.00	5-36	20	F None
8387	Elnora Elevator Co., Elnora[340]	Elnora Elevator Co., Elnora, Ind.	C	98.00	....	90.00	....	4-36	....	C None
	Dunfield Soy Beans, Lot 17		F	96.88	2.82	57.00	0.00	6-36	12	F None
8345	Farmers Co-op. Co., Cicero	Farmers Co-op. Co., Cicero, Ind.	C	99.60	....	90.00	....	4-36	....	C None
	Manchu Soy Beans, Lot M		F	98.04	1.96	91.00	0.00	6-36	....	F None
8300	Funk & Sons, Edward J., Kentland	Funk & Sons, Edward J., Kentland, Ind.	C	98.00	....	90.00	....	3-36	....	C None
	Dunfield Soy Beans, Lot 1		F	100.00	0.00	90.00	0.00	6-36	....	F None
8340	Guthrie, James, Henryville	Guthrie, James, Henryville, Ind.	C	98.00	....	95.00	....	4-36	....	C None
	Manchu Soy Beans, Lot 1		F	96.88	2.94	87.00	0.00	6-36	100	F None
8335	*Harrison Co. Farm Bureau Co-op. Ass'n, Inc., Crandall	Harrison Co. Farm Bureau Co-op. Ass'n, Inc., Crandall, Ind.	C		....	....	....	....	....	C
	Mixed Soy Beans		F	98.68	1.07	89.00	0.00	5-36	52	F Buckhorn, 4
8326	*Hedden, David, Magnolia[341]	Hedden, David, Magnolia, Ind.	C		....				....	C
	Wilson Soy Beans		F	99.09	0.77	88.00	0.00	5-36	136	F None

*Not labeled with official Indiana State Labels.

†Certified by retailer.

C and F stands, respectively, for Claimed and Found.

[336] Not tagged. Labels furnished.

[337] Sample secured from St. Joseph Farm, Notre Dame, Ind.

[338] Not tagged. Returned to seller. Sample secured from Elvis Harris, French Lick, Ind.

[339] Sample secured from William Reynolds, Route 2, French Lick, Ind.

[340] Not tagged. Labels furnished. Sample secured from R. D. Rader, Elnora, Ind.

[341] Sample secured from T. B. McPhillips, Elizabeth, Ind.

TABLE 8—Soy Beans—Continued

Laboratory No. S.	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, Per Cent	Inert Matter, Per Cent	Germination, Per Cent	Hard Seeds, Per Cent	Date of Germination	Total Number Weed Seeds Per Lb. of Seeds	Number Per Pound of Each of the Noxious Weed Seeds Specified in the Law
8331	*Hedden, David, Magnolia[342]	Hedden, David, Magnolia, Ind.	C							
	Soy Beans		F	99.17	0.35	94.00	0.00	5-36	68	None
8337	*Hedden, David, Magnolia	Hedden, David, Magnolia, Ind.	C							
	Wilson Soy Beans		F	98.12	0.99	86.00	0.00	6-36	240	None
8374	*Jackson, Forrest, West Fork[343]	Jackson, Forrest, West Fork, Ind.	C							
	Soy Beans		F	98.30	0.47	83.00	1.00	6-36	1,344	Horse nettle, 8
8325	McIntyre & Hopping, Leipsic[344]	Johnson, Everett, Orleans, Ind.	C	95.00		90.00		5-36		None
	Illini Soy Beans, Lot 1		F	92.46	7.44	77.00	0.00	5-36	52	None
8309	†Kirk Feed Co., Helmsburg	Kirk Feed Co., Clayton, Ind.	C	98.00		95.00		4-36		None
	Dunfield Soy Beans, Lot 1		F	99.11	0.89	89.00	0.00	5-36		None
7969	Wakarusa Milling Co., Wakarusa	Kraus, Sam, Ft. Wayne, Ind.	C	95.53		82.00		4-35		None
	Manchu Soy Beans, Lot W		F	99.97	0.03	85.00	0.00	4-36		None
8234	Martin, Howard, Monroe City[345]	Martin, Howard, Monroe City, Ind.	C							
	Soy Beans		F	99.20	0.69	87.00	1.00	5-36	1,316	None
8388	Mayer Grain Co., Fulton	Mayer Grain Co., South Whitley, Ind.	C	98.00		90.00		5-36		None
	Dunfield Soy Beans		F	99.30	0.70	86.00	0.00	6-36		None
8310	Nashville Poultry Market, Nashville[346]	Nashville Poultry Market, Nashville, Ind.	C	99.00		88.00	6.00	2-36		None
	Soy Beans		F	99.84	0.16	90.00	1.00	5-36		None
8323	Martin's Feed Mills, New Paris[347]	New Paris Elevator, New Paris, Ind.	C	98.00		95.00		3-36		None
	Manchu Soy Beans, Lot Cam		F	94.49	5.46	83.00	0.00	6-36		None
8221	*Perry, James, Monroe City[348]	Perry James, Monroe City, Ind.	C							
	Soy Beans		F	98.50	1.18	79.00	0.00	5-36	276	Horse nettle, 44
8232	*Perry, James, Monroe City[349]	Perry, James, Monroe City, Ind.	C							
	Soy Beans		F	94.30	4.62	78.00	0.00	5-36	992	Horse nettle, 52
8324	*Probst, Arthur, Indianapolis[350]	Probst, Arthur, Indianapolis, Ind.	C							
	Manchu Soy Beans		F	99.47	0.53	92.00	0.00	5-36		None
8361	Batman, A. J., Marengo	Purcell Seed Co., Evansville, Ind.	C	98.00		91.00		1-36		None
	Black Wilson Soy Beans, Lot 4791		F	99.16	0.08	81.00	0.00	6-36	88	None
8313	Heise Bros. & Co., Mitchell	Ross Seed Co., Louisville, Ky.	C	97.00		85.00		3-36		None
	Manchu Soy Beans, Lot 4892		F	98.04	1.96	76.00	0.00	6-36		None
8129	Boston Standiford Brumi, Palmyra	Scott Seed Co., New Albany, Ind.	C	98.00		90.00		11-35		None
	Manchu Soy Beans		F	99.16	0.84	87.00	0.00	4-36		None
8333	Clark Co. Farm Bureau Co-op. Ass'n, Inc., Jeffersonville[351]	Scott Seed Co., New Albany, Ind.	C	98.00		90.00		11-35		None
	Wilson Soy Beans, Lot 713		F	98.51	1.05	59.00	0.00	6-36	40	None
8339	Shine Milling Co., New Albany	Shine Milling Co., New Albany, Ind.	C	90.00		90.00		5-36		None
	Dunfield Soy Beans		F	94.51	4.73	90.00	0.00	5-36	260	None
8365	*Jenner & Sons, W. E., Marengo	Spain, W. W., Rockport, Ind.	C							
	Wilson Soy Beans		F	97.43	2.01	86.00	0.00	6-36	312	Horse nettle, 4
8380	Abell Milling Co., Birdseye	Steinkamp, Hugo, Holland, Ind.	C	99.00		88.00		4-36		None
	Black Wilson Soy Beans		F	99.86	0.12	82.00	0.00	6-36		None

8400	Sugar Creek Grain Co., Thorntown[352]	Sugar Creek Grain Co., Thorntown, Ind.	C							C	
	Mixed Soy Beans		F	94.65	5.07	76.00	0.00	6-36		F	None
8371	Sunshine Feed Store, Scottsburg	Sunshine Feed Store, Scottsburg, Ind.	C	98.00		92.00		5-36		C	None
	Manchu Soy Beans		F	99.79	0.17	95.00	0.00	6-36		F	None
8375	Sunshine Feed Store, Scottsburg[353]	Sunshine Feed Store, Scottsburg, Ind.	C	98.00		90.00		5-36		C	None
	Virginia Brown Soy Beans, Lot 1.		F	99.76	0.24	69.00	0.00	6-36		F	None
8376	Sunshine Feed Store, Scottsburg[354]	Sunshine Feed Store, Scottsburg, Ind.	C	98.00		90.00		5-36		C	None
	Black Wilson Soy Beans, Lot 1		F	99.90	0.06	67.00	0.00	6-36		F	None
8418	Community Store, Prairie Creek[355]	Sunshine Store, Paris, Ill.	C	95.00		90.00		7-36		C	None
	Ebony Soy Beans		F	99.95	0.05	65.50	12.50	7-36		F	None
8095	Vanest, W. T., Westport[356]	Vanest, W. T., Westport, Ind.	C							C	
	Manchu Soy Beans		F	98.81	1.19	94.00	0.00	4-36		F	None
8378	Abell Milling Co., Birdseye[357]	Victoria Mill & Elevator Co., Jasper, Ind.	C	98.00		95.00		5-36		C	None
	Manchu Soy Beans, Lot 17		F	97.24	2.73	63.00		6-36		F	None
8133	Warren Seed Co., Indianapolis	Warren Seed Co., Indianapolis, Ind.	C	99.00		90.00		3-36		C	None
	Manchu Soy Beans, Lot 1		F	99.16	0.84	87.00	2.00	4-36		F	None
8372	Whitley Co. Farm Bureau Co-op. Ass'n, Inc., Columbia City	Whitley Co. Farm Bureau Co-op. Ass'n, Inc., Columbia City, Ind.	C	98.00		85.00		4-36		C	None
	Manchu Soy Beans, Lot 1		F	98.33	1.41	96.00	0.00	6-36	356	F	None
8367	*Williams, James, Corydon[358]	Williams, James, Corydon, Ind.	C							C	
	Soy Beans		F	99.43	0.37	80.00	0.00	6-36	24	F	None
8373	*Williams, James, Corydon[359]	Williams, James, Corydon, Ind.	C							C	
	Soy Beans		F	98.53	1.20	81.00	1.00	6-36	84	F	None
8237	Farmers Co-op. Elevator Co., Seymour[360]	Wyatt Elevator, Petersburg, Ind.	C	98.00		95.00		1-36		C	None
	Kingwa Soy Beans, Lot Wright		F	98.51	1.39	69.00	0.00	5-36	8	F	None
8341	Harrison Co. Farm Bureau Co-op. Ass'n, Inc., Corydon	Wyatt Elevator, Petersburg, Ind.	C	98.00		90.00		3-36		C	None
	Wilson Soy Beans		F	98.22	1.57	83.00	0.00	5-36	24	F	None
8343	Harrison Co. Farm Bureau Co-op. Ass'n, Inc., Corydon	Wyatt Elevator, Petersburg, Ind.	C	98.00		94.00		3-36		C	None
	Kingwa Soy Beans, Lot Hahn		F	99.61	0.35	85.00	0.00	5-36	4	F	None
7344	Wyatt Elevator, Petersburg	Wyatt Elevator, Petersburg, Ind	C	99.67		90.00		12-35		C	None
	Kingwa Soy Beans, Lot 3328		F	99.73	0.27	86.00	0.00	3-36		F	None

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*Not labeled with official Indiana State Labels.

†Certified by retailer.

C and F stands, respectively, for Claimed and Found.

[342] Sample secured from Andy Kessinger, Elizabeth, Ind.

[343] Sample secured from Owen Crecelius, Beechwood, Ind.

[344] Not tagged. Labels furnished. Removed from sale. Misbranded. Relabeled.

[345] Not tagged. Used for feed.

[346] Not tagged. Labels furnished.

[347] Removed from sale. Misbranded. Relabeled.

[348] Sample secured from Walter Gross, Petersburg, Ind.

[349] Sample secured from Earl Myers, Petersburg, Ind.

[350] Sample secured from Howard Cauble, Route 3, Salem, Ind.

[351] Removed from sale. Misbranded. All sold.

[352] Not tagged. Sold for feed.

[353] Removed from sale. Misbranded. Relabeled.

[354] Removed from sale. Misbranded.

[355] Not tagged. Labels furnished. Removed from sale. Misbranded.

[356] Not tagged. Sample secured at Bloomington Sales Barn, Bloomington, Ind.

[357] Removed from sale. Misbranded. All sold.

[358] Sample secured from J. S. Riddle, Beechwood, Ind.

[359] Sample secured from Bunch Garage, Leavenworth, Ind.

[360] Removed from sale. Misbranded. All sold.

TABLE 8—Sudan Grass

Laboratory No. S.	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, Per Cent	Inert Matter, Per Cent	Germination, Per Cent	Date of Germination	Total Number Weed Seeds Per Lb. of Seeds	Number Per Pound of Each of the Noxious Weed Seeds Specified in the Law
8171	Farmers Co-op. Co., Knox[361]	Dickinson Co., The Albert, Chicago, Ill.	C	......	......	......	......	......	C
	Sudan Grass, Lot 98199		F	99.28	0.69	76.00	4-36	54	F None
6759	Worthington Grain Co., Worthington	Hooton-Davis Seed Co., Lebanon, Ind.	C	98.00	......	70.00	3-35	......	C None
	Sudan Grass, Lot S-560		F	97.57	1.56	76.50	8-35	1,003	F None
6757	Riggs & Son, W. G., Sullivan[362]	Indiana Seed Co., Indianapolis, Ind.	C	98.00	......	90.00	3-35	......	C None
	Sudan Grass, Lot SC-176		F	95.74	4.09	75.00	8-35	126	F None
8405	Woodbury-Elliott Grain Co., Muncie	Indiana Seed Co., Indianapolis, Ind.	C	98.00	......	85.00	5-36	......	C None
	Sudan Grass, Lot Tex		F	98.07	1.81	80.50	6-36	54	F None
7389	Johnson & Chenoweth, Shoals	Purcell Seed Co., Evansville, Ind.	C	95.66	......	78.00	1-36	......	C None
	Tru Val Sudan Grass, Lot 4153		F	98.12	1.86	83.50	4-36	36	F None
6754	Saiter Morgan Co., Vincennes	Purcell Seed Co., Evansville, Ind.	C	97.42	......	80.00	4-35	......	C Mustard, 5
	Sudan Grass, Lot 4103		F	97.36	2.45	82.50	8-35	126	F None
6741	Martin Feed Store, Elkhart	Standard Seed Co., Chicago, Ill.	C	98.50	......	80.00	2-35	......	C None
	Sudan Grass, Lot 322		F	98.72	0.81	72.00	8-35	504	F None
7570	Seberger Seed Co., Crown Point	Standard Seed Co., Chicago, Ill.	C	98.70	......	80.00	1-36	......	C None
	Sudan Grass, Lot 340		F	98.54	1.17	81.50	3-36	18	F None
7593	Warsaw Feed Store, Warsaw	Standard Seed Co., Chicago, Ill.	C	97.80	......	80.00	1-36	......	C None
	Sudan Grass, Lot 340		F	98.61	1.22	83.00	3-36	18	F None
6740	Wynn, Arlie S., Rochester	Standard Seed Co., Chicago, Ill.	C	98.00	......	85.00	2-35	......	C None
	Sudan Grass, Lot 320		F	97.58	2.20	79.00	8-35	126	F None
7068	Wynn, Arlie S., Rochester	Standard Seed Co., Chicago, Ill.	C	98.00	......	85.00	9-35	......	C None
	Sudan Grass, Lot 340		F	98.61	1.31	77.50	3-36	17	F None
6747	Elkhart Co. Farm Bureau Co-op. Ass'n, Inc., Goshen	Syler & Syler, Nappanee, Ind.	C	97.00	......	80.00	5-35	......	C None
	Sudan Grass		F	98.51	1.37	87.50	7-35	90	F None

*Not labeled with official Indiana State Labels.
†Certified by retailer.
C and F stands, respectively, for Claimed and Found.

[361] Not tagged. Not offered for sale.
[362] Removed from sale. Misbranded. Relabeled.

TABLE 8—Timothy

Laboratory No. S.	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, Per Cent	Inert Matter, Per Cent	Germination, Per Cent	Date of Germination	Total Number Weed Seeds Per Lb. of Seeds	Number Per Pound of Each of the Noxious Weed Seeds Specified in the Law
7867	Columbia Feed & Dairy Supply Co., Ft. Wayne Timothy, Lot B820	Allied Seed Co., Inc., Ft. Wayne, Ind.	C F	99.60 99.70	...... 0.20	90.00 95.25	1-36 5-36	 243	C None F Curled dock, 18
6886	Hartford City Milling Co., Hartford City Timothy, ~~Lot~~ B-778	Allied Seed Co., Inc., Ft. Wayne, Ind.	C F	99.60 99.70	...... 0.20	90.00 94.50	8-35 11-35	 108	C None F Buckhorn, 18; common plantain, 90
6869	Irwin Feed Store & Hatchery, Madison Timothy, Lot P-514	Allied Seed Co., Inc., Ft. Wayne, Ind.	C F	99.60 99.65	...... 0.25	90.00 93.75	9-35 10-35	 450	C None F None
6834	Mexico Elevator Co., Mexico Timothy, Lot B-628	Allied Seed Co., Inc., Ft. Wayne, Ind.	C F	99.60 99.85	...... 0.05	90.00 96.75	8-35 9-35	 981	C None F Buckhorn, 90; chicory, 36; common plantain, 180
6856	Penman Bros., Brazil[363] Timothy	Butt & Co., L. T., Center Point, Ind.	C F	96.00 99.65	...... 0.15	90.00 93.50	8-35 10-35	 1,132	C None F Buckhorn, 18; common plantain, 18; red sorrel, 666
7139	Cox Sales, C. C., Shelbyville[364] Timothy, Lot 1-53	Byers Seed Co., Franklin, Ind.	C F	99.35 99.20	...... 0.30	90.00 95.75	1-36 2-36	 2,187	C None F Buckhorn, 468; common plantain, 558; curled dock, 18; red sorrel, 18
7845	Campbell & Co., Kendallville Timothy	Campbell & Co., Kendallville, Ind	C F	97.83 97.04	...... 0.24	86.00 95.75	2-36 5-36	 11,475	C Buckhorn, 1,587; red sorrel, 7,711 F Buckhorn, 360; common plantain, 72; red sorrel, 10,575; yellow trefoil, 18
6817	†Bolles Hardware Co., Brownstown Timothy, Lot 1214	Chambers Seed Co., Louisville, Ky.	C F	99.50 99.75	...... 0.10	80.00 94.25	 9-35	 1,647	C None F Buckhorn, 18; common plantain, 54
6983	Bloomington Feed Store & Hatchery, Bloomington Timothy, Lot 4-TA	Crabbs Reynolds Taylor Co., Crawfordsville, Ind.	C F	99.65 99.90	...... 0.05	90.00 93.00	8-35 1-36	 369	C None F Common plantain, 144
6899	Clay Co. Farm Bureau Co-op. Ass'n, Inc., Brazil Timothy, Lot 1 TB	Crabbs Reynolds Taylor Co., Crawfordsville, Ind.	C F	99.65 99.75	...... 0.20	92.00 90.75	9-35 11-35	 18	C None F Bracted plantain, 18
6885	Farmers Exchange, Inc., Warren Timothy, Lot 4 TA	Crabbs Reynolds Taylor Co., Crawfordsville, Ind.	C F	99.65 99.70	...... 0.20	90.00 92.50	8-35 11-35	 558	C None F Buckhorn, 18; common plantain, 90
8408	Farmers Exchange, Inc., Warren Timothy, Lot 4-TG	Crabbs Reynolds Taylor Co., Crawfordsville, Ind.	C F	99.65 99.60	...... 0.25	92.00 94.25	6-36 6-36	 1,683	C None F Buckhorn, 54; common plantain, 18; red sorrel, 36
7038	Farmers Feed & Coal Co., Bloomington Timothy, Lot 2-TC	Crabbs Reynolds Taylor Co., Crawfordsville, Ind.	C F	99.70 99.60	...... 0.35	92.00 95.00	10-35 2-36	 36	C None F Buckhorn, 18; curled dock, 18
6838	Hartford City Milling Co., Hartford City Timothy, Lot 4 TA	Crabbs Reynolds Taylor Co., Crawfordsville, Ind.	C F	99.65 99.80	...... 0.15	90.00 95.25	8-35 9-35	 297	C None F Buckhorn, 72
6832	Hirsch Bros., Inc., Clymers Timothy, Lot 4-TA	Crabbs Reynolds Taylor Co., Crawfordsville, Ind.	C F	99.65 99.85	...... 0.10	90.00 93.50	8-35 9-35	 126	C None F Bracted plantain, 18; buckhorn, 18; common plantain, 90

*Not labeled with official Indiana State Labels.
†Certified by retailer.
C and F stands, respectively, for Claimed and Found.

[363] Distributed by J. M. Schultz Seed Co., Dieterich, Ill. Removed from sale. Misbranded.

[364] Removed from sale. Misbranded. All sold.

TABLE 8—Timothy—Continued

Laboratory No. S.	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, Per Cent	Inert Matter, Per Cent	Germination, Per Cent	Date of Germination	Total Number Weed Seeds Per Lb. of Seeds	Number Per Pound of Each of the Noxious Weed Seeds Specified in the Law
7057	Jacob, W. E., Jasonville Timothy, Lot S-TA	Crabbs Reynolds Taylor Co., Crawfordsville, Ind.	C	99.60	......	90.00	9-35	......	C None
			F	99.65	0.25	96.00	2-36	162	F Buckhorn, 18; common plantain, 126; red sorrel, 18
7043	Johnson Feed & Supply Co., Linton Timothy, Lot 2-TC	Crabbs Reynolds Taylor Co., Crawfordsville, Ind.	C	99.70	......	92.00	10-35	......	C None
			F	99.71	0.24	94.25	2-36	......	F None
6829	Logansport Elevator Co., Logansport Timothy, Lot 4-TA	Crabbs Reynolds Taylor Co., Crawfordsville, Ind.	C	99.65	......	90.00	8-35	......	C None
			F	99.80	0.10	94.50	9-35	450	F None
7003	Sample, John L., Madison Timothy, Lot 4 TA	Crabbs Reynolds Taylor Co., Crawfordsville, Ind.	C	99.65	......	90.00	8-35	......	C None
			F	99.95	0.05	96.50	1-36	54	F Buckhorn, 54
7453	Swayzee Grain Co., Swayzee Timothy, Lot 2-TC	Crabbs Reynolds Taylor Co., Crawfordsville, Ind.	C	99.70	......	92.00	10-35	......	C None
			F	99.80	0.20	91.50	4-36	36	F Buckhorn, 36
7171	Beck Grain Co., Shelbyville Timothy	Davis Seed Corp., Lebanon, Ind.	C	99.50	......	90.00	12-35	......	C None
			F	99.70	0.20	97.25	3-36	801	F Buckhorn, 18; common plantain, 72; red sorrel, 36
7207	Farmers Co-op. Co., Selma Timothy	Davis Seed Corp., Lebanon, Ind.	C	99.50	......	90.00	12-35	......	C None
			F	99.70	0.25	93.00	3-36	225	F None
6810	Records, James L., Edinburg Timothy, Lot 1581	Davis Seed Corp., Lebanon, Ind.	C	99.60	......	85.00	8-35	......	C None
			F	99.85	0.10	96.00	9-35	54	F Buckhorn, 18; curled dock, 36
7023	Sanders, O. D., Newcastle Timothy, Lot 650	Davis Seed Corp., Lebanon, Ind.	C	99.50	......	90.00	1-36	......	C None
			F	99.80	0.15	92.75	2-36	108	F Buckhorn, 54; curled dock, 54
7951	Springer & Sons, W. O., Greenwood Timothy, Lot Pioneer	Davis Seed Corp., Lebanon, Ind.	C	99.50	......	90.00	1-36	......	C None
			F	99.40	0.45	92.50	5-36	648	F Buckhorn, 54; common plantain, 144
6815	Westermeier Hardware, Columbus Timothy, Lot 1581	Davis Seed Corp., Lebanon, Ind.	C	99.60	......	85.00	8-35	......	C None
			F	99.85	0.05	96.00	9-35	297	F Curled dock, 36; red sorrel, 36
6952	†Armstrong-Landon Co., The, Kokomo Timothy, Lot 69342	Dickinson Co., The Albert, Chicago, Ill.	C	99.70	......	94.00	8-35	......	C None
			F	99.71	0.19	95.00	1-36	369	F Common plantain, 18; curled dock, 18; red sorrel, 108
7894	Fretz, R. C., Waterloo Timothy, Lot 69531	Dickinson Co., The Albert, Chicago, Ill.	C	99.70	......	94.00	11-35	......	C None
			F	99.70	0.15	92.75	5-36	441	F Bracted plantain, 36; buckhorn, 18; common plantain, 126; oxeye daisy, 18; red sorrel, 18
6827	Garten Feed Co., The, Indianapolis Timothy, Lot 69306	Dickinson Co., The Albert, Chicago, Ill.	C	99.70	......	94.00	8-35	......	C None
			F	99.70	0.20	92.50	9-35	180	F Buckhorn, 36; common plantain, 36; curled dock, 36; red sorrel, 72
7276	Griffin Hardware, Carlisle Timothy, Lot 69445	Dickinson Co., The Albert, Chicago, Ill.	C	99.65	......	94.00	10-35	......	C None
			F	99.85	0.10	97.25	3-36	36	F Common plantain, 18; red sorrel, 18
7836	Huntington Equity Exchange, Huntington Timothy, Lot 69553	Dickinson Co., The Albert, Chicago, Ill.	C	99.75	......	94.00	1-35	......	C None
			F	99.85	0.10	93.50	5-36	18	F Bracted plantain, 18
7058	Jacob, W. E., Jasonville[365] Timothy, Lot 69372	Dickinson Co., The Albert, Chicago, Ill.	C	99.70	......	94.00	9-35	......	C None
			F	99.50	0.35	95.00	2-36	927	F Common plantain, 198; red sorrel, 5

7059	Jacob, W. E., Jasonville[366]	Dickinson Co., The Albert, Chicago, Ill.	C	99.70	......	94.00	9-35	......	C None
	Timothy, Lot 69394		F	99.45	0.20	94.50	2-36	72	F Bracted plantain, 36; red sorrel, 36
6835	Kiest Milling Co., Knox[367]	Dickinson Co., The Albert, Chicago, Ill.	C	99.75	......	94.00	9-35	......	C None
	Timothy, Lot 69355		F	99.85	0.05	93.50	9-35	1,035	F Bracted plantain, 108; common plantain, 180; curled dock, 18; red sorrel, 54
6848	Knapp Seed & Feed Co., C. E., South Bend	Dickinson Co., The Albert, Chicago, Ill.	C	99.70	......	94.00	9-35	......	C None
	Timothy, Lot 69357		F	99.80	0.10	95.50	9-35	252	F Bracted plantain, 54; buckhorn, 18; common plantain, 108; red sorrel, 72
6849	Knapp Seed & Feed Co., C. E., South Bend	Dickinson Co., The Albert, Chicago, Ill.	C	99.65	......	94.00	9-35	......	C None
	Timothy, Lot 69351		F	99.75	0.15	93.00	9-35	162	F Common plantain, 108; red sorrel, 54
6833	Peru Grain & Coal Co , Peru	Dickinson Co., The Albert, Chicago, Ill.	C	99.70	......	94.00	8-35	......	C None
	Timothy, Lot 69327		F	99.80	0.15	95.50	9-35	54	F Common plantain, 54
8009	Pierce Elevator Co., The, Union City	Dickinson Co., The Albert, Chicago, Ill.	C	99.75	......	94.00	1-36	......	C None
	Timothy, Lot 69553		F	99.80	0.10	94.75	5-36	522	F Bracted plantain, 18; common plantain, 54
7281	Riggs & Son, W. G., Sullivan	Dickinson Co., The Albert, Chicago, Ill.	C	99.70	......	94.00	9-35	......	C None
	Timothy, Lot 69423		F	99.95	0.04	95 25	3-36	72	F Buckhorn, 18; red sorrel, 54
7017	Sowash Grain Co., Inc., E. K., Crown Point	Dickinson Co., The Albert, Chicago, Ill.	C	99.66	......	95.00	12-35	......	C None
	Timothy, Lot 69537		F	99.55	0.35	95.25	2-36	684	F Bracted plantain, 126; common plantain, 90; red sorrel, 18
7552	Syler, Clay, North Manchester	Dickinson Co., The Albert, Chicago, Ill.	C	99.75	......	94.00	1 36	......	C None
	Timothy, Lot 69553		F	99.66	0.29	93.25	4-36	......	F None
7912	†Syler & Syler, Nappanee	Dickinson Co., The Albert, Chicago, Ill.	C	99.60	......	95.00	12-35	......	C Common plantain, 112; red sorrel, 234
	Timothy, Lot 69537		F	99.76	0.14	95.75	5-36	1,431	F Bracted plantain, 198; buckhorn, 36; common plantain, 18; red sorrel, 54
7367	Victoria Mill & Elevator Co., Inc., Jasper	Dickinson Co., The Albert, Chicago, Ill.	C	99.70	......	94.00	8-35	......	C None
	Timothy, Lot 69305		F	99.75	0.10	96.50	4-36	468	F Common plantain, 18
7069	Wilson Coal & Grain Co., Rochester	Dickinson Co., The Albert, Chicago, Ill.	C	99.75	......	94.00	1 36	......	C None
	Timothy, Lot 69555		F	99.65	0.05	95 00	2-36	72	F Common plantain, 36; curled dock, 18; red sorrel, 18
7521	Wolf & Son, North Judson	Dickinson Co., The Albert, Chicago, Ill.	C	99.70	......	94.00	1-36	......	C None
	Timothy, Lot 69553		F	99.75	0 20	95 25	4-36	36	F Common plantain, 18; red sorrel, 18
7945	Butt & Co., L. T., Center Point[368]	Edgar Co. Farm Supply Co., Paris, Ill.	C	99.90	......	94 00	2-36	......	C None
	Timothy, Lot 55		F	99.85	0.05	92.50	5-36	72	F Buckhorn, 18; curled dock, 54
6901	†Brazil Flour & Feed Co., Brazil[369]	Edgar Co. Seed Co., Paris, Ill.	C	99.50	......	90.00	8-35	......	C None
	Timothy, Lot 2		F	99 50	0.25	87.25	11-35	1,503	F Common plantain, 180; red sorrel, 1,098
7952	Farmers Supply Co., Danville[370]	Ensminger, Aaron, Danville, Ind.	C	97.66	......	95.75	2-36	......	C Curled dock, 90
	Timothy, Lot 73558		F	97.39	0.15	95.75	5-36	25,974	F Buckhorn, 306; common plantain, 3,600; curled dock, 18; red sorrel, 17,325
7868	*Fisher Seed Store, Columbia City	Fisher Seed Store, Columbia City, Ind.	C	......	......	......	......	......	C
	Timothy		F	96.53	0.78	91.00	4-36	17,280	F Buckhorn, 4,725; common plantain, 594; curled dock, 36; red sorrel, 3,600
7237	Carney Hatcheries, Inc., Franklin	Foster-Kendall Co., Carmel, Ind.	C	99.60	......	93.00	12-35	......	C None
	Timothy		F	99.65	0.30	94.25	3-36	18	F Common plantain, 18
6839	Cohee & Clark, Kempton	Foster-Kendall Co., Carmel, Ind.	C	99.60	......	93.00	-35	......	C None
	Timothy, Lot Kempton		F	99 90	0.05	91.75	9-35	540	F Bracted plantain, 18; common plantain, 54; prickly lettuce, 18

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*Not labeled with official Indiana State Labels.

†Certified by retailer.

C and F stands, respectively, for Claimed and Found.

[365] Not tagged. Labels furnished.

[366] Not tagged. Labels furnished.

[367] Not tagged. Labels furnished.

[368] Not tagged. Labels furnished.

[369] Removed from sale. Misbranded. Relabeled.

[370] Removed from sale. Misbranded. All sold.

TABLE 8—Timothy—Continued

Laboratory No. S.	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, Per Cent	Inert Matter, Per Cent	Germination, Per Cent	Date of Germination	Total Number Weed Seeds Per Lb. of Seeds	Number Per Pound of Each of the Noxious Weed Seeds Specified in the Law
6947	Galveston Farmers Elevator Co., Galveston	Foster-Kendall Co., Carmel, Ind.	C	99.60	.....	93.00	10-35	....	C None
	Timothy, Lot Galveston		F	99.80	0.15	96.75	1-36		F None
7667	Linkhart & Son, North Vernon	Foster-Kendall Co., Carmel, Ind.	C	99.60	......	93.00	12-35	......	C None
	Timothy, Lot Linkhart		F	99.80	0.10	94.75	4-36	243	F Common plantain, 18
7722	Sellars Grain Co., Russiaville[371]	Foster-Kendall Co., Carmel, Ind.	C	99.60		93.00	-35		C None
	Timothy		F	99.85	0.10	94.50	4-36	18	F Common plantain, 18
6823	Warren Seed Co., Indianapolis	Foster-Kendall Co., Carmel, Ind.	C	99.60	......	93.00	8-35	......	C None
	Timothy		F	99.90	0.10	96.25	9-35		F None
7199	Wellington Milling Co., Anderson	Foster-Kendall Co., Carmel, Ind.	C	99.60	...	93.00	12-35		C None
	Timothy, Lot Wellington		F	99.80	0.15	92.75	3-36	......	F None
6910	Goodrich Bros. Co., Winchester	Goodrich Bros. Co., Winchester, Ind.	C	99.50		90.00	9-35		C None
	Timothy, Lot 5805		F	99.40	0.50	93.25	11-35	2,142	F Buckhorn, 54; common plantain, 270; red sorrel, 18
7785	Roberts Feed Store, Richmond[372]	Goodrich Bros. Co., Winchester, Ind.	C	99.50	......	90.00	1-36		C None
	Timothy, Lot 5886		F	99.37	0.48	95.75	4-36	5,409	F Buckhorn, 72; common plantain, 162
6909	Williamsburg Co-op. Ass'n, Williamsburg	Goodrich Bros. Co., Winchester, Ind.	C	99.50	......	92.00	9-35	......	C None
	Timothy, Lot 5805		F	99.55	0.35	93.75	11-35	3,276	F Bracted plantain, 54; common plantain, 54; wild carrot, 18
7320	†Heldt & Voelker Co., Evansville	Heldt Co., The, Evansville, Ind.	C	99.56	.	90.00	11-35		C Common plantain, 225; red sorrel, 1,575
	Thelco Timothy, Lot 3310		F	99.17	0.39	95.75	3-36	3,519	F Bracted plantain, 18; buckhorn, 90; common plantain, 36; oxeye daisy, 90; red sorrel, 1,710
8215	Heldt Co., The, Evansville	Heldt Co., The, Evansville, Ind.	C	99.56		98.00	11-35	.	C Common plantain, 225; red sorrel, 1,575
	Thelco Timothy, Lot 3310		F	99.60	0.30	92.00	5-36	513	F Bracted plantain, 36; buckhorn, 72; common plantain, 36; red sorrel, 144
6862	McCarty Hardware Co., Ft. Branch[373]	Heldt Co., The, Evansville, Ind.	C	91.92		90.00	8-35	.	C Common plantain, 3,150; red sorrel, 225
	Fancy Timothy, Lot 3059		F	92.12	3.84	52.50	11-35	53,676	F Buckhorn, 54; common plantain, 2,475; oxeye daisy, 72
6863	McCarty Hardware Co., Ft. Branch	Heldt Co., The, Evansville, Ind.	C	99.70	......	90.00	9-35	......	C None
	Thelco Timothy, Lot 3279		F	99.70	0.20	90.50	10-35	450	F Buckhorn, 144; common plantain, 18; red sorrel, 288
6857	Murphy & Co., Princeton	Heldt Co., The, Evansville, Ind.	C	99.73	......	90.00	9-35	......	C Red sorrel, 50
	Thelco Timothy, Lot 3279		F	99.46	0.44	94.75	10-35	900	F Bracted plantain, 36; buckhorn, 90; common plantain, 54; red sorrel, 270
7309	Murphy & Co., Princeton	Heldt Co., The, Evansville, Ind.	C	99.71	..	92.00	11-35	.	C Buckhorn, 225; red sorrel, 450
	Thelco Timothy, Lot 3316		F	99.55	0.10	95.00	3-36	4,608	F Buckhorn, 90; common plantain, 18; red sorrel, 3,825
8416	Steinkamp, Hugo, Huntingburg[374]	Heldt Co., The, Evansville, Ind.	C	99.56	. .	92.00	1-36	..	C Common plantain, 225; red sorrel, 1,575
	Thelco Timothy, Lot 3310		F	99.40	0.50	94.50	7-36	315	F Buckhorn, 18; common plantain, 36; oxeye daisy, 36

7826	Hemlock Grain Co., Hemlock Timothy, Lot S-6929	Hemlock Grain Co., Hemlock, Ind.	C	98.88	.....	84.75	12-35	....	C Buckhorn, 36; common plantain, 72
			F	97.67	1.39	89.00	5-36	10,116	F Buckhorn, 216; common plantain, 432; prickly lettuce, 18
7566	Milford Grain & Milling Co., Milford Timothy, Lot 5044	Hirsch & Sons, Henry, Toledo, Ohio	C	99.80	......	93.00	10-35	......	C None
			F	99.71	0.19	94.00	4-36	297	F Bracted plantain, 18; common plantain, 54
6846	Atlanta Grain Co., Atlanta Timothy, Lot T 581	Hooton-Davis Seed Corp., Lebanon, Ind.	C	99.60	......	85.00	8-35	......	C None
			F	99.90	0.05	94.00	9-35	954	F Curled dock, 54
6908	Hagerstown Grain Co., Hagerstown Timothy, Lot T-581	Hooton-Davis Seed Corp., Lebanon, Ind.	C	99.60	......	90.00	8-35	......	C None
			F	99.80	0.10	91.75	11-35	540	F Buckhorn, 36; curled dock, 18; red sorrel, 36
6855	Penman Bros., Brazil Timothy, Lot T 581	Hooton-Davis Seed Corp., Lebanon, Ind.	C	99.60	......	85.00	8-35	......	C None
			F	99.75	0.15	93.00	10-35	243	F Curled dock, 18
8001	Hancock Co. Farm Bureau Co-op. Ass'n, Inc., Greenfield Timothy, Lot 4270	Indiana Farm Bureau Co-op. Ass'n, Inc., Indianapolis, Ind.	C	99.50	....	90.00	2-36		C None
			F	99.55	0.25	93.25	5-36	1,098	F Common plantain, 72; curled dock, 18; red sorrel, 108
7214	Lawrence Co. Farm Bureau Co-op. Ass'n, Inc., Bedford Timothy, Lot 4236	Indiana Farm Bureau Co-op. Ass'n, Inc., Indianapolis, Ind.	C	99.50	......	90.00	12-35	......	C None
			F	99.50	0.40	91.75	3-36	36	F Common plantain, 36
7159	Putnam Co. Farm Bureau Co-op. Ass'n, Inc., Greencastle Timothy, Lot 4236	Indiana Farm Bureau Co-op. Ass'n, Inc., Indianapolis, Ind.	C	99.50		90.00	12-35		C None
			F	99.60	0.30	93.50	3-36	576	F Buckhorn, 18; common plantain, 90; curled dock, 18
6905	Ripley Co. Farm Bureau Co-op. Ass'n, Inc., Osgood Timothy, Lot 3997	Indiana Farm Bureau Co-op. Ass'n, Inc., Indianapolis, Ind.	C	99.50	......	90.00	9-35	......	C None
			F	99.70	0.25	93.00	11-35	234	F Common plantain, 234
7284	Sullivan Co. Farm Bureau Co-op. Ass'n, Inc., Sullivan Timothy, Lot 4236	Indiana Farm Bureau Co-op. Ass'n, Inc., Indianapolis, Ind.	C	99.50		90.00	12-35		C None
			F	99.85	0.10	91.25	3-36	72	F Common plantain, 54; red sorrel, 18
6896	Vigo Co. Farm Bureau Co-op. Ass'n, Inc., Terre Haute Timothy, Lot 3997	Indiana Farm Bureau Co-op. Ass'n, Inc., Indianapolis, Ind.	C	99.50	......	90.00	9-35	......	C None
			F	99.45	0.40	88.50	11-35	630	F Buckhorn, 18; common plantain, 162
6864	Adams & Morrow, Inc., Princeton Timothy, Lot I-44	Indiana Seed Co., Indianapolis, Ind.	C	99.50	......	90.00	9-35	......	C None
			F	99.80	0.10	89.00	10-35	351	F Common plantain, 90; red sorrel, 36
7304	Adams & Morrow, Inc., Princeton Timothy, Lot 4-TB	Indiana Seed Co., Indianapolis, Ind.	C	99.70	......	92.00	12-35	......	C None
			F	99.80	0.10	92.75	3-36	90	F Buckhorn, 18; common plantain, 72
7231	Bottorff, D. M., Columbus Timothy, Lot 4 TB	Indiana Seed Co., Indianapolis, Ind.	C	99.70		92.00	12-35		C None
			F	99.60	0.25	91.25	3-36	279	F Bracted plantain, 18; common plantain, 36
6878	Farmers Co-op. Co., Southport Timothy, Lot P 513	Indiana Seed Co., Indianapolis, Ind.	C	99.60	......	90.00	9-35	......	C None
			F	99.65	0.20	90.00	10-35	747	F Bracted plantain, 18; Buckhorn, 36; common plantain, 468
7156	Kenworthy & Son, Monrovia Timothy, Lot 504	Indiana Seed Co., Indianapolis, Ind.	C	99.75	.....	90.00	8-35	....	C None
			F	99.65	0.25	96.25	3-36	495	F Bracted plantain, 18; common plantain, 252
6895	McComas & Pritchard, Mohawk Timothy, Lot I-45	Indiana Seed Co., Indianapolis, Ind.	C	98.50	.....	90.00	9-35	......	C Common plantain, 1,300
			F	98.04	1.08	87.50	11-35	4,059	F Common plantain, 2,700; red sorrel, 234
7148	Martin Hardware Co., Clayton Timothy, Lot 4-TB	Indiana Seed Co., Indianapolis, Ind.	C	99.70	......	92.00	12-35	......	C None
			F	99.80	0.10	94.50	3-36	261	F Buckhorn, 36
7501	Nading Grain Co., Wm., Greensburg Timothy, Lot 4 TB	Indiana Seed Co., Indianapolis, Ind.	C	99.70	......	92.00	12-35	......	C None
			F	99.65	0.20	90.25	4-36	......	F None

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*Not labeled with official Indiana State Labels.

†Certified by retailer.

C and F stands, respectively, for Claimed and Found.

[371] Distributed by Sellars Grain Co., Forrest, Ind.

[372] Not tagged. Labels furnished.

[373] Removed from sale. Misbranded. Returned to Dristributor

[374] Removed from sale. Misbranded. Relabeled.

TABLE 8—Timothy—Continued

Laboratory No. S.	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, Per Cent	Inert Matter, Per Cent	Germination, Per Cent	Date of Germination	Total Number Weed Seeds Per Lb. of Seeds	Number Per Pound of Each of the Noxious Weed Seeds Specified in the Law
6[illegible]05	Pritchard & Rafert, Inc., Pendleton[375] Timothy, Lot I-38	Indiana Seed Co., Indianapolis, Ind.	C	99.90	....	90.00	3-35	...	C Buckhorn, 180; common plantain, 180
			F	99.22	0.63	69.75	9-35	4,095	F Buckhorn, 486; common plantain, 162; curled dock, 18; red sorrel, 54
7703	Sunshine Feed Store, Scottsburg Timothy, Lot I-53	Indiana Seed Co., Indianapolis, Ind.	C	99.35	.....	90.00	1-36	....	C Common plantain, 180
			F	99.31	0.34	95.50	4-36	2,790	F Buckhorn, 522; common plantain, 450; red sorrel, 18
6893	Weer, F. W., Anderson Timothy, Lot 4 TB	Indiana Seed Co., Indianapolis, Ind.	C	99.70	.....	92.00	10-35	...	C None
			F	99.80	0.15	92.00	11-35	36	F Common plantain, 36
6984	Bloomington Feed Store & Hatchery, Bloomington Timothy, Lot Red Bird	Lewis Implement & Seed Co., Louisville, Ky.	C	99.50	.....	90.00	8-35	...	C None
			F	99.80	0.10	93.25	1-36	90	F Bracted plantain, 18; buckhorn, 36; common plantain, 36
7684	Dunlevy & Son, D. R., Henryville	Lewis Implement & Seed Co., Louisville, Ky.	C	99.50	......	90.00	1-36	....	C Buckhorn, 144; common plantain, 832; red sorrel, 224
	Red Bird Timothy, Lot 1332		F	99.26	0.59	92.50	4-36	1,908	F Bracted plantain, 18; buckhorn, 162; common plantain, 594; oxeye daisy, 36; red sorrel, 198
6818	Greger, A. C., Brownstown Timothy, Lot Red Bird	Lewis Implement & Seed Co., Louisville, Ky.	C	99.50	......	90.00	8-35	.....	C None
			F	99.95	0.05	94.25	9-35	36	F Buckhorn, 36
6981	Heise Bros., Bedford[376] Timothy, Lot RLB	Lewis Implement & Seed Co., Louisville, Ky.	C	99.50	......	90.00	8-35	....	C None
			F	99.71	0.19	94.75	1-36	738	F Buckhorn, 72; common plantain, 126; red sorrel, 90
6877	Jefferson Co. Farm Bureau Co-op. Ass'n, Inc., Madison Timothy, Lot RB	Lewis Implement & Seed Co., Louisville, Ky.	C	99.50	......	90.00	8-35	......	C None
			F	99.65	0.10	95.50	10-35	1,935	F Bracted plantain, 54; buckhorn, 108; common plantain, 54; red sorrel, 144
6904	Jefferson Co. Farm Bureau Co-op. Ass'n, Inc., Madison	Lewis Implement & Seed Co., Louisville, Ky.	C	99.50	......	90.00	9-35	......	C Bracted plantain, 54; buckhorn, 108; common plantain, 54; red sorrel, 114
	Red Bird Timothy, Lot 1328		F	99.60	0.20	94.75	11-35	2,430	F Bracted plantain, 72; buckhorn, 162; common plantain, 144; curled dock, 54; red sorrel, 198
[illegible]	Bloomington Feed Store & Hatchery, Bloomington Timothy	Louisville Seed Co., Louisville, Ky.	C	99.50	......	90.00	8-35	....	C Bracted plantain, 450; buckhorn, 225
			F	99.50	0.30	91.75	1-36	756	F Buckhorn, 36; Common plantain, 252; red sorrel, 18
7687	Scott Co. Farm Bureau Co-op. Ass'n, Inc., Scottsburg Timothy	Louisville Seed Co., Louisville, Ky.	C	99.61	......	95.00	1-36	......	C None
			F	99.32	0.39	94.00	4-36	2,016	F Buckhorn, 18; common plantain, 162; oxeye daisy, 36

6861	Butler Feed Store, Oakland City Timothy, Lot 1320	McCarty Seed Co., J. A., Evansville, Ind.	C	99.61	......	92.00	8-35	......	C None
			F	99.70	0.20	92.25	10-35	162	F Bracted plantain, 18; buckhorn, 72; red sorrel, 72
7287	Pike Co. Farm Bureau Co-op. Ass'n, Inc., Petersburg Timothy, Lot 114	McCarty Seed Co., J. A., Evansville, Ind.	C	99.75	......	94.00	12-35	....	C Red sorrel, 450
			F	99.36	0.25	93.75	3-36	3,240	F Bracted plantain, 36; buckhorn, 36; common plantain, 18; red sorrel, 2,700
7516	Crum, H. H., Milan Timothy, Lot 2659	McCullough Seed Co., The J. Chas., Cincinnati, O.	C	99.60	....	92.00	1-36	....	C None
			F	99.65	0.20	94.25	4-36	504	F Bracted plantain, 18; buckhorn, 36
6907	Nedderman, Roy, Sunman Timothy, Lot 2659	McCullough Seed Co., The J. Chas., Cincinnati, O.	C	99.60	......	92.00	8-35	....	C None
			F	99.76	0.14	93.50	11-35	261	F Bracted plantain, 18; buckhorn, 18
7508	Nedderman, Roy, Sunman Timothy, Lot 2659	McCullough Seed Co., The J. Chas., Cincinnati, O.	C	99.60	......	92.00	8-35	....	C None
			F	99.80	0.15	92.50	4-36	450	F None
7661	Osgood Grain Co., Osgood Timothy, Lot 2902	McCullough Seed Co., The J. Chas., Cincinnati, O.	C	99.60	......	92.00	1-36	....	C None
			F	99.61	0.29	94.25	4-36	90	F Buckhorn, 18; common plantain, 72
7527	Sawdon, R. A., Aurora Timothy, Lot 2902	McCullough Seed Co., The J. Chas., Cincinnati, O.	C	99.60	....	92.00	1-36	....	C None
			F	99.50	0.40	93.75	4-36	333	F Buckhorn, 18; common plantain, 90
6986	Tuxedo Feed & Supply Co., Aurora Timothy, Lot 2659	McCullough Seed Co., The J. Chas., Cincinnati, O.	C	99.60	....	92.00	8-35	....	C None
			F	99.60	0.30	93.25	1-36	297	F Buckhorn, 54; common plantain, 18
7662	Eckert-Palmer Hardware, Osgood[377] Timothy, Lot 1721	McCullough's Sons Co., The J. M., Cincinnati, O.	C	99.65	....	92.00	9-35	....	C None
			F	99.75	0.10	91.50	3-36	4,788	F Bracted plantain, 90; buckhorn, 54; common plantain, 378; red sorrel, 216
6828	Garten Feed Co., The, Indianapolis Timothy, Lot 9987	Mangelsdorf & Bro., Ed. F., St. Louis, Mo.	C	99.75	.	90.00	8-35	.	C Common plantain, 32
			F	99.90	0.05	95.00	9-35	180	F Buckhorn, 18; common plantain, 162
7473	*Marburger Bros., Peru Timothy	Marburger Bros., Peru, Ind.	C	......	......	......	......	......	C
			F	96.80	0.34	83.00	3-36	40,563	F Common plantain, 288
7149	Franklin Co. Farm Bureau Co-op. Ass'n, Inc., Brookville Timothy, Lot 5783	Market Gardeners' Seed Co., The, Cincinnati, O.	C	99.55	....	90.00	9-35	....	C None
			F	99.60	0.30	92.25	2-36	405	F Buckhorn, 36; common plantain, 126; red sorrel, 18
7533	Krick & Sons Co., A., Milan Timothy, Lot 5837	Market Gardeners' Seed Co., The, Cincinnati, O.	C	99.04	....	90.00	12-35	.	C None
			F	99.07	0.24	93.75	3-36	10,575	F None
7650	Milan Milling Co., Milan Timothy, Lot 808	Market Gardeners' Seed Co., The, Cincinnati, O.	C	98.25	....	90.00	1-36	...	C Buckhorn, 976; common plantain, 40; curled dock, 216; red sorrel, 928
			F	98.45	0.40	92.25	3-36	3,375	F Bracted plantain, 54; buckhorn, 828; common plantain, 216; curled dock, 162; red sorrel, 990
7652	Versailles Feed Co., Versailles Timothy, Lot 5783	Market Gardeners' Seed Co., The, Cincinnati, O.	C	99.55	......	90.00	10-35	....	C Common plantain, 112
			F	99.46	0.44	92.50	3-36	747	F Common plantain, 72
7793	Markleville Elevator Co., Markleville[378] Timothy, Lot 62450	Markleville Elevator Co., Markleville, Ind.	C	99.70	......	91.50	3-36	......	C None
			F	98.71	0.40	94.00	4-36	243	F Common plantain, 18
7088	Miller Grain Co., Bainbridge Timothy, Lot D	Miller Grain Co., Bainbridge, Ind.	C	99.50	......	93.00	8-35	......	C None
			F	99.50	0.35	96.75	2-36	765	F Oxeye daisy, 18; red sorrel, 72
7547	Morrow Grain Co., Wabash[379] Timothy, Lot Roberts	Morrow Grain Co., Wabash, Ind.	C	99.42	......	88.00	9-35	.....	C None
			F	99.30	0.30	93.75	3-36	396	F Common plantain, 396
7361	Boonville Milling Co., Boonville Timothy, Lot 550	National Seed Co., Louisville, Ky.	C	99.50	......	92.00	8-35	......	C Buckhorn, 224; red sorrel, 672
			F	99.70	0.15	92.25	3-36	1,242	F Bracted plantain, 126; buckhorn, 18; common plantain, 648

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*Not labeled with official Indiana State Labels.

†Certified by retailer.

C and F stands, respectively, for Claimed and Found.

[375] Removed from sale. Misbranded. Returned to distributor.

[376] Distributed by Heise Bros., Orleans, Ind.

[377] Not tagged. Labels furnished. Removed from sale. Misbranded. Relabeled

[378] Not tagged. Labels furnished.

[379] Not tagged. Labels furnished.

TABLE 8—Timothy—Continued

Laboratory No. S.	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, Per Cent	Inert Matter, Per Cent	Germination, Per Cent	Date of Germination	Total Number Weed Seeds Per Lb. of Seeds	Number Per Pound of Each of the Noxious Weed Seeds Specified in the Law
6985	Bloomington Feed Store & Hatchery, Bloomington[380] Timothy, Lot Big Chief	Northwestern Seed Co., Keokuk, Iowa	C	99 50		90 00	8 35		C None
			F	99 50	0 35	93 50	1 36	3,195	F Buckhorn, 72; common plantain, 162; red sorrel, 36
7073	Karsell Co., Inc., The, Bloomington Timothy, Lot Big Chief	Northwestern Seed Co., Keokuk, Iowa	C	99 50		90 00	8 35		C None
			F	99 30	0 40	92 50	2 36	1,449	F Buckhorn, 18; common plantain, 216; curled dock, 18; red sorrel, 72
6781	St. Meinrad Milling Co., St. Meinrad[381] Timothy, Lot C 397	Ohio Valley Seed Co., Evansville, Ind.	C	99 60		88 00	. .	.	C None
			F	99 85	0 05	95 25	9-35	675	F None
6942	Pentecost & Craft, Terre Haute	Pentecost & Craft, Terre Haute, Ind.	C	97 60	.	78 50	11-35		C Buckhorn, 1,125; bracted plantain, 450; red sorrel, 13,725
	Timothy, Lot 72279		F	98 50	0 25	87 25	1 36	10,413	F Bracted plantain, 666; buckhorn, 432; common plantain, 18; curled dock, 18; oxeye daisy, 54; red sorrel, 8,325
8006	Pierce Elevator Co., The, Union City[382] Timothy	Pierce Elevator Co., The, Union City, Ind.	C	96 50		82 00	3 36	. .	C Buckhorn, 180
			F	99 71	0 24	90.75	4-36	540	F Buckhorn, 90
7311	Ballard & Morganheimer, Haubstadt	Purcell Seed Co., Evansville, Ind.	C	99 52	. . .	90 00	9 35		C Bracted plantain, 9; buckhorn, 9; common plantain, 225
	"Tru Val" Timothy, Lot 436		F	99 75	0 15	94 25	3-36	1,890	F Common plantain, 72; curled dock, 18
7388	Daviess Co. Farm Bureau Co-op. Ass'n, Inc., Washington	Purcell Seed Co., Evansville, Ind.	C	99 52	. . .	90 00	9-35	. . .	C Bracted plantain, 9; buckhorn, 9; common plantain, 225
	Tru Val Timothy, Lot 436 7-A		F	99 70	0 20	94.25	4-36	693	F Common plantain, 18
7353	Fortwendel, J. A., Troy Tru Val Timothy, Lot 425-4-"A'"	Purcell Seed Co., Evansville, Ind.	C	99 25	.	90 00	10-35		C Buckhorn, 9: common plantain, 81
			F	99 75	0.15	98 00	4-36	297	F Common plantain, 72
6979	Graves Implement Store, Tell City Tru Val Timothy, Lot 4267	Purcell Seed Co., Evanvsille, Ind.	C	99.74	. . .	90 00	8-35	. .	C Common plantain, 36
			F	99 90	0.05	93 75	1-36	54	F Common plantain, 54
6859	Johnson & Chenoweth, Shoals Timothy, Lot 4279 "A"	Purcell Seed Co., Evansville Ind.	C	99 80	. . . . . .	90 00	9-35	.	C Bracted plantain, 27; buckhorn, 225
			F	99.80	0.10	90 50	10-35	261	F Buckhorn, 36
7338	Purcell Seed Co., Evansville	Purcell Seed Co., Evansville, Ind.	C	99.52	. . . . . .	90.00	12-35	. . . . .	C Bracted plantain, 9; buckhorn, 9; common plantain, 225
	Tru Val Timothy, Lot 4367-A		F	99 55	0.35	95.25	3-36	540	F Buckhorn, 18; common plantain, 72
7271	Saiter-Morgan Co., The Vincennes "Tru Val" Timothy, Lot 4262	Purcell Seed Co., Evansville, Ind.	C	99.50	. . . . .	90.00	8-35	. . . . .	C None
			F	99.75	0.15	96 00	3-36	279	F Buckhorn, 18; common plantain, 18; red sorrel, 18
7278	Sartor & Clark, Oaktown	Purcell Seed Co., Evansville, Ind.	C	99.70	. . . . .	90.00	8 35	. .	C Buckhorn, 450; common plantain, 72· sorrel, 9
	Timothy, Lot 4329		F	99 85	0.10	95 75	3-36	90	F Bracted plantain, 54; buckhorn, 18; mon plantain, 18

8415	Steinkamp, Hugo, Huntingburg	Purcell Seed Co., Evansville, Ind.	C	99.50	....	90.00	11-35	. .	C Bracted plantain, 18; buckhorn, 18; common plantain, 45: red sorrel, 9
	"Tru Val" Timothy, Lot 4280		F	99.75	0.20	94.50	7-36	558	F Buckhorn, 36; common plantain, 36; oxeye daisy, 18; red sorrel, 18
6897	Johnston & Sons Milling Co., Prairieton[383] Timothy, Lot S	Quinlan Seed Store, Terre Haute, Ind.	C	98.75	....	90.00	10-35	. .	C None
			F	98.46	0.30	96.00	11-35	7,623	F Common plantain, 18; red sorrel, 6,525; yellow trefoil, 180
7412	Jolliff & Co., Odon	Quinlan Seed Store, Terre Haute, Ind.	C	99.47	......	87.50	1-36	......	C Buckhorn, 2,466; curled dock, 18; red sorrel, 2,475
	Timothy		F	99.30	0.20	78.25	3-36	3,717	F Bracted plantain, 36; buckhorn, 1,296; red sorrel, 2,160
7931	Quinlan Seed Store, Terre Haute Timothy, Lot 1	Quinlan Seed Store, Terre Haute, Ind.	C	99.69	....	90.00	2-36	.....	C Red sorrel, 2,475
			F	99.15	0.30	93.25	5-36	4,950	F Red sorrel, 4,050
6894	†Standard Hatcheries, Terre Haute[384] Timothy	Quinlan Seed Store, Terre Haute, Ind.	C	98.00	.	90.00	10-35		C None
			F	99.47	0.09	77.50	11-35	8,084	F Buckhorn, 2,466; curled dock, 18; red sorrel, 2,475
6783	McCampbell, Ralph, French Lick	Ross Seed Co., Louisville, Ky.	C	99.50	.. ...	85.00	8-35	......	C Buckhorn, 225; common plantain, 32; curled dock, 112; red sorrel, 16
	Timothy		F	99.90	0.05	93.00	9-35	288	F Bracted plantain, 108; buckhorn, 90; common plantain, 72; curled dock, 18
7049	Combs, Gilbert, Bloomfield Reliable Timothy	Schultz Seed Co., J. M., Dieterich, Ill.	C	99.50	....	93.00	12-35	..	C None
			F	99.80	0.20	96.25	2-36	36	F Bracted plantain, 18; buckhorn, 18
6875	†McCarty Seed Co., J. A., Evansville Lucky Jim Timothy, Lot 1320	Schultz Seed Co., J. M., Dieterich, Ill.	C	99.61	.. ..	92.00	9-35	. .	C None
			F	99.30	0.55	91.75	10-35	1,314	F Bracted plantain, 72; buckhorn, 90; common plantain, 54; red sorrel, 198
6854	Penman Bros., Brazil[385] Timothy, Lot 107	Schultz Seed Co., J. M., Dieterich, Ill.	C	99.50	.. ...	91.00	8-35	.	C None
			F	99.31	0.49	94.25	10-35	2,016	F Buckhorn, 36; common plantain, 18; curled dock, 18; oxeye daisy, 18; red sorrel, 1,026
6807	Lucas Cash Store, Brownstown Timothy, Lot 814	Scott Seed Co., New Albany, Ind.	C	99.60	.....	90.00	8-35	.	C None
			F	99.85	0.10	92.75	9-35	36	F Common plantain, 36
8022	Roper & Brown, Hobart Timothy, Lot 15406	Standard Seed Co., Chicago, Ill.	C	99.50	.. ..	92.00	1-36	.	C None
			F	99.76	0.19	93.50	4-36	495	F Bracted plantain, 18; common plantain, 216; red sorrel, 36
7981	Sun-Field Seed Service, Chicago, Ill.[386] Timothy, Lot 15411	Sun-Field Seed Service, Chicago, Ill.	C	99.50	.. ..	92.00	2-36		C None
			F	99.41	0.49	96.75	4-36	504	F Common plantain, 36; curled dock, 18
7982	Sun-Field Seed Service, Chicago, Ill.[387] Timothy, Lot 15390	Sun-Field Seed Service, Chicago, Ill.	C	99.50	....	92.00	3-36	. ..	C None
			F	99.76	0.19	96.00	4-36	144	F Common plantain, 126; red sorrel, 18
7612	Hirsch Bros. Grain Co., Grass Creek	Syler & Syler, Plymouth, Ind.	C	99.44	....	90.00	1-36	. . .	C Buckhorn, 216; common plantain, 126; red sorrel, 540
	Timothy, Lot 3095		F	99.35	0.20	92.50	4-36	1,179	F Buckhorn, 198; common plantain, 72; dodder, 9; red sorrel, 432; yellow trefoil, 18
7856	New Haven-Thurman Equity Exchange, New Haven Timothy, Lot Badger Brand	Teweles Seed Co., L., Milwaukee, Wis.	C	99.75	.. ...	97.00	2-36	.....	C None
			F	99.61	0.29	96.50	5-36	333	F Common plantain, 108
7484	Schwalm, W. B., Logansport Timothy, Lot Badger Brand	Teweles Seed Co., L., Milwaukee, Wis.	C	99.75	......	97.00	2-36	......	C None
			F	99.70	0.25	94.25	4-36	72	F Common plantain, 72

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*Not labeled with official Indiana State Labels.

†Certified by retailer.

C and F stands, respectively, for Claimed and Found.

[380] Distributed by The Karsell Co., Inc., Bloomington, Ind.

[381] Tag incomplete.

[382] Not tagged. Labels furnished.

[383] Not tagged. Labels furnished. Removed from sale. Misbranded. Used on own farm.

[384] Removed from sale. Misbranded. Used on own farm.

[385] Distributed by L. T. Butt & Co., Center Point, Ind., Removed from sale. Misbranded.

[386] Distributed by Golden Payne, Newcastle, Ind. Sample secured from J. S. Jones, Newcastle, Ind.

[387] Distributed by Golden Payne, Newcastle, Ind. Sample secured from J. S. Jones, Newcastle, Ind.

TABLE 8—Mixtures

Laboratory No. S.	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor	Purity, Per Cent	Inert Matter, Per Cent	Germination, Per Cent	Hard Seeds, Per Cent	Date of Germination	Total Number Weed Seeds Per Lb. of Seeds	Number Per Pound of Each of the Noxious Weed Seeds Specified in the Law
8113	Ayres & Co., L. S., Indianapolis Aimcee Lawn Mixture	Ayres & Co., L. S., Indianapolis, Ind.							
		Ky. Blue Grass C	42.50		85.00		1–36		
		Fancy Red Top C	23.00		90.00		1–36		
		Dom. Rye Grass C	19.60		90.00		1–36		
		White Dutch Clover C	5.00		85.00		1–36		C None
		Ky. Blue Grass F	42.85		85.00		6–36		
		Fancy Red Top F	25.88		87.50		6–36		
		Dom. Rye Grass F	15.88		84.50		6–36		
		White Dutch Clover F	7.06	8.04	64.75	10.50	6–36	18,135	F Common plantain, 45; red sorrel, 90
7475	*Berry Seed Co., Clarinda, Iowa[388] Red Clover, Alsike Clover and Timothy, Lot 3025	Berry Seed Co., Clarinda, Iowa							
		Red Clover C	12.50		85.00		1–36		
		Alsike Clover C	9.00				1–36		C None
		Timothy C	76.00		90.00		1–36		
		Red Clover F	10.84		72.50	3.50	3–36		
		Alsike Clover F	5.23		89.50	5.75	3–36		
		Timothy F	80.48	1.09	93.75		3–36	5,373	F Buckhorn, 18; Curled dock, 36; dodder, 36; red sorrel, 108
7617	*Berry Seed Co., Clarinda, Iowa[389] Mixture, Lot 4000	Berry Seed Co., Clarinda, Iowa							
		Timothy C	49.66		88.00		1–36		
		Sweet Clover C	19.12		81.00		1–36		
		Alfalfa C	14.31		76.00		1–36		
		Red Clover C	7.84		82.00		1–36		
		Alsike Clover C	8.57		73.00		1–36		C None
		Timothy F	42.91		91.50		3–36		
		Sweet Clover F	21.30		46.50	6.50	3–36		
		Alfalfa F	16.46		43.50	20.00	3–36		
		Red Clover F	8.85		70.50	7.00	3–36		
		Alsike Clover F	6.42	1.98	70.00	9.00	3–36	15,858	F Bracted plantain, 18; buckhorn, 36; common plantain, 18; curled dock, 36; red sorrel, 414; yellow trefoil, 36
7732	*Berry Seed Co., Clarinda, Iowa[390] Mixture, Lot 3022	Berry Seed Co., Clarinda, Iowa							
		Red Clover C	17.50		88.00		12–35		
		Alsike Clover C	15.00		88.00		12–35		
		Timothy C	65.50		88.00		12–35		C None
		Red Clover F	16.14		74.50	8.00	3–36		
		Alsike Clover F	15.55		66.25	7.50	3–36		
		Timothy F	60.73	2.45	67.50		3–36	41,724	F Buckhorn, 234; Canada thistle, 54; common plantain, 360; curled dock, 90; mustard, 36; red sorrel, 2,925

7921	*Berry Seed Co., Clarinda, Iowa[391] Marvelous Mixture, Lot 4092	Berry Seed Co., Clarinda, Iowa								
		Timothy	C	42.00	......	80.00	......	1-36	......	
		Alsike	C	8.00	......	80.00	......	1-36	......	
		Alfalfa	C	13.00	......	80.00	......	1-36	......	
		Red Clover	C	11.00	......	80.00	......	1-36	......	
		Sweet Clover	C	22.00	......	80.00	......	1-36	......	C None
		Timothy	F	42.50	......	92.25	......	4-36	......	
		Alsike	F	9.25	......	79.75	6.25	4-36	......	
		Alfalfa	F	9.40	......	50.50	13.00	4-36	......	
		Red Clover	F	9.10	......	63.00	6.50	4-36	......	
		Sweet Clover	F	24.50	1.50	39.00	5.50	4-36	17,766	F Buckhorn, 18; common plantain, 378; curled dock, 144; horse nettle, 18; prickly lettuce, 18; red sorrel, 54; wild carrot, 36; yellow trefoil, 2,925
7567	Seberger Seed Co., Crown Point[392] Condon's Velvet Green Lawn Grass Mixture, Lot C	Condon Bros., Seedsmen, Rockford, Ill.								
		Ky. Blue Grass	C	33.30	......	76.00	......	1-36	......	
		Red Top (Solid Seed)	C	37.56	......	44.00	......	1-36	......	
		Rye Grass	C	9.97	......	85.00	......	1-36	......	
		White Dutch Clover	C	9.79	......	92.00	......	1-36	......	
		Chewing Fescue	C	1.00	......	88.00	......	1-36	......	C None
		Ky. Blue Grass	F	31.84	......	73.00	......	5-36	......	
		Red Top	F	41.09	......	72.50	......	5-36	......	
		Rye Grass	F	6.47	......	79.50	......	5-36	......	
		White Dutch Clover	F	11.74	7.56	61.00	25.50	5-36	18,765	F Buckhorn, 45; curled dock, 90; red sorrel, 180
8033	Indiana Harbor Feed Store, Indiana Harbor[393] American Shore Lawn Seed Mix.	Consolidated Seed Co., Chicago, Ill.								
		Ky. Blue Grass	C	19.09	......	75.00	......	1-36	......	
		Red Top	C	27.33	......	83.00	......	1-36	......	
		Rye Grass	C	37.90	......	76.00	......	1-36	......	
		White Clover	C	1.00	......	56.00	......	1-36	......	C Buckhorn, 21,600; dodder, 225; red sorrel, 3,600; yellow trefoil, 3,600
		Ky. Blue Grass	F	31.57	......	63.50	......	6-36	......	
		Red Top	F	27.77	......	6.00	......	6-36	......	
		Rye Grass	F	34.54	4.71	80.00	......	6-36	5,130	F Buckhorn, 45; common plantain, 450; oxeye daisy, 135
6950	Swayzee Grain Co., Swayzee[394] Green Lawn Grass Seed	Crabbs Reynolds Taylor Co., Crawfordsville, Ind.								
		Ky. Blue Grass	C	11.70	......	80.00	......	10-35	......	
		Red Top	C	19.65	......	85.00	......	10-35	......	
		Rye Grass	C	28.50	......	80.00	......	10-35	......	
		Timothy	C	18.65	......	85.00	......	10-35	......	
		Creeping Bent	C	0.85	......	70.00	......	10-35	......	
		White Clover	C	1.75	......	80.00	......	10-35	......	C None
		Ky. Blue Grass	F	11.11	......	76.00	......	1-36	......	
		Red Top	F	23.91	......	79.75	......	1-36	......	
		Rye Grass	F	15.87	......	81.00	......	1-36	......	
		Timothy	F	33.33	......	93.25	......	1-36	......	
		White Clover	F	3.38	11.11	......	......	1-36	15,120	F Bracted plantain, 45; buckhorn, 180; common plantain, 225; red sorrel, 720

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*Not labeled with official Indiana State Labels.

†Certified by retailer.

C and F stands, respectively, for Claimed and Found.

[388] Sample secured from A. D. Williams, Route 5, Logansport, Ind.

[389] Sample secured from Clyde O. Laudeman, Route 1, Bremen, Ind.

[390] Sample secured from John Fosher, Hartford City, Ind.

[391] Sample secured from Monroe Stambaugh, Veedersburg, Ind.

[392] Removed from sale. Misbranded. All sold.

[393] Not tagged. Labels furnished. Removed from sale. Misbranded. Relabeled.

[394] Removed from sale. Misbranded. Returned to distributor.

TABLE 8—Mixtures—Continued

Laboratory No. S.	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor	Purity, Per Cent	Inert Matter, Per Cent	Germination, Per Cent	Hard Seeds, Per Cent	Date of Germination	Total Number Weed Seeds Per Lb. of Seeds	Number Per Pound of Each of the Noxious Weed Seeds Specified in the Law
7454	Swayzee Grain Co., Swayzee Green Lawn Grass Seed, Lot S-6950	Crabbs Reynolds Taylor Co., Crawfordsville, Ind.							
		Ky. Blue Grass C	11.11		76.00		1-36		
		Red Top C	23.91		79.75		1-36		
		Rye Grass C	15.87		81.00		1-36		
		Timothy C	33.33		93.25		1-36		
		White Clover C	3.38				1-36		
		Bent Grass C	0.59				1-36		C Bracted plantain, 45; buckhorn, 180; common plantain, 225; red sorrel, 720
		Ky. Blue Grass F	11.55		59.50		5-36		
		Red Top F	22.50		71.50		5-36		
		Rye Grass F	19.47		89.50		5-36		
		Timothy F	30.63		96.25		5-36		
		White Clover F	2.48	12.98			5-36	14,490	F Buckhorn, 90; red sorrel, 450
7999	Shirley, O. C., Knightstown Alsike Clover, Sweet Clover and Red Clover	Davis Seed Corp., Lebanon, Ind.							
		Alsike Clover C	93.54		75.00		3-36		
		Sweet Clover C	1.64		80.00		3-36		
		Red Clover C	0.84		84.00		3-36		C Buckhorn, 108; common plantain, 54; curled dock, 162; red sorrel, 36; yellow trefoil, 5,400
		Alsike Clover F	92.22		82.25	6.75	5-36		
		Sweet Clover F	1.47	1.77			5-36	10,773	F Buckhorn, 234; common plantain, 90; curled dock, 288; red sorrel, 36; yellow trefoil, 5,850
7259	Brazil Hardware Co., Brazil[395] Superior Lawn Grass Mix, Lot 36625	Dickinson Co., The Albert, Chicago, Ill.							
		Ky. Blue Grass C	9.50		85.00		1-36		
		Red Top C	26.00		90.00		1-36		
		White Clover C	4.00		90.00		1-36		
		Timothy C	26.00		90.00		1-36		
		Dom. Rye Grass C	17.00		93.00		1-36		C None
		Ky. Blue Grass F	10.58		80.00		4-36		
		Red Top F	20.36		79.00		4-36		
		White Clover F	5.32		45.75	10.25	4-36		
		Timothy F	32.10		91.00		4-36		
		Dom. Rye Grass F	14.64	15.75	91.00		4-36	27,495	F Buckhorn, 180; common plantain, 1,080; red sorrel, 45; yellow trefoil, 90
8038	Gotto-Mathias Co., Michigan City Evergreen Mixture, Lot 36575	Dickinson Co., The Albert, Chicago, Ill.							
		Red Top C	32.00		84.00		9-35		
		Ky. Blue Grass C	26.25		65.00		9-35		
		Dom. Rye Grass C	19.80		96.00		9-35		
		White Clover C	5.00		80.00		9-35		C Buckhorn, 1,792; common plantain, 96; curled dock, 96; oxeye daisy, 96; red sorrel, 256

		Red Top	F	31 19	......	53.00	......	6-36	......	
		Ky. Blue Grass	F	23.26	......	59.50	......	6-36	......	
		Dom. Rye Grass	F	18.37	......	95.50	......	6-36	......	
		White Clover	F	4.69	19.94	......	......	6-36	73,215	F Buckhorn, 5,850; common plantain, 45; oxeye daisy, 90; red sorrel, 630
8377	**Meyer Bros. Drug Co., Ft. Wayne**[396] Park Lawn Mixed Lawn Grass Seed	**Haight, Inc., R. J., Chicago, Ill.**								
		Red Top	C	10.00	......	70.00	......	1-36	......	
		Dom. Rye Grass	C	29.70	......	85 00	......	1-36	......	
		Timothy	C	29.70	......	90 00	......	1-36	......	C None
		Red Top	F	10 08	......	30 75	......	6-36	......	
		Dom. Rye Grass	F	32.41	......	66.00	......	6-36	......	
		Timothy	F	31.22	21.94	74.25	......	6-36	64,215	F Bracted plantain, 90; buckhorn, 990; common plantain, 900; oxeye daisy, 135; red sorrel, 900
7678	**Hallowell's Feed Store, North Vernon** Medium Clover and Alfalfa, Lot I-1301	**Indiana Seed Co., Indianapolis, Ind.**								
		Med. Clover	C	93.23	......	80 00	10 00	1-36	......	
		Alfalfa	C	4 70	......	80 00	10.00	1-36	......	C Buckhorn, 180; common plantain, 450
		Med. Clover	F	90.86	......	84.50	1.00	4-36	......	
		Alfalfa	F	5 45	0 91	54 50	6 50	4 36	1,971	F Buckhorn, 432; common plantain, 1,260; curled dock, 189
8119	Jansen-Overman Co., Indianapolis Favorite Mixture	**Jansen-Overman Co., Indianapolis, Ind.**								
		Red Top	C	40 50	......	90 00		2 36	......	
		Ky. Blue Grass	C	42.50	......	80.00	......	2-36	......	
		White Dutch Clover	C	5.00	......	85.00	......	1-36	......	C None
		Red Top	F	44 07	......	85 50	......	6 36	......	
		Ky. Blue Grass	F	39 38	......	70 00		6-36	......	
		White Dutch Clover	F	6 36	8 72	80 00	12 00	6-36	12,960	F Curled dock, 90; oxeye daisy, 45; red sorrel, 225
8120	Jansen-Overman Co., Indianapolis[397] Special Mixture	**Jansen-Overman Co., Indianapolis, Ind.**								
		Blue Grass	C	29 00	......	85 00	......	2 36	......	
		Red Top	C	32 00		90 00	......	2-36	......	
		Rye Grass	C	25 00	......	96 00	......	2 36		C None
		Blue Grass	F	28 38	......	68 00	......	6 36	......	
		Red Top	F	27.98	......	84.50	......	6-36	......	
		Rye Grass	F	35.23	7.83	62.00	......	6-36	7,380	F Buckhorn, 135; red sorrel, 45
8121	Jansen-Overman Co., Indianapolis Shady Lawn Mixture	**Jansen-Overman Co., Indianapolis, Ind.**								
		Ky. Blue Grass	C	36 00	......	85 00	......	2 36	......	
		Red Top	C	36 00	......	90 00	......	2 36	......	
		Poa Trivialis	C	17 00	......	80 00	......	11-34	......	
		White Clover	C	5 00	......	85 00	......	1-36	......	C None
		Ky. Blue Grass	F	36 57	......	78 50	......	6 36	......	
		Red Top	F	26.42	......	93 25	......	6-36	......	
		Poa Trivialis	F	20.90	......	56 00	......	6-36	......	
		White Clover	F	4 82	10 32	......	......	6-36	5,940	F Buckhorn, 45; red sorrel, 45
7818	**Wagoner Hardware Co., Knightstown**[398] Lincoln Park Mixed Lawn	**Johnson, Inc., J. Oliver, Chicago, Ill.**								
		Ky. Blue Grass	C	16.00	......	60.00	......	......	......	
		Fancy Red Top	C	35.90	......	70 00	......	......	......	
		White Clover	C	1.00	......	90.00	......	......	......	
		Rye Grass	C	27.38	......	95.00	......	......	......	C None
		Ky. Blue Grass	F	15.72	......	54 50	......	5-36	......	
		Fancy Red Top	F	32.79	......	74.00	......	5-36	......	
		White Clover	F	1 19	......	......	......	5-36	......	
		Rye Grass	F	32.51	15.48	87 00	......	5-36	23,220	F Bracted plantain, 135; buckhorn, 315; common plantain, 360; oxeye daisy, 90; red sorrel, 720

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*Not labeled with official Indiana State Labels.
†Certified by retailer.
C and F stands, respectively, for Claimed and Found.

[395] Removed from sale. Misbranded. All sold.
[396] Removed from sale. Misbranded. Returned to distributor.
[397] Removed from sale. Misbranded. All sold.
[398] Tag incomplete. Removed from sale. Misbranded Relabeled.

TABLE 8—Mixtures—Continued

Laboratory No. S.	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor	Purity, Per Cent	Inert Matter, Per Cent	Germination, Per Cent	Hard Seeds, Per Cent	Date of Germination	Total Number Weed Seeds Per Lb. of Seeds	Number Per Pound of Each of the Noxious Weed Seeds Specified in the Law
8075	*Metropolitan Seed Corp., New York, N. Y.[399], Grass	Metropolitan Seed Corp., New York, N. Y. C							C
		Ky. Blue Grass F	59.52		69.00		5–36		
		Red Top F	25.84	14.24	88.50		5–36	21,825	F Oxeye daisy, 135; red sorrel, 90
8027	Decker Hardware, Inc., LaPorte[400] Shady Lawn Grass Seed	Ostberg Seed Co., Chicago, Ill.							
		Ky. Blue Grass C	12.30		75.00		1–36		
		Red Top C	44.76		80.00		1–36		
		Rye Grass C	19.38		76.00		1–36		
		Poa Trivialis C	13.30		81.00		1–36		C Buckhorn, 14,500; red sorrel, 1,800
		Ky. Blue Grass F	14.04		26.50		5–36		
		Red Top F	28.41		30.00		5–36		
		Rye Grass F	37.48		88.50		5–36		
		Poa Trivialis F	17.30	12.07	88.00		5–36	13,005	F Bracted plantain, 45; buckhorn, 45; common plantain, 225; red sorrel, 540
8028	Decker Hardware, Inc., LaPorte[401] Ace Lawn Seed Mixture	Ostberg Seed Co., Chicago, Ill.							
		Ky. Blue Grass C	46.75		75.00		1–36		
		Red Top C	27.04		80.00		1–36		
		Rye Grass C	9.85		76.00		1–36		
		White Clover C	4.95		56.00		1–36		C Buckhorn, 49,500; dodder, 1,125; red sorrel, 900
		Ky. Blue Grass F	45.03		57.00		6–36		
		Red Top F	21.20		60.75		6–36		
		Rye Grass F	9.20		90.00		6–36		
		White Clover F	5.42	18.59	62.75	13.75	6–36	8,775	F Buckhorn, 90; common plantain, 90; red sorrel, 45
8029	Decker Hardware, Inc., LaPorte[402] University Lawn Seed	Ostberg Seed Co., Chicago, Ill.							
		Ky. Blue Grass C	32.97		75.00		1–36		
		Red Top C	23.30		80.00		1–36		
		Rye Grass C	29.40		76.00		1–36		
		White Clover C	2.94		56.00		1–36		C Buckhorn, 36,000; dodder, 675; red sorrel, 2,430; yellow trefoil, 10,800
		Ky. Blue Grass F	27.47		62.00		6–36		
		Red Top F	29.70		58.50		6–36		
		Rye Grass F	26.73		89.00		6–36		
		White Clover F	3.66	11.98			6–36	12,240	F Buckhorn, 45; common plantain, 45
8044	Decker Hardware, Inc., LaPorte[403] Quality Grass Seed	Ostberg Seed Co., Chicago, Ill.							
		Ky. Blue Grass C	15.18		75.00		1–36		
		Red Top C	27.42		80.00		1–36		
		Rye Grass C	43.20		76.00		1–36		
		White Clover C	1.00		56.00		1–36		C Buckhorn, 18,000; dodder, 225; red sorrel, 3,960; yellow trefoil, 3,600
		Ky. Blue Grass F	28.87		56.00		6–36		
		Red Top F	36.52		15.75		6–36		
		Rye Grass F	19.69		82.00		6–36		
		White Clover F	1.72	12.14			6–36	11,160	F Buckhorn, 45; common plantain, 180; red sorrel, 90; yellow trefoil, 45

8018	Goldblatt Bros., Hammond[404]	Ostberg Seed Co., Chicago, Ill.									
	Green Hill Lawn Seed		Ky. Blue Grass	C	27.88		75.00		1-36		
			Red Top	C	24.25		85.00		1-36		
			Rye Grass	C	26.94		70.00		1-36		
			White Clover	C	3.42		50.00		1-36		C Buckhorn, 30,600; dodder, 960; red sorrel, 2,475
			Ky. Blue Grass	F	35.07		62.50		6-36		
			Red Top	F	24.75		23.25		6-36		
			Rye Grass	F	29.17		81.50		6-36		
			White Clover	F	2.46	7.76			6-36	11,160	F Common plantain, 810
8019	Goldblatt Bros., Hammond[405]	Ostberg Seed Co., Chicago, Ill.									
	Let-It-Grow Lawn Seed		Ky. Blue Grass	C	18.40		75.00		1-36		
			Red Top	C	32.31		85.00		1-36		
			Rye Grass	C	35.26		76.00		1-36		
			White Clover	C	1.47		57.00		1-36		C Buckhorn, 20,700; dodder, 450; red sorrel, 3,375
			Ky. Blue Grass	F	18.43		60.50		6-36		
			Red Top	F	26.76		4.50		6-36		
			Rye Grass	F	45.89		76.50		6-36		
			White Clover	F	3.96	4.66			6-36	7,920	F Buckhorn, 45; common plantain, 135; red sorrel, 45; yellow trefoil, 45
8030	Goldblatt Bros., Hammond[406]	Ostberg Seed Co., Chicago, Ill.									
	Grass Matt Lawn Seed		Ky. Blue Grass	C	16.02		75.00		1-36		
			Red Top	C	33.96		85.00		1-36		
			Rye Grass	C	32.74		76.00		1-36		
			White Clover	C	1.43		57.00		1-36		C Buckhorn, 12,000; dodder, 825; red sorrel, 3,420
			Ky. Blue Grass	F	26.54		68.00		5-36		
			Red Top	F	32.01		3.00		5-36		
			Rye Grass	F	33.80		82.50		5-36		
			White Clover	F	1.29	5.96			5-36	11,835	F Common plantain, 90; oxeye daisy, 45
8032	Goldblatt Bros., Hammond[407]	Ostberg Seed Co., Chicago, Ill.									
	Town Park Lawn Seed		Ky. Blue Grass	C	37.19		75.00		1-36		
			Red Top	C	26.35		85.00		1-36		
			Rye Grass	C	32.34		76.00		1-36		
			White Clover	C	2.94		57.00		1-36		C Buckhorn, 29,700; dodder, 825; red sorrel, [illegible],970
			Ky. Blue Grass	F	22.34		64.50		5-36		
			Red Top	F	25.34		4.00		5-36		
			Rye Grass	F	44.29		81.50		5-36		
			White Clover	F	1.92	5.71			5-36	9,990	F Buckhorn, 90; common plantain, 720; oxeye daisy, 45; red sorrel, 90; yellow trefoil, 45
6761	Kozacik Hardware Co., Inc., Whiting, Ind.	Ostberg Seed Co., Chicago, Ill.									
	Special Lawn Seed		Ky. Blue Grass	C	20.09		80.00		1-35		
			Red Top	C	18.75		90.00		1-35		
			Rye Grass	C	46.56		90.00		1-35		
			White Clover	C	1.96		90.00		1-35		C Bracted plantain, 32; buckhorn, 64; curled dock, 16; quack grass, 16; red sorrel, 64
			Ky. Blue Grass	F	18.74		30.50		8-35		
			Red Top	F	25.05		7.50		8-35		
			Rye Grass	F	40.99		93.50		8-35		
			White Clover	F	1.61	13.02			8-35	9,495	F Buckhorn, 45; common plantain, 720· red sorrel, 180

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†Certified by retailer.

C and F stands, respectively, for Claimed and Found.

[399] Sample secured from William McQuade, District Manager WPA, Bedford, Ind.

[400] Removed from sale. Misbranded. Relabeled.

[401] Not tagged. Labels furnished.

[402] Not tagged. Labels furnished.

[403] Not tagged. Labels furnished. Removed from sale. Misbranded. Relabeled.

[404] Removed from sale. Misbranded.

[405] Removed from sale. Misbranded.

[406] Removed from sale. Misbranded.

[407] Removed from sale. Misbranded.

TABLE 8—Mixtures—Continued

Laboratory No. S.	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, Per Cent	Inert Matter, Per Cent	Germination, Per Cent	Hard Seeds, Per Cent	Date of Germination	Total Number Weed Seeds Per Lb. of Seeds	Number Per Pound of Each of the Noxious Weed Seeds Specified in the Law
6762	Kozacik Hardware Co., Inc., Whiting Fancy Mixed Lawn Seed	Ostberg Seed Co., Chicago, Ill.								
		Ky. Blue Grass	C	42.50		80.00		1-35		
		Red Top	C	27.16		90.00		1-35		
		Rye Grass	C	17.43		90.00		1-35		C Buckhorn, 96; Curled dock, 32; quack grass, 32; red sorrel, 64
		White Clover	C	1.98		90.00		1-35		
		Ky. Blue Grass	F	28.60		45.00		8-35		
		Red Top	F	26.78		36.75		8-35		
		Rye Grass	F	19.98		94.00		8-35		
		White Clover	F	1.97	19.88			8-35	14,580	F Bracted plantain, 45; buckhorn, 180; common plantain, 90; oxeye daisy, 45; red sorrel, 720
7970	Sears, Roebuck & Co., Terre Haute[408] Jackson Park Lawn Seed Mixture	Ostberg Seed Co., Chicago, Ill.								
		Ky. Blue Grass	C	31.96		80.00		1-36		
		Red Top	C	33.43		90.00		1-36		
		Rye Grass	C	27.83		90.00		1-36		
		White Clover	C	2.45		90.00		1-36		C None
		Ky. Blue Grass	F	37.00		66.00		6-36		
		Red Top	F	28.40		86.75		6-36		
		Rye Grass	F	23.50		92.00		6-36		
		White Clover	F	2.80	7.30			6-36	28,350	F Buckhorn, 45; Canada thistle, 45; common plantain, 135; oxeye daisy, 180; yellow trefoil, 45
8123	Ayres & Co., L. S., Indianapolis Scott's Lawn Seed, Regular Mixture	Scott & Sons Co., O. M., Marysville, Ohio								
		Ky. Blue Grass	C	58.10		88.00		1-36		
		Fancy Red Top	C	24.45		90.00		1-36		
		Poa Trivialis	C	7.22		90.00		1-36		
		Creeping Bent	C	7.35		90.00		1-36		C None
		Ky. Blue Grass	F	56.56		83.50		6-36		
		Fancy Red Top	F	24.99		92.75		6-36		
		Poa Trivalis	F	10.30		92.00		6-36		
		Creeping Bent	F	6.02	1.75	93.00		6-36	2,925	F Buckhorn, 90; red sorrel, 135
7622	Sun-Field Seed Service, Chicago[409] America's Best Mix, Lot 4092	Sun-Field Seed Service, Chicago, Ill.								
		Timothy	C	42.00		90.00		1-36		
		Alsike	C	8.00		80.00		1-36		
		Alfalfa	C	13.00		76.00		1-36		
		Red Clover	C	11.00		78.00		1-36		
		Sweet Clover	C	22.00		80.00		1-36		C None
		Timothy	F	41.45		90.25		3-36		
		Alsike	F	6.94		67.00	13.00	3-36		
		Alfalfa	F	10.86		54.00	12.50	3-36		
		Red Clover	F	10.41		66.50	7.50	3-36		
		Sweet Clover	F	24.05	1.98	49.50	4.00	3-36	17,550	F Buckhorn, 18; Canada thistle, 18; common plantain, 162; curled dock, 126; mustard, 18; red sorrel, 90; wild carrot, 18; yellow trefoil, 2,250

7615	Bremen Elevator, Bremen Alsike Clover and White Clover	Teweles Seed Co., L., Milwaukee, Wis.								
		Alsike Clover	C	93.36		87.00	7.00	1-36		
		White Clover	C	5.31		85.00	10.00	1-36		C None
		Alsike Clover	F	93.04		93.50	3.50	4-36		
		White Clover	F	5.26	0.15	92.25	5.00	4-36	3,186	F Buckhorn, 36; common plantain, 18; curled dock, 54; red sorrel, 108; yellow trefoil, 720
7588	Johnson Hardware Co., Lafayette[410] Lawn Grass Mixture, Lot Badger Brand	Teweles Seed Co., L., Milwaukee, Wis.								
		Ky. Blue Grass	C	43.83		86.00		2-36		
		Red Top	C	29.24		90.00		2-36		
		Rye Grass	C	6.92		87.00		2-36		
		Chewing's Fescue	C	1.94		89.00		2-36		
		White Clover	C	9.77		80.00		2-36		C None
		Ky. Blue Grass	F	40.66		56.00		5-36		
		Red Top	F	33.02		63.25		5-36		
		Rye Grass	F	9.15		61.00		5-36		
		White Clover	F	7.55	9.24	77.00	7.00	5-36	23,850	F None
7099	†Vonnegut Hardware Co., Indianapolis Vonnegut's Best Lawn Seed	Whitney-Eckstein Seed Co., Buffalo, N. Y.								
		Ky. Blue Grass	C	54.79		80.00		1-36		
		Fancy Red Top	C	25.50		90.00		1-36		
		Chewing's Fescue	C	8.58		90.00		1-36		
		White Clover	C	5.00		90.00		1-36		C None
		Ky. Blue Grass	F	51.70		85.50		3-36		
		Fancy Red Top	F	28.00		88.50		3-36		
		Fescue	F	7.30		81.50		3-36		
		White Clover	F	4.00	8.60	...		3-36	14,445	F Red sorrel, 45
7100	†Vonnegut Hardware Co., Indianapolis Vonnegut's Shady Spot	Whitney-Eckstein Seed Co., Buffalo, N. Y.								
		Rough Stalked Meadow Grass	C	26.11		88.00		1-36		
		Ky. Blue Grass	C	20.51		80.00		1-36		
		Red Top	C	25.25		90.00		1-36		
		Chewing's Fescue	C	20.47		85.00		1-36		C Bracted plantain, 450
		Rough Stalked Meadow Grass	F	24.97		88.50		3-36		
		Ky. Blue Grass	F	20.97		81.50		3-36		
		Red Top	F	21.60		86.50		3-36		
		Chewing's Fescue	F	24.48	7.23	81.50		3-36	6,345	F Buckhorn, 45
8069	Block, Wm. H., Indianapolis Central States Lawn Seed Mixture, Lot 227-1	Woodruff & Sons, F. H., Toledo, Ohio								
		Ky. Blue Grass	C	42.50		75.00		1-36		
		Red Top	C	21.50		90.00		1-36		
		Dom. Rye Grass	C	19.75		90.00		1-36		
		White Clover	C	5.75		80.50		1-36		C None
		Ky. Blue Grass	F	42.35		72.00		6-36		
		Red Top	F	21.51		88.50		6-36		
		Dom. Rye Grass	F	19.12		89.00		6-36		
		White Clover	F	6.21	10.33	66.50	8.50	6-36	13,230	F Red sorrel, 630
8070	Block, Wm. H., Indianapolis Turfmaker Lawn Seed Mixture, Lot 1-10	Woodruff & Sons, F. H., Toledo, Ohio	C							
		Ky. Blue Grass	C	38.00		85.00		1-36		
		Red Top	C	37.00		90.00		1-36		
		Colonial Bent	C	11.85		90.00		1-36		
		Rough Stalked Meadow Grass	C	9.70		90.00		1-36		C None
		Ky. Blue Grass	F	37.13		83.00		6-36		
		Red Top	F	39.21		90.00		6-36		
		Colonial Bent	F	8.14		92.00		6-36		
		Rough Stalked Meadow Grass	F	11.86	2.60	89.00		6-36	6,300	F None

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C and F stands, respectively, for Claimed and Found.

[408] Not tagged. Labels furnished. Removed from sale. Misbranded. Returned to distributor.

[409] Sample secured from Willard Barnett, Route 1, Logansport, Ind.

[410] Removed from sale. Misbranded.

TABLE 8—Mixtures—Continued

Laboratory No. S.	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor	Purity, Per Cent	Inert Matter, Per Cent	Germination, Per Cent	Hard Seeds, Per Cent	Date of Germination	Total Number Weed Seeds Per Lb. of Seeds	Number Per Pound of Each of the Noxious Weed Seeds Specified in the Law
8071	†Block Co., Wm. H., Indianapolis Block's Best Lawn Seed Mixture, Lot 222-1	Woodruff & Sons, F. H., Toledo, Ohio							
		Ky. Blue Grass C	52.46		87.00		1-36		
		Red Top C	24.50		90.00		1-36		
		Colonial Bent C	7.84		90.00		1-36		
		Rough Stalked Meadow Grass C	7.50		90.00		1-36		
		White Clover C	5.00		85.00		1-36		C None
		Ky. Blue Grass F	50.36		86.50		6-36		
		Red Top F	25.53		85.37		6-36		
		Colonial Bent F	5.91		55.50		6-36		
		Rough Stalked Meadow Grass F	9.62		92.00		6-36		
		White Clover F	5.07	2.89	78.00	2.50	6-36	8,370	F Red sorrel, 270
8072	†Block Co., Wm. H., Indianapolis Green Velvet Lawn Seed Mixture, Lot 223-1	Woodruff & Sons, F. H., Toledo, Ohio							
		Ky. Blue Grass C	24.00		75.00		1-36		
		Red Top C	28.00		90.00		1-36		
		Dom. Rye Grass C	27.38		90.00		1-36		
		White Clover C	4.85		80.50		1-36		C Red sorrel, 450
		Ky. Blue Grass F	24.73		77.50		6-36		
		Red Top F	31.28		88.00		6-36		
		Dom. Rye Grass F	24.33		93.00		6-36		
		White Clover F	4.57	14.40			6-36	20,160	F Common plantain, 90; red sorrel, 720
8073	Block, Wm. H., Indianapolis Shadolawn Lawn Seed Mixture, Lot 226-1	Woodruff & Sons, F. H., Toledo, Ohio							
		Rough Stalked Meadow Grass C	29.00		90.00		1-36		
		Chewing's Fescue C	24.50		70.00		1-36		
		Ky. Blue Grass C	19.00		85.00		1-36		
		Red Top C	24.30		90.00		1-36		C None
		Rough Stalked Meadow Grass F	31.33		90.50		6-36		
		Fescue F	23.13		92.00		6-36		
		Ky. Blue Grass F	21.23		78.50		6-36		
		Red Top F	22.63	1.38	92.25		6-36	8,145	F Red sorrel, 45
8074	†Block Co., Wm. H., Indianapolis Parklawn Lawn Seed Mixture, Lot 224-1	Woodruff & Sons, F. H., Toledo, Ohio							
		Ky. Blue Grass C	10.40		76.00		1-36		
		Red Top C	17.00		90.00		1-36		
		Dom. Rye Grass C	49.00		90.00		1-36		
		White Clover C	4.85		80.50		1-36		C Buckhorn, 450; oxeye daisy, 450; red sorrel, 1,350
		Ky. Blue Grass F	12.08		76.50		6-36		
		Red Top F	21.78		80.25		6-36		
		Dom. Rye Grass F	40.49		91.00		6-36		
		White Clover F	5.94	19.21	66.00	8.50	6-36	2,610	F Buckhorn, 90; common plantain, 45; oxeye daisy, 45; red sorrel, 180

*Not labeled with official Indiana State Labels.
†Certified by retailer.
C and F stands, respectively, for Claimed and Found.

TABLE 8—Garden Seed

Laboratory No. S.	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, Per Cent	Inert Matter, Per Cent	Germination, Per Cent	Date of Germination	Total Number Weed Seeds Per Lb. of Seeds	Number Per Pound of Each of the Noxious Weed Seeds Specified in the Law
8116	Kiest Milling Co., Knox	Condon Bros., Seedsmen, Rockford, Ill.	C	99.00	.....	90.00	12–35	.....	C None
	Condon's Model Yellow Onion, Lot C		F	99.92	0.08	90.50	4–36	.....	F None
7745	Ort & Co., Churubusco[411]	Ferry-Morse Seed Co., Detroit, Mich.	C	.....	.....	93.00	.....	.....	C None
	Southport Yellow Globe Onion		F	99.93	0.07	89.00	4–36	.....	F None
7746	Ort & Co., Churubusco[412]	Ferry-Morse Seed Co., Detroit, Mich.	C	.....	.....	88.00	.....	.....	C None
	Southport White Globe Onion		F	99.98	0.02	83.00	4–36	.....	F None
7549	Trembley Co., S. F., Columbia City	Ferry-Morse Seed Co., Detroit, Mich.	C	99.00	.....	91.00	12–35	.....	C None
	Southport Yellow Globe Onion, Brigham Strain, Lot Brigham		F	99.99	0.01	90.00	3–36	.....	F None
7550	Trembley Co., S. F. Columbia City	Ferry-Morse Seed Co., Detroit, Mich.	C	99.00	.....	90.00	12–35	.....	C None
	Southport Yellow Globe Onion		F	99.78	0.12	96.00	3–36	135	F None
7551	Trembley Co., S. F., Columbia City	Ferry-Morse Seed Co., Detroit, Mich.	C	99.00	.....	91.00	12–35	.....	C None
	Southport White Globe Onion, Lot White		F	99.70	0.10	92.00	3–36	675	F None
7902	*Wolff & Sons, G., Hamilton[413]	Ferry-Morse Seed Co., Detroit, Mich.	C	.....	.....	.....	.....	.....	C
	Southport White Globe Onion, Lot 5		F	99.97	0.03	88.50	4–36	.....	F None
7903	Wolff & Sons, G., Hamilton[414]	Ferry-Morse Seed Co., Detroit, Mich.	C	.....	.....	91.00	.....	.....	C None
	Southport Yellow Globe Onion, Lot 5		F	100.00	0.00	86.00	4–36	.....	F None
7592	Ort & Co., Churubusco	Klitgord, M., Lima, N. Y.	C	99.50	.....	92.00	–36	.....	C None
	Special Yellow Globe Onion		F	99.91	0.07	91.50	3–36	45	F None
7595	Ort & Co., Churubusco[415]	Klitgord, M., Lima, N. Y.	C	.....	.....	88.00	–36	.....	C None
	Southport White Globe Onion		F	99.94	0.05	87.00	3–36	45	F None
7901	Strock, Frank, Hudson	Quirk, John B., North Madison, Ohio	C	99.80	.....	90.00	10–35	.....	C None
	Special White Globe Onion		F	99.60	0.40	87.50	4–36	.....	F None
7520	Wells, Guy M., Knox[416]	Vaughn's Seed Store, Chicago, Ill.	C	98.00	.....	94.00	11–35	.....	C None
	Yellow Globe Onion Seed		F	99.90	0.10	96.50	3–36	.....	F None

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*Not labeled with official Indiana State Labels.
†Certified by retailer.
C and F stands, respectively, for Claimed and Found.

[411] Tag incomplete.

[412] Tag incomplete.

[413] Distributed by Thomas Owen's Son, Angola, Ind.

[414] Tag incomplete. Distributed by Thomas Owen's Son, Angola, Ind.

[415] Tag incomplete.

[416] Not tagged. Labels furnished.

TABLE 8—Miscellaneous

Laboratory No. S.	Name and Address of Retailer from Whom Sample was Secured, Kind, Brand and Lot No.	Name and Address of Distributor		Purity, Per Cent	Inert Matter, Per Cent	Germination, Per Cent	Hard Seeds, Per Cent	Date of Germination	Total Number Weed Seeds Per Lb. of Seeds	Number Per Pound of Each of the Noxious Weed Seeds Specified in the Law
7572	†Seberger Seed Co., Crown Point	Dickinson Co., The Albert, Chicago, Ill.	C	98.52		96.00		2-36		C None
	6 Row Barley, Lot 71243		F	98.55	0.26	94.00		4-36	30	F Mustard, 5
7960	Farmers Exchange, Inc., Warren[417]	Teweles Seed Co., L., Milwaukee, Wis.	C	98.86		96.00		3-36		C None
	Velvet Barley		F	99.31	0.31	91.50		5-36	25	F Quack grass, 5
8035	†McMahan Seed Co., Valparaiso	Mangelsdorf & Bro., Ed. F., St. Louis, Mo	C	98.00		94.00		2-36		C None
	Reed's Canary Grass, Lot M		F	99.36	0.64	90.00		4-36		F None
8004	Farmers Co-op. Co., Centerville	Davis Seed Corp., Lebanon, Ind.	C	99.50		75.00		2-36		C None
	Rape Seed		F	99.88	0.12	68.50		6-36		F None
7695	James Seed Co., Jeffersonville	Scott Seed Co., New Albany, Ind.	C	98.43		80.00		11-35		C None.
	Rye Grass, Lot 1		F	99.04	0.20	89.50		4-36	2,457	F Curled dock, 54: red sorrel, 63
7424	*Lafayette Life Insurance Co., Lafayette.	American Field Seed Co., Chicago, Ill.	C	99.00		90.00		12-35		C None
	Winter Vetch, Lot 6887		F	99.59	0.37	59.50	21.50	3-36	8	F Corn cockle, 8

*Not labeled with official Indiana State Labels.

†Certified by retailer.

C and F stands, respectively, for Claimed and Found.

[417] Sample secured from Charles Brett, Route 4, Huntington, Ind.

Circular No. 226 November, 1936

ELECTRIC SOIL HEATING FOR HOTBEDS

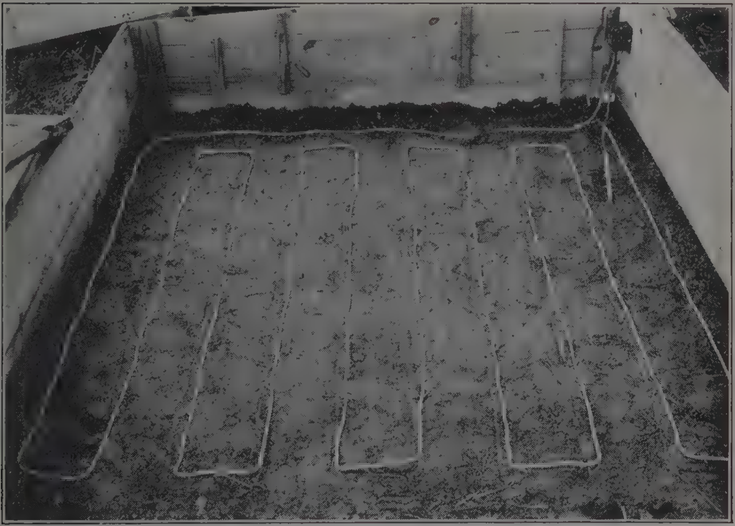

Fig. 1. Showing arrangement of cable and thermostat in a 6- by 6-foot hotbed, which is a practical size for the production of early vegetable plants and flowering plants. The cable is covered by 3 to 4 inches of garden soil and the temperature is automatically controlled.

PURDUE UNIVERSITY
AGRICULTURAL EXPERIMENT STATION
LAFAYETTE, INDIANA

SUMMARY

1. The use of soil-heating cable for heating hotbeds electrically is superior to the individual heater from the standpoint of ease and cost of installation, and cost of operation.
2. Cabbage and tomato plants will germinate in less time and the plants grow faster in hotbeds with the cable installed on the surface of the soil or in the soil and air or at a depth of 3 inches in the soil than in those where the cable is 6 inches below the soil surface.
3. Records of 35 electrical hotbeds operated in Indiana from 1931-36 showed a variation in consumption from 0.22 to 3.60 kilowatt-hour per 3- by 6-foot sash per day. Of the entire group, 8 used less than 1.0 kilowatt-hour per sash per day, 12 used from 1.0 to 1.5, 7 used from 1.5 to 2.0, 4 used from 2.0 to 3.0, and 4 used more than 3.0.
4. Covering hotbeds at night reduced the amount of energy consumed and the use of cinder insulation under and around the beds showed a saving of 20 per cent in amount of electricity used. Banking the frames with soil and fitting sash tightly to the frames likewise reduced energy consumption.
5. Control of heating units with thermostats showed no advantage in saving of electric energy over manual control, but eliminated the necessity for close personal attention to temperature regulation.

ELECTRIC SOIL HEATING FOR HOTBEDS

T. E. HIENTON, Dept. of Agricultural Engineering
J. H. MACGILLIVRAY, Dept. of Horticulture

Interest in heating hotbeds and cutting benches with electricity has increased rapidly because the amount of fresh horse manure available for supplying heat has decreased and because satisfactory electrical heaters have been developed to replace manure. Studies have been conducted in Indiana since 1931 to determine the practicability of different types of electrical heating units, the economy of their use in comparison with other sources of heat and the quality of plants produced.

The first use of electric heat for hotbeds is reported to have occurred in Norway in 1922. A device of this type was first used in the United States in the State of Washington in 1925. Professor Garver of Washington State College installed the first experimental electric hotbed in 1927. Heaters used were of home-made construction until 1931 when the first commercial unit heaters and soil-heating cable made their appearance.

Investigational work with electrical heating of hotbeds and cutting benches was initiated in Indiana in 1931. Three hotbeds, of two 3- by 6-foot sash each, were installed, using various types of insulation around the frames. One-half of each hotbed was heated with individual heaters and the other half with lead-covered resistance wire. In the cable-heated hotbeds, 83.3 per cent of the tomato seeds were germinated, in those with unit heaters, 79.5 per cent, and in a check steam-heated hotbed, 69.4 per cent. This difference was apparently due to the more nearly uniform soil and air temperatures in the electric than in the

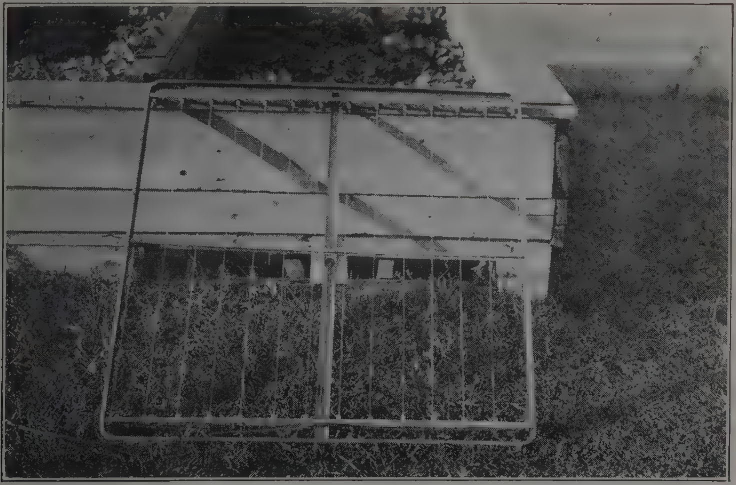

Fig. 2. The underheat type of electric heater is used in hotbeds and cutting benches. Each unit is usually provided with an individual thermostat.

steam-heated hotbed. Results of this study disclosed that the cable was superior to the individual heater from the standpoint of ease and cost of installation, and cost of operation.

Ten electrically heated hotbed and two cutting-bench test installations, using soil-heating cable to provide heat, were made during 1932 and records obtained of their operation. A need for additional information on the proper depth and lateral spacing of the cable was disclosed from observations of these installations. A study to determine the optimum depth and lateral spacing of the cable in hotbeds was made during 1933 and 1934 by G. W. Alkire, a graduate student, on two crops, cabbage and tomato. One phase of this study was made with cable spaced 7 inches apart at depths of 6 inches, 3 inches and flush with soil surface. The second phase of the study was conducted with the cable installed 6 inches deep with lateral spacings of 7 inches, 10 inches, 14 inches and 18 inches. An installation of cable spaced 14 inches apart, 6 inches deep, with 30 additional feet of cable fastened to the frame 3 inches above the soil, was also included.

Results of these studies, listed in Table 1, showed that cabbage and tomato seeds will germinate in less time and the plants grow faster in hotbeds with the cable installed on the surface of the soil or in the soil and air, or at a depth of 3 inches in the soil than in those where all of the cable was placed 6 inches below the surface of the soil.

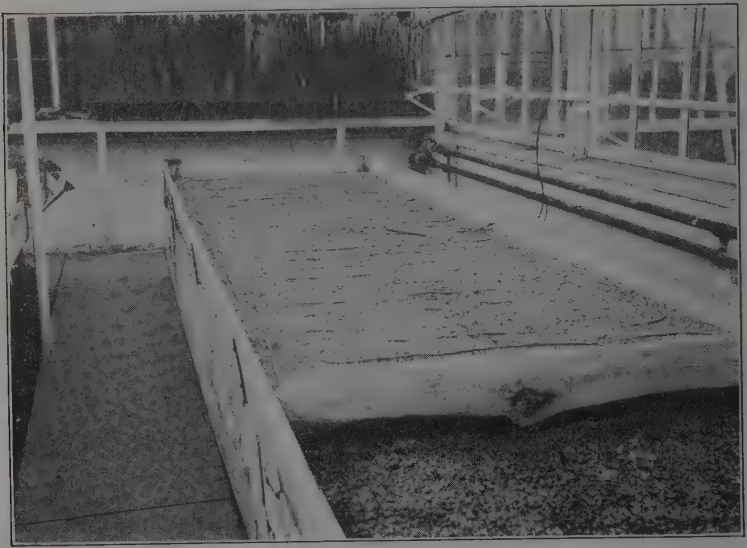

Fig. 3. Electrically heated cutting bench in which cable is laid 7 inches apart. The sand for cuttings is placed on the cable.

Air temperatures varied more widely than soil temperatures in hotbeds with cable at a depth of 6 inches than in the others included in the study. Air temperatures dropped as low as 40 degrees F. at 6 a. m. in the hotbeds

Table 1. The effect of different lateral and depth spacings upon electric consumption and the growth of cabbage and tomato plants.

Bed	Cable Spacing	Cable Depth	Heating Capacity	Cabbage, March 1-27							Tomato, April 1—May 15						
				Consumption[3]							Consumption[3]						
				Per Sash Per Day	Per Degree F. Rise in		Average Soil Temp.	Average Air Temp.	Dry Weight 100 Plants	Average Height	Per Sash Per Day	Per Degree F. Rise in		Average Soil Temp.	Average Air Temp.	Dry Weight 100 Plants	Average Height
					Air Temp.	Soil Temp.						Air Temp.	Soil Temp.				
	In.	In.	Watts Per Sq. Ft.	Kw.-hr.	Kw.-hr	Kw.-hr	Degrees F.	Degrees F.	Gm.	In.	Kw.-hr.	Kw. hr	Kw.-hr	Degrees F.	Degrees F.	Gm.	In.
1	18	6	4.4	1.77	0.154	0.104	62.33	56.9	1.6	3.6	0.52	0.056	0.045	63.33	62.80	32.4	14.6
2	7	6	11.1	2.72	0.157	0.145	64.11	62.6	1.5	3.6	0.73	0.050	0.059	64.14	66.88	33.6	16.2
3	14	6	5.5	2.03	0.134	0.131	60.80	60.6	1.7	3.4	0.79	0.052	0.074	63.90	66.60	35.9	18.0
4	14[1]	6[1]	11.1[2]	3.09	0.174	0.192	61.40	63.2	2.6	4.0	1.03	0.061	0.087	63.71	68.01	36.6	18.3
5	7	0	11.1	3.25	0.140	0.194	62.60	69.2	2.5	3.7	1.13	0.074	0.099	63.41	68.36	35.4	17.7
6	7	3	11.1	2.55	0.144	0.135	64.35	63.1	1.5	3.3	0.93	0.062	0.075	64.25	67.38	33.4	16.7
7	10	6	7.4	2.48	0.171	0.135	63.70	59.8	1.8	3.4	0.81	0.067	0.065	64.27	64.35	34.0	17.0

[1] 30 feet of cable, fastened on sides of frame 3 inches above soil, 30 feet in soil.

[2] 5.5 watts in soil, remainder in air.

[3] Number of kilowatt-hours for each degree rise of the air temperature or soil temperature in the hotbed, above the outside temperature, per sash per day.

with lateral spacing of cable of 18 and 14 inches respectively, at 6-inch depth, with outdoor air temperature of 32 degrees F.

Energy consumption per sash per day increased in electrically heated hotbeds as the lateral spacing of the cable decreased and as its depth decreased with the same lateral spacing. The amount of electricity consumed to produce one degree F. rise in soil temperature above outside air temperature was greater where all or a part of the cable was installed on the surface of the soil or in the air than where laid in the soil. However, higher air temperatures were maintained in the former type of installation than in the latter.

Fig. 4. Earliness of celery may be increased by the use of heating cable beneath the rows in the early spring.

A study to determine the optimum temperature for rooting coleus cuttings

Table 2. Rooting time in open coil compartment type beds in greenhouse held at approximately 55° F. in January, 1931.

Tray No.	Heater Capacity Watts Per Sq. Yd.	Consumption Per Sq. Yd. Per Day* Kw.-hr.	Temperature Range of Soil at 2-In. Depth Degrees F.	TIME TO ROOT IN ½ Peat Moss ½ Sand Days	Pit Sand Days	Washed Sand Days
			IRESENE			
I	113.0	2.704	75—80	8	8	8
II	90.0	2.163	68—75	9	9	9
III	67.5	1.622	64—70	13	13	13
IV	45.0	1.081	58—65	16	16	16
Check	....	.....	49—59	23	22	22
			COLEUS—Christmas Gem			
I	113.0	2.704	75—80	7	7	7
II	90.0	2.163	68—75	8	8	8
III	67.5	1.622	64—70	13	11	11
IV	45.0	1.081	58—65	19	16	16
Check	....	.....	49—59	28	23	23

*Power was on continuously.

was made in 1931 by M. W. Richman as his undergraduate thesis in Horticulture. Results of his work are shown in Table 2. His conclusions were that, while temperatures of 75 to 80 degrees F. gave quickest rooting, those from 70 to 75 degrees were more satisfactory for coleus, considering cost. The roots on cuttings propagated in mixed sand and peat moss were larger, longer and more abundant. The best propagating conditions were obtained with high humidity surrounding the plants and fairly low moisture in the sand.

Electric heat was used experimentally during 1933, 1934 and 1935, 2 to 3 inches beneath rows of celery, by a grower near Fort Wayne. The difference in rate of growth of heated and unheated plants in 1933 is evident in Figure 4. Increases in yield of 61.8 per cent, 83.4 per cent, 33.6 per cent and 32.9 per cent were produced in 1933 with cable wattages per foot of 9.7, 6.7, 4.3 and 2.4, respectively. However, during each of the three years used, the cost of electricity at 2 cents per kilowatt-hour has exceeded the value of the additional celery produced at 10 cents per pound.

Records on a total of 35 hotbed installations and 4 cutting benches, obtained from 1931 to 1936, are listed in Table 3. The hotbed installations included a total of 644 sash, 3 by 6 feet in size, and the cutting benches, 393 square feet. Hotbeds varied from the 2-sash 6- by 6-foot size used by the city

Table 3. Records of operation of electric hotbeds and cutting benches in Indiana, 1931-36.

Crop	Heating Started Date	Time Heated Days	3x6 Foot Sash No.	*Consumption Kw.-hr.	Thermostat Used	Insulation	Remarks
Pepper Leek Tomato	Apr. 4, 1932	38	4	0.95	No	12 in. cinders beneath bed. Frame banked with soil.	Used burlap mat to cover sash at night.
Cauliflower	Apr. 11, 1932	32	4	1.44	Yes	2 in. cinders beneath bed.	Cello-glass sash used.
Radish Onion Beet	Mar. 26, 1932	37	4	1.44	Yes	12 in. cinders beneath bed. Frame banked with soil.	
Sweet Potato	Apr. 16, 1932	17	14	1.02	Yes	3 in. cinders beneath bed, banked with soil.	Covered sash with canvas at night. Cable half in soil, half in air.
Sweet Potato	Apr. 16, 1933	13	10	2.33	No	4 in. cinders beneath bed, 12 in. around sides.	Sash did not fit frames tightly.
Sweet Potato	May 1, 1933	10	14	0.80	Yes	3 in. cinders beneath bed.	Covered sash with canvas at night. Cable half in soil, half in air.
Cabbage Tomato Sweet Potato	Mar. 20, 1933	60	8	1.24	Yes	4 in. rock wool used in half frame.	Covered sash with canvas at night.
Sweet Potato	Apr. 11, 1933	26	4	3.60	Yes	Banked soil one-half height of sides.	Maintained soil temp. above 70°F. during entire period.
Cabbage Tomato Pepper Flowers	Mar. 6, 1933	48	2	1.98	Yes	Frame banked with soil.	
Egg Plant Pepper Tomato	Apr. 4, 1933	34	4	1.53	Yes	Frame banked with soil.	
Flowers Vegetable	Mar. 23, 1933	37	12	0.22	Yes	Frame banked with soil.	Soil temp. held about 50° F.

Table 3—Continued

CROP	Heating Started Date	Time Heated Days	3x6 Foot Sash No.	*Consumption Kw.-hr.	Thermostat Used	Insulation	Remarks
Cabbage Pepper Tomato	Mar. 1, 1933	66	2	2.05	Yes	12 in. cinders beneath bed. Frame banked with soil.	
Flowers	Mar. 13, 1933	67	4	1.37	Yes	13 in. cinders beneath bed. Frame banked with soil.	Used mats in cold weather.
Tomato Celery Pepper	Apr. 24, 1933	40	20	0.24	Yes	12 in. cinders used on six sash beneath bed. Frame banked with soil.	Heat used in May for frost protection.
Tomato Egg Plant Pepper	Mar. 17, 1933	54	3	0.89	Yes	6 in. cinders beneath bed. Frame banked with soil.	Plants better than those sown in manure hotbed 10 days earlier.
Cabbage Tomato	Mar. 23, 1933	53	2	1.66	Yes	Frame banked with soil.	
Cabbage Pepper Tomato	Mar. 27, 1934	47	20	0.70	No	Frame banked with soil. 4 in. cinders beneath bed. 12 in. on sides.	Felt weather strip tacked on top of frame.
Sweet Potato	Apr. 11, 1934	12	11	2.05	Yes	Frame banked with soil.	
Flowers	Mar. 26, 1935	41	240	1.45	Yes	No insulation.	
Sweet Potato	Apr. 14, 1935	31	22.2	1.37	Yes	Frame banked with soil.	Elec. heated beds produced 58% more plants than manure-heated.
Sweet Potato Cantaloupe	Apr. 10, 1936	19	100	3.19	Yes	Frame banked with soil.	
Tomato	Apr. 6, 1931	21	3	0.85	No	Double-walled frames.	14% greater germination than steam.
Tomato	Apr. 6, 1931	21	3	2.34	Yes	Unit heaters used. Double-walled frames.	10% greater germination than steam.
Tomato	Mar. 15, 1932	49	2	1.16	Yes	5 in. cinders beneath cable. Frame banked with soil.	Sash covered with milo mat at night.
Tomato	Apr. 6, 1932	20	4	3.57	Yes	12 in. cinders beneath bed. 6 in. cinders on sides.	Heated one-half of 24-foot bed, no partition.
Tomato	Mar. 22, 1932	60	2	1.94	Yes	5 in. cinders beneath cable. Frame banked with soil.	Seeds germinated in 6 days, in check manure bed required 16 days.
Tomato	Apr. 20, 1932	20	16	2.14	Yes	Frame placed on top of soil.	Glass sash.
Tomato	Apr. 20, 1932	20	16	2.88	Yes	Frame placed on top of soil.	Muslin
Tomato	Apr. 20, 1932	19	16	1.33	Yes	No insulation	Produced 569 plants per sash.
Tomato	Feb. 23, 1932	29	2	1.06	Yes	3 in. cinders beneath hotbed, in greenhouse.	Used to force potted plants.
Tomato	May 1, 1933	11	16	1.12	Yes	Frame placed on top of soil.	Glass sash.
Tomato	May 1, 1933	11	16	1.99	Yes	Frame placed on top of soil.	Muslin
Tomato	Apr. 20, 1933	27	8	0.47	Yes	4 in. rock wool used in half of frame.	
Tomato	Apr. 4, 1933	19	16	3.21	Yes	Cable placed on surface of soil. No insulation or banking.	Plants from elec. bed produced 10.44 T. per A., steam bed, 9.4 T.
Tomato	Mar. 3, 1933	48	6	1.67	Yes	Frame banked with soil, 5 in. cinders beneath bed.	Sash covered with milo mat at night.
Tomato	Mar. 12, 1933	54	16	0.37	Yes	No insulation.	Sash covered with canvas at night.

Table 3—Continued

CUTTING BENCH

CROP	Heating Started Date	Time Heated Days	3x6 Foot Sash No.	*Consumption Kw.-hr.	Thermostat Used	Insulation	Remarks
Chrysanthemum	Apr. 4, 1932	15	4	3.48	Yes		
Poinsettia	June 11, 1934	15	1.67	1.84	Yes		
Lantana Poinsettia	June 3, 1933	88	12	2.89	Yes		
Poinsettia	June 16, 1933	22	4.16	3.44	Yes		

*Per 3- by 6-foot sash per day.

gardener for raising his vegetable and flower plants, to 16-sash units for raising tomato plants for canning factory or market gardener (Figure 5), and to 50-sash units for growing sweet potato plants in southern Indiana (Figure 6).

Results reported by those using electrical heating in hotbeds indicate that seeds germinate faster and with a higher percentage than in manure- or steam-heated ones. One grower reported that tomato seeds planted in an electric hotbed germinated in six days, but required sixteen days in a manure-heated one. Another reports 58 per cent more sweet potato plants from an electric than from a manure-heated hotbed. The tomato plants shown in Figure 5 which were raised in the electric hotbed, on the left, yielded 10.4 tons per acre, while those heated in the steam hotbed on the right yielded 9.4 tons per acre. A central Indiana grower, who raises plants for retail sale, produced 3,750 plants per bushel of sweet potato seed in an electric hotbed

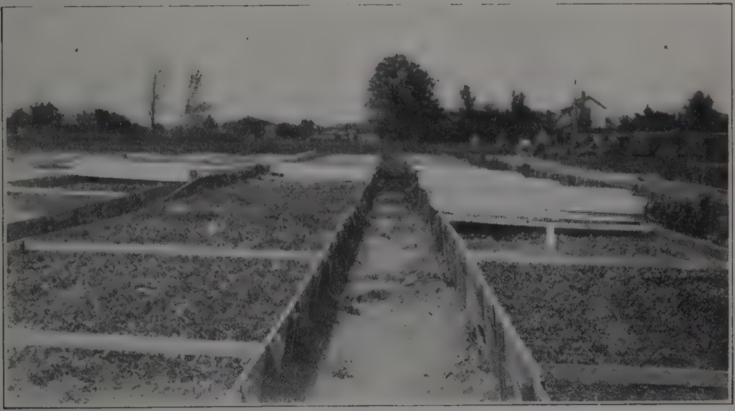

Fig. 5. The relative size of tomato plants produced by electric and steam heat. The stakes are of equal height above the ground. The electric bed is on the left and these plants produced 10.4 tons of tomatoes per acre as compared to 9.4 tons for the steam-heated plants.

and 2,334 per bushel in one heated by manure. The plants returned $14.25 and $8.16 per bushel of seed, respectively, when grown in electric- and manure-heated hotbeds, the difference being due in part to the earliness of the plants in the first type.

COST OF OPERATION

The records obtained on 35 electrically heated hotbeds and four cutting-bench installations (Table 3) during the past six years report the consumption per sash per day while heat was used. The wide variety of methods used in building and insulating the hotbeds, combined with a wide difference in operating temperatures maintained in them, resulted in a considerable range in consumption. A use of as low as 0.22 kilowatt-hour per 3- by 6-foot sash per day and another of as high as 3.60 was reported. Of the entire number, 8 used less than 1.0 kilowatt-hour per sash per day, 12 used from 1.0 to 1.5, 7 used from 1.5 to 2.0, 4 used from 2.0 to 3.0 and 4 used more than 3.0. Experience gained in the first season in operating electric heaters in hotbeds enabled several growers to reduce the consumption nearly 40 per cent during the second year.

Consumption of electric energy in cutting benches varied from 0.92 to 1.74 kilowatt-hour per square yard per day. These amounts were all less than that found by Richman to produce the most satisfactory cuttings from coleus, where cost was considered. This smaller consumption is most probably due to higher greenhouse air temperatures than that which prevailed during the test at Purdue University.

Covering hotbeds with canvas strips, straw mats or other covering at night reduced the amount of energy consumed and the use of cinder insulation under and around the beds showed a saving of 20 per cent in amount of electricity used. Banking the frames with soil and fitting the sash tightly to the frames likewise reduced energy consumption. Control of heating units with thermostats showed no advantage in saving of current over manual control, but eliminated the necessity for close personal attention to temperature regulation.

ELECTRIC HEATING SYSTEMS

Two types of hotbed heaters are included in Table 3, the underheat type, Figure 2, in which the heaters are placed in compartments beneath the hotbed soil, and the direct type, Figures 1 and 6, wherein the soil is heated by direct contact with lead-covered cable.

The underheat method may be used to heat a hotbed and a cutting or propagating bench in a greenhouse. Such heating elements are composed of resistance wire supported by metal frames approximately 30 inches square and are usually provided with a thermostat.

The direct method which utilizes hotbed-heating cable is used extensively in outside hotbeds, in cutting and propagating benches, and outdoor plots. It was used in all installations reported in Table 3 except one in 1931. Hotbed-heating cable consists of a small resistance wire insulated with asbestos or other materials and enclosed in a flexible lead sheath. This type of heater is best suited to large installations, while the underheat type is practical only for small hotbed installations of a few sash or small areas in greenhouse benches.

COST OF EQUIPMENT

The heating cable will cost approximately 6.25 cents per foot, resulting in an investment of $1 to $2 per 3- by 6-foot sash, depending upon the spacing of the cable used and the size of the installation. Thermostats will cost from $6 to $9. Individual heaters for each sash cost approximately $10 each, including thermostat.

The cost for heating equipment for a 6- by 6-foot hotbed with cable 7 inches apart (Figure 1) will amount to $3.75 for 60 feet of cable plus a thermostat costing $7.50. Heating equipment for a 40-sash hotbed will cost $45.00 for cable and will require two thermostats, with the cable spaced 12 inches apart.

Hotbeds are used primarily for plant production and plant forcing either in addition to a greenhouse or by persons not having greenhouse facilities available. Their use is one of the most economical methods of producing desirable plants out of the normal growing season which are brought to maturity in the garden or field. Hotbeds may be used also as cold frames after the heat has been used up from the manure-heated or turned off from the steam or electrically heated beds. Cold frames are valuable in hardening off plants so that they may better withstand any unfavorable weather after transplanting to the garden. Hotbeds may also be used to grow such quick-maturing crops as radishes and lettuce. These may be grown in early spring or in the fall and, since they are cool season crops, little heat is required.

LOCATION OF BEDS

Several of the important considerations relative to the location of hotbeds are as follows:

1. Easy accessibility to house or farm buildings for ease in care.
2. A well drained soil permits a more effective control of soil moisture in the hotbed.
3. A good water supply.
4. Good protection from the wind by means of building, hills or windbreaks.
5. Single rows of sash should extend east and west and the sash slope to the south to obtain maximum amount of sunlight.
6. Where there are several beds, there is need of ample space to permit easy access to them.

CONSTRUCTION

Cinder insulation has been used by some Indiana growers on the sides or bottom or both of their electric hotbeds. Such insulation has shown approximately 20 per cent saving where used on both sides and bottom, while somewhat less saving was shown where bottom insulation only was used. Depth of cinders ranged from 6 to 12 inches on the bottom and 4 to 6 inches on the sides of the hotbeds. Satisfactory results have been obtained without using cinders or other insulation, but bed frames should be set into the soil, if possible, and banked to the tops with soil or other material to prevent heat losses.

Hotbed frames are usually in 6-foot widths and any multiple of 3 feet in length, in order to accommodate the standard 3- by 6-foot sash. Melon and sweet potato growers in southern Indiana frequently use a 4- by 10-foot sash. The frame material may be either wood, preferably 2 inches thick, or concrete. In constructing the frame, it is important to avoid cracks between the joints or around the edges of the sash, as drafts increase the consumption of electricity. The frame should be just high enough to provide sufficient space between the surface of the soil in the bed and the sash for the plants, as less heat will be required and a smaller part of the bed shaded. The rear board of the hotbed frame should be 4 to 6 inches higher than the front board.

A covering over the sash, as shown in Figure 7, during the cool nights of early spring and late fall will reduce the energy consumption of the bed considerably. Straw mats, old blankets, canvas, or tough waterproof paper which has been reinforced with sisal or other strengthening material may be used for this purpose.

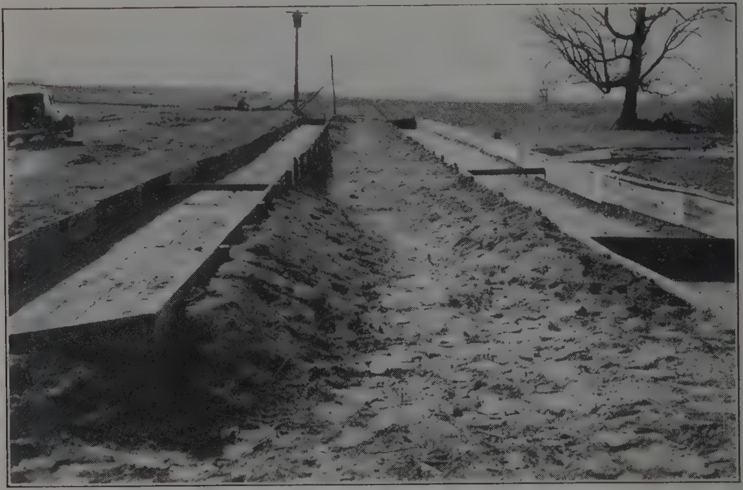

Fig. 6. A large installation of electric heating cable. Six sections of cable are placed lengthwise of the bed.

Glass sash is ordinarily used for hotbeds, although cloth or a glass substitute can be used. If greater detail of hotbed construction and management is desired, Circular Number 77 of the Purdue University Agricultural Experiment Station should be requested.

PREPARATION OF SOIL

In growing plants a soil of good texture and fertility should be used. Composted soil of sod and manure are frequently employed, but any fertile soil containing ample humus and fairly free of weed seeds may be used. Commercial fertilizer may be used to increase the plant food content of the soil at the rate of one-eighth to one-quarter pound per sash of such analysis as 2-12-6. The analysis of fertilizer used will vary with the soil. Where soil becomes infected with soil-borne diseases, it will be necessary to replace it with uninfected soil or sterilize the soil in the beds.

INSTALLATION

The installation of the element used in the underheat method usually involves the construction of a special compartment beneath the hotbed soil, as may be seen in Figure 2, while the installation of hotbed-heating cable requires no special construction.

Spacing of the cable may vary from 7 to 14 inches laterally and from the soil surface to 6 inches beneath the surface in depth. Installations for raising sweet potato plants have been found very satisfactory with the cable spaced at 12-inch intervals, 2 to 3 inches beneath the potatoes. Cable installed in cutting benches is usually laid 7 inches apart, as shown in Figure 3.

The length of cable used per 3- by 6-foot sash depends upon the wattage desired. Ordinarily, the cable is installed so as to deliver from 150 to 200 watts per sash. Sixty feet of number 19 cable will furnish approximately 400 watts at 110 volts, while 120 feet will furnish 800 watts on 220 volts. The installation of 60 feet of cable in a 6- by 6-foot area, spaced at 7-inch intervals, is shown in Figure 1. A similar method is used for 120 feet to be operated on 220 volts and used on a 6- by 12-foot or 6- by 15-foot area. Larger areas may be heated by duplicating these installations or as shown in Figure 6, where full 120-foot lengths have been laid and electrical connections made at each end. Hardware cloth may be used in the soil 1 inch above the cable if there is danger of injury to the lead covering from tillage tools.

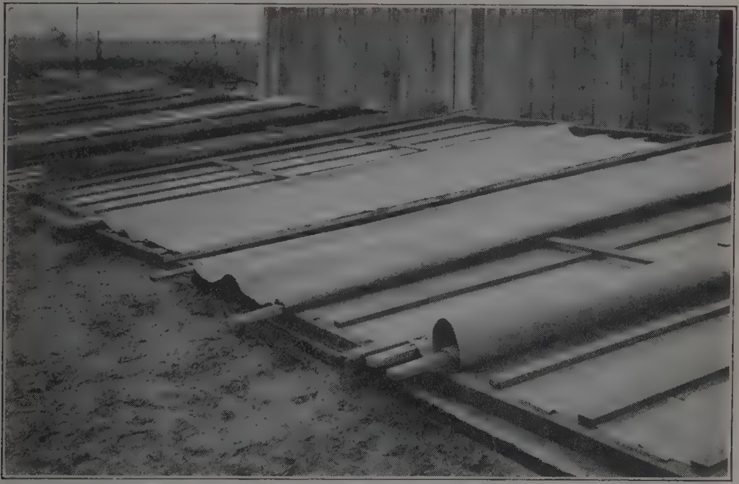

Fig. 7. Conservation of heat by means of coverings on cold nights and tight-fitting frames reduces the consumption of electricity.

The wattage from a given length of cable is dependent upon the resistance of the wire (ohms) and the voltage to which it is connected. The following formula is used in computing wattage:

$$\text{Watts} = \frac{\text{line voltage}^2}{\text{total ohms in cable}}$$

For a 110-volt circuit and 60 feet of cable with a resistance of 0.5 ohm per foot, the wattage is:

$$\text{Watts} = \frac{110\text{x}110}{60\text{x}0.5} = 403$$

The length of cable to use in order to secure a desired wattage can be computed from the following formula:

$$\text{Length, in feet} = \frac{\text{line voltage}^2}{\text{watts x ohms per foot}}$$

Assuming it is desired to heat a 2-sash hotbed with 400 watts, using cable with a resistance of 0.5 ohm per foot, on a 110-volt circuit, the number of feet of cable can be calculated by substituting in the above formula, as follows:

$$\text{Length, in feet} = \frac{110\text{x}110}{400\text{x}0.5} = 60$$

The minimum number of feet of cable that should be connected directly to the circuit is usually specified by the manufacturer. Since the wattage per foot of cable increases as the length of the cable decreases, it is possible that the cable may be damaged by excessive heat if too short a length is used.

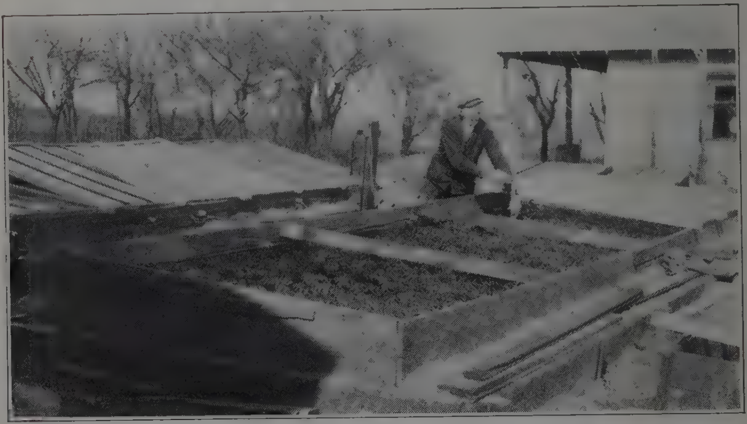

Fig. 8. Electric hotbed used for home production of early tomato plants either for the market gardener or for sale to home gardeners. Spring production of vegetable, flowering, and bedding plants is often a profitable business.

HEAT CONTROL

Automatic temperature control is secured by the use of a thermostat. Hotbeds may be operated satisfactorily and economically by using a manually operated switch, but a thermostat will reduce the amount of supervision necessary in order to maintain the desired temperatures and will also frequently result in a saving of electricity, particularly on warm days. A thermostat with a capacity of 15 amperes will regulate a maximum load of 1650 watts on a 110-volt circuit or twice that amount on a 220-volt circuit.

Thermostats used in Indiana installations have all been of a bulb and bellows type which quickly makes or breaks the circuit to the heaters. Regardless of type, any satisfactory thermostat should quickly open or close the circuit to prevent radio interference and burning of thermostat points.

HOTBED TEMPERATURES

Plants are classified into warm- and cool-season crops, and there is a difference in their temperatures for optimum germination and growth. Cool-season crops, such as cabbage, cauliflower and lettuce, will germinate at 50-60° F., while warm-season crops, such as cucumbers, tomatoes and peppers, will germinate more satisfactorily with a temperature of 70-75° F. The night temperature during germination may be carried 5-10° lower. After the appearance of a majority of the seedlings, the temperatures may be lowered as follows: 40-45° F. day or night for cool-season crops; and 55-60° F. for warm-season crops in the daytime and as low as 50° F. at night. Temperatures on cloudy days may be the same as those during the night. Sweet potatoes should be bedded in a soil which can be maintained at a temperature of about 70-75° F. After the plants have begun to appear, a lowering of the temperature to 60-65° F. is preferred by some growers. These temperatures are considered favorable for sweet potatoes, but lower temperatures may be used where a slower growth is desired.

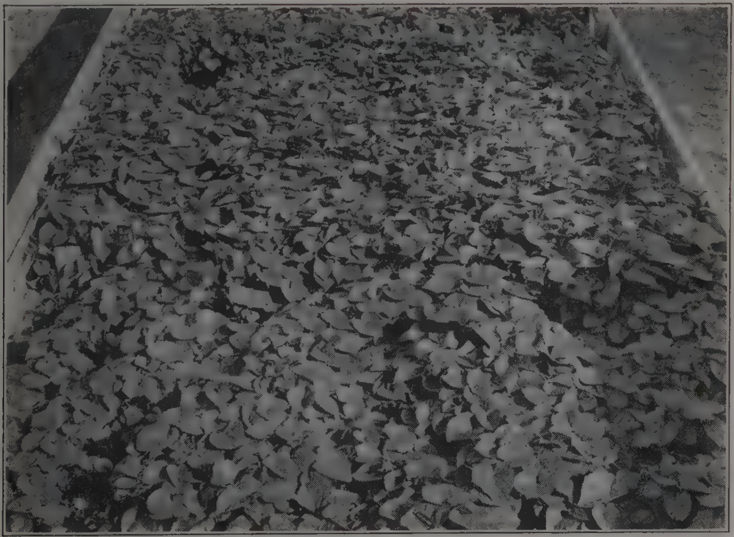

Fig. 9. Excellent sweet potato plants grown in hotbed heated by electric cable on the sides as well as in the soil.

Temperatures can be controlled by regulation of the artificial heat or by ventilation through raising and lowering the sash. Daily ventilation will assist in producing sturdy, stocky plants.

OPERATION

Watering should be carefully performed, as it is one of the methods used in controlling plant growth. Water should be applied in sufficient quantity to soak the soil thoroughly rather than frequent light waterings. It is best to water during the late morning or the middle of a sunny day so the foliage of the plants is dry by night. In other words, water when the hotbed temperature is rising rather than falling. Careful watering will assist in the prevention of the spread of disease.

The water requirements of the electric bed are practically the same as the manure-heated bed except in installations where the soil is underlaid with cinders, in which case more water will be necessary due to the greater drainage.

Electrically heated hotbeds require less ventilation than manure-heated beds because of the lack of ammonia fumes, vapor and uniformity of heat. Practically the only time ventilation is needed is on warm, bright days.

The use of electric heat in plant growing has steadily increased in Indiana for five years. There will be a further increase in use by present operators as well as new installations as growers become familiar with its advantages for plant production.

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